

FINAL REPORT


The study evaluated the impact of MANAGE's DAESI programme on the trained dealers and the ultimate beneficiaries, the farming community. The study covered the dealers trained during 2009-10 to 2017-18 spread across the States of Andhra Pradesh, Odisha, Rajasthan and Uttar Pradesh

Evaluation and Impact Assessment of “Diploma in Agricultural Extension Services for Input Dealers”

June 2019

Prepared by


VARSHA SOCIETY



National Institute of Agricultural Extension Management (MANAGE) was established in 1987 by the Ministry of Agriculture & Farmers Welfare, Government of India as an autonomous Institute, from which its acronym 'MANAGE' is derived. In recognition of its importance and expansion of activities all over the country, its status was elevated to that of a National Institute in 1992 and re-christened to its present name i.e., National Institute of Agricultural Extension Management. MANAGE is the Indian response to challenges of agricultural extension in a rapidly growing and diverse agriculture sector. The policies of liberalization and globalization of the economy and the level of agricultural technology becoming more sophisticated and complex, called for major initiatives towards reorientation and modernization of the agricultural extension system. Effective ways of managing the extension system needed to be evolved and extension organizations enabled to transform the existing set up through professional guidance and training of critical manpower. **MANAGE** is the response to this imperative need. **MANAGE** offers its services in the following five streams viz., Management Training, Consultancy, Management Education, Research and Information Services.

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Acronyms

AP	Andhra Pradesh
ACABC	Agri Clinics and Agri Business Centers
ADA	Assistant Director of Agriculture
ATMA	Agricultural Technology Management Agency
AV	Audio Visual
CSFES	Computed Suggestions for Enrolment Score
DAC	Department of Agriculture & Cooperation, MoAFW
DAESI	Diploma in Agricultural Extension Services for Input Dealers
DDA	Deputy Director of Agriculture
DII	DAESI Impact Index
EC	Essential Commodities
FCO	Fertilizer Control Order
FDI	Foreign Direct Investment
GOI	Government of India
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
JDA	Joint Director of Agriculture
KII	Key Informants Institutions
km	kilometer
KVK	Krishi Vignana Kendra
MANAGE	National Institute of Agricultural Extension Management
MoAFW	Ministry of Agriculture & Farmers Welfare, Govt of India
NGO	Non-Government Organization
OUAT	Orissa University of Agricultural University
PACS	Primary Agricultural Cooperative Society
PP	Plant Protection
PRA	Participatory Rural Appraisal
RKVY	Rashtriya Krishi Vikas Yojana
RRA	Rapid Rural Appraisal
SAMETI	State Agricultural Management & Extension Training Institute
SAU	State Agricultural University
ToR	Terms of Reference
WTO	World Trade Organization

Executive Summary

The study on “Evaluation and Impact Assessment of DAESI program” aimed at assessing the impact of DAESI programme implemented up to 2018 as per the objectives of the overall programme. The study was intended to throw light on the outcomes of the programme and shortcomings in its execution to facilitate corrections, if any, to enable enhanced performance in the future.

Major objectives of the study were to assess and evaluate the

- Impact of DAESI program on behavioural changes it has made on the trained dealers.
- Impact on knowledge of input dealers, quality of Extension services provided by input dealers to farmers, extent of coverage of farmers by the trained input dealers and suggestions for improvement.
- Impact on income level of input dealers, change in the customer base
- DAESI as a tool for reduction of legal problems at input dealers’ level.
- Perception of farmers on the dealers trained under DAESI, acceptance of DAESI certified input dealers as extension source, impact of DAESI on farmers in terms of knowledge, adoption, rational use of inputs, cropping pattern, enhancement in production, productivity and profitability
- Any other issue relating impact of DAESI at farmers level
- DAESI scheme in terms of present course fee, cost norms and methodology of implementation and suggest any modifications for improvement
- Present venues, Infrastructure, Resource persons, Facilitators, Partner Institutes, Course content, Study material, Methodology, Evaluation procedures and to suggest ways and means to strengthen the same
- Involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other Developmental programs like RKVY, Extension Reforms in promotion of DAESI

Primarily, Before -After method was followed in order to analyse the impact of the DAESI programme. The study laid emphasis on measuring the impact of DAESI across three levels of stakeholders including the Dealers, Farmers and Non trained dealers in addition to evaluating the implementation aspects. At the dealer level, following evaluation questions were focused upon,

- Impact of DAESI program on behavioral changes on the trained dealers
- Impact on knowledge of input dealers, quality of Extension services provided by input dealers to farmers, extent of coverage of farmers by the trained input dealers and suggestions for improvement
- Impact on income level of input dealers, change in the customer base
- DAESI as a tool for reduction of legal problems at input dealers’ level

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Farmers' perception on the DAESI programme was captured using the following major research questions

- Perception of farmers on the dealers trained under DAESI
- Acceptance of DAESI certified input dealers as extension source
- Impact of DAESI on farmers in terms of:
 - Knowledge on farming
 - Adoption of farm innovations
 - Rational use of farm inputs, cropping pattern, enhancement in production, productivity and profitability

Following major implementation aspects were reviewed as part of the study

- An analysis of the DAESI scheme in terms of present course fee, cost norms and methodology of implementation
- An analysis of present Venues, Infrastructure, Resource persons, Facilitators, Partner Institutes, Course content, Study material, Methodology, Evaluation procedures
- An analysis of involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other Developmental programs like RKVY, Extension Reforms in promotion of DAESI

The study adopted a mixed methodology combining quantitative methods such as field surveys supplemented by qualitative methods like Focus Group Discussions (FGDs)

- Review of existing secondary data and reports
- Field surveys
- Focus Group Discussions
- Key Informant interviews
- Case study method
- Socio - Economic impact analysis
- Road map for the future - Stakeholder Consultation (Academia/ Research Institutions, Agri-Input Companies, Extension experts and DAESI facilitators)

The study covered a dealer sample of 833, interviewed 1590 farmers and 54 non-trained dealers. Perceptions were obtained on a scale of 1 to 5 (very low to very high).

Key Findings

Key findings of the study are as follows:

A. Demographic and Business Profile of Dealers

- ❖ Age :
 - 70% dealers were in 35-55 age group;
 - 20% below 35 years and
 - 10% above 55 years
- ❖ Sex: Female dealers comprised less than 1%

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- ❖ Dealership experience:
 - 37% up to 10 years;
 - 41% 11-20 years;
 - 21% above 20 years
- ❖ Entrepreneurial background: Two-third dealers are first generation into input business
- ❖ Farming Experience: All most all dealers have farming experience with 50% dealers having more than 10 years
- ❖ Business Turnover:
 - 35% dealers have <Rs 10 lakhs/yr;
 - 25% in Rs 11-50 lakhs/yr;
 - 30% in Rs 51-100 lakhs /yr;
 - 10% above Rs 100 lakhs/yr
- ❖ Profit:
 - 94% have less than Rs 10 lakh/yr;
 - 4% have Rs 11-20 lakh/yr;
 - 2% above Rs 20 lakhs/yr

B. Impact on Dealers and Farmers

1. Extent of gain in knowledge

The highest gain in knowledge was on the component of pests and disease control (score 4.08) followed by weed management (score 4.05), soil health management (4.04), seed and seed production (3.99), Irrigation management (3.99), Crop production technologies (3.96), Acts and regulation related to farm inputs (3.95), and rainfed farming (3.91).

An interaction with dealers through FGDs revealed that the primary motivation for the dealers to join the programme was obtaining the license. However, soon after joining the programme, they realized the importance of knowledge gained through the programme to such an extent that they were willing to forego the subsidy on programme fee. Many dealers had motivated other dealers and their relatives on joining the programme.

2. Extent of gain in skills

Among different areas of skills, the top five areas of skills were handling of fertilizers (score 3.84) followed by handling of pesticides (3.83), seed treatment techniques (3.82), identification of plant diseases (3.78) and identification of plant pests (3.76) and identification of deficiency symptoms of major nutrients (3.73).

Relatively lower level of skills were gained in areas like use of computer for market information, drip and sprinkler irrigation system and operation and maintenance of plant protection equipments.

3. Changes in Attitude as perceived by dealers

The greater change was increased sensitiveness to the problems of farmers (measure 4.01) followed by increased confidence on providing advisories (4.01), greater sense

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of ethics in business (3.93) and increased realization on extension services provided (3.9), changed positive attitude towards scientists and agricultural officers (3.57).

During the Focus Group Discussions (FGDs), the dealers mentioned that “they feel confident in providing technical advice to the farmers based on scientific knowledge received, and also in dealing with input companies. The dealers consider themselves not merely traders, but advice - givers also. They are now confident in consulting and interacting with the agricultural professionals to clear their doubts.

4. Attitude change of dealers - as reported by the farmers

The higher level of change had occurred with regard to improvements in interaction with the farmers (score 3.87) followed by providing new farm inputs such as seeds, chemicals and fertilizers (score 3.80), providing new farm information and practices (3.74), enhanced knowledge of dealers about farmers’ problems (3.71), providing improved advises such as farm produce price, marketing.

5. Perceived importance of different topics of DAESI training

The data also shows that relatively the top six most important topics were pest and disease control, seed and seed production, weed management, irrigation management, soil health management and crop production techniques.

During the FGDs, the dealers expressed the need for greater importance to topics such as bio - fertilizers, organic manures, organic farming, new molecules for pest control etc.

7. Extent of change in business practices

The highest level of change has occurred with regard to improvements in interaction with farmers (score 3.66) followed by providing new inputs such as fertilizers, seeds, chemicals etc (score 3.64), providing new farm information (score 3.59), providing advices on farm price and marketing (score 3.56).

8. New advisories and inputs provided to the farmers

Among different new advisories disseminated information about the new seeds took the first place (97%) followed by ‘methods of application of fertilizers (96%) ; new crops to be grown (95%) and farm chemicals for control of diseases and pests (90%).

Among the new inputs supply of improved seeds topped the list (95%) followed by new brands of fertilizers (92%), safe and better chemicals for control of pests and diseases (90%) , bio fertilizers ,& micro nutrients (87%).

9. Changes in key business indicators

“Number of farmers covered” has had the maximum change due to DAESI training, according to the DAESI dealers across the states.

Wilcoxon test results indicate that overall, the DAESI training programme has resulted in gain in business performance significantly across the states and individually in all the states under the study.

10. Reduction in legal problems

The study has shown that about 87 per cent of the dealers did not face any legal problems related to input business. Out of 13 per cent dealers who face legal

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problems nearly three fourth (74.26%) indicated that DAESI training helped them in solving their legal problems.

11. Farmers satisfaction of extension services provided by DAESI dealers

As much as 86 per cent of the farmers were very highly satisfied or highly satisfied with the extension services provided by the dealers. Only two per cent of the farmers came under low extent to very low extent of satisfaction. About 12 per cent of the farmers had medium level of satisfaction. These findings indicate that DAESI trained dealers were able to satisfy them farm information and inputs needs of a vast majority of farming community

12. Adoption of advisories and increase in yield and income

The highest level of adoption (98.68%) was on improved seeds which was followed by adoption of fertilizers (93.50%), farm chemicals for control of disease and pests (92.42%), introduction of new crops (91.10%) and herbicide (85.19%)

As such as 88 per cent of farmers perceived a positive change in farm yield and income due to the services provided by the DAESI trained dealers. Only about four per cent of the farmers did not experience any positive change

The data confirm a significant change have occurred in diversification of crops, reduction of cost of inputs and increase in yield and income. The extent of changes varied from 1 to 10% level to 41 to 50 % level. A majority (more than 50%) of the farmers fell under 1 to 30% level of changes.

13. DAESI impact index

DAESI impact index to measure different components of impact of DAESI on dealers, farmers, quality of extension services, customer base etc. was developed.

The composite index for the dealers who underwent DAESI training was calculated based on the cumulative indices of knowledge, skill and attitude changed due to the training programme. The overall cumulative index (OCI) is worked out as simple average of the three cumulative indices.

$OCI = (CI-A+CI-B+CI-C)/3$ (Where CI stands for Cumulative index of A or B or C)

Accordingly, the overall cumulative index of DAESI training impact is worked out to 67.72 per cent. This indicates that the overall impact of the training was highly significant.

C. Observations on the organizational aspects

1. Time and Duration

- Ninety per cent of the dealer respondents agreed with the current duration of the training programme
- Ten per cent of the respondents indicated need for reduction in the duration. Out of this, 71 per cent mentioned desired duration between 1 and 6 months

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2. Course content

- A majority of the stakeholders had mentioned that the present course structure is quite comprehensive, well-structured and convenient. However there was a felt need to include more topics in areas like bio-fertilisers, bio-control of pests and diseases, organic farming etc.
- A uniform observation of the dealers across states is that the relative share of practical work has to be enhanced and practicals should be conducted by experienced faculty.
- About 34 per cent of the dealer respondents indicated that they require subject matter specific (seeds, fertilizers, pesticides etc.) trainings, while 66 per cent were not in favour of it.
- Of the dealers who have asked for subject matter specific trainings, 28 per cent have indicated that the ideal number of training days to be 30.

3. Course delivery and evaluation

- On-line course delivery and evaluation would make it easy for some dealers to pursue the course and complete it at their own pace and convenience.
- Online DAESI courses may also be offered for the benefit of dealers and private sector officials who could afford to have net connectivity. Training should be given on the use of mobile and other electronic means to impart guidance to farmers

4. Venue and logistics related

- Majority of dealers did not face problems with venue in terms of distance. However “venue” as a problem in terms of distance was one of the reasons for non-enrolment by non-DAESI dealers.
- The facilities for training in terms of infrastructure was perceived to be adequate by a majority of the dealers. However, in some places problems of poor infrastructure existed.

5. Resource persons

- Most of the dealers were satisfied with the quality of the resource persons. They were happy that the resource persons were drawn from the State Agricultural Universities (SAUs). However, a number of dealers expressed that most often junior faculty members were deputed for training.
- Suggestions were offered to invite more number of experienced and successful dealers for sharing their business experiences.

6. Training manuals/ Resource materials

- Non-availability of training manuals / resource materials need to be made available in vernacular languages.
- Follow up of training for keeping continuity with input dealers should be done through re-training of Input dealers should ensure quality of inputs as final product will come back to all of us for consumption”

Conclusions and Recommendations

Conclusions

- The evidences of the study clearly shows that the DAESI training has resulted in significant positive behavioural changes as per the objectives of the programme resulting in significant gain in their knowledge and skills related to various dimension of modern farm technologies and farming conditions.
- The dealers have not only gained technical knowledge and skills in modern farming technology but their mental outlook (attitude) has also been positively affected through increased sensitiveness to the problems of farmers, inculcation of positive attitude towards scientists and agricultural officers, increased scientific orientation and enhanced confidence on providing advisories.
- The evidences of the study further show that farmers had observed positive changes in behaviour and attitude of dealers due to DAESI programme with respect to improvements in interaction with the farmers, providing new farm inputs such as seeds, chemicals and fertilizers, providing new farm information and practices.
- The DAESI training has enabled dealers to provide quality extension services including farm advisories and inputs at the last mile - village level. Thus the DAESI has transformed the dealers into last mile agricultural extension agents
- The evidences related to perceived high level of satisfaction of a majority of farmers on services provided by DAESI trained dealers indicate that they were able to satisfy farmers' farm information and inputs needs of a vast majority of farming community. This also shows the greater level of acceptance of DAESI trained dealers as a credible extension agents at village level.
- The study further shows that DAESI training had a significant changes in customers' base and business volume of dealers.
- The results of the study show evidences of impact of DAESI at framers' level through a significant increase in adoption of modern farming practices resulting in enhanced yield and income.
- A higher level of satisfaction level of DAESI dealers with various aspects of organisation and management of DAESI provides evidences for continuation of DAESI in the present structure of implementation even though there os enough scope for further refinements.
- As the training is imparted at many centres across the country, MANAGE may undertake post-training assessment of trained dealers and beneficiary farmers (after six months after completion of their training) on various aspects pertaining to the training.

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Recommendations

- The programme should continue in its present form with adequate budgetary provision considering the cost appreciation.
- There is an immediate need to upscale the programme as the total dealer population across the country is estimated at 2.8 lakh individuals as in 2015. So far, DAESI has penetrated and reached out to only 4 per cent of the dealer population. Partnerships and alternate modes of delivery of the course including online platforms could be looked into.
- To meet the growing demand more number of programmes may be organised annually covering the entire country.
- Implementation of the program is non-uniform across states in terms of support by respective state government departments. The program showed good results where the concerned state departments identified a senior person who could spend substantial time on this activity. With increasing enrolments in all most all states, the program needs a full time official to coordinate at state level.
- As known, infrastructure facilities have a bearing on the learning outcome. The training hall infrastructure, IT facilities for presentation, facilities for refreshments and wash rooms etc are highly crucial for sustained interests of the participants. While identifying new centres, this may be kept in mind before a new centre is created.
- Onetime grant be given to deserving centres to improve their infrastructure and ensure quality of training.
- Availability of guest faculty is not uniform across the centres. Centres close to Big cities or well-developed places have access to senior officials from research, academic, government, industry and other departments. Interior places mostly at district head-quarters and away to such established places need differential support to attract senior and experienced persons.
- In almost all the locations, trainees were unanimous in their feedback on importance of practical sessions. Possibilities of exploring field visits as well as guest lectures in and around the vicinity of the training venue seems essential.
- The course content be made modular with more emphasis on practical to improve the skill of dealers, especially for identification of pest and diseases, nutrition deficiency, etc.
- Attempts be made to provide digital as well as print copy of the reference materials for future reference.
- Resource persons for the programme should be drawn from various organizations - both from government institutes as well from private sector. Most dealers expressed need for serious efforts to invite senior and experienced faculty, officers and executives to conduct theory and practical sessions.
- Both the trained and trainee dealers have provided mixed feedback on exclusive courses in specific sub - sectors like seeds, chemicals, fertilisers, machinery, etc. However, academicians and scientists opined that the persons entering the input

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dealing business may not have much exposure to farm science. More than 50 per cent sessions (on ethics, business management, law, regulations, quality) are of general nature and common to all. Besides, different participants hail from different business verticals and learn from each other. In many cases, dealers are trying to diversify to provide more than one service to farmer. This is particularly evident from corporate retail outlets and also successful dealers. Therefore, it is recommended to continue offering one program for all in a holistic manner. However, the curriculum may be revised time to time. The flexibility in the current system of implementation is taking care of this aspect as state nodal officers and local facilitators are able to decide location specific case experiences by the choice of faculty and field visit, as per need.

- It is noted that fertiliser and agri-chemical dealerships are given to science graduates. However, agri-experts felt that the science graduates also need to be familiarised with farm science basics. Therefore, they too may be mandated to undergo DAESI training or specially designed training for them.
- There is a greater need for inclusivity and diversification into other allied sectors such as animal husbandry & dairy development, fisheries, poultry etc as the feed industry is one of the emerging businesses. The proposition of launching exclusive courses for feed industry dealers may be explored.
- Dealers are in waiting to enrol in the course and also youth are seeking opportunities to enrol in DAESI and look at it as a means for entrepreneurship. The following options are possible and worth considering.
 - There is need to offer such courses at more research and extension centres of agri-universities.
 - Agri-universities may be encouraged to evolve a separate finishing diploma course as their regular activity towards entrepreneurship development.
 - The course can be offered in mixed mode i.e. partly online and partly on campus with compulsory attendance at contact sessions. The practical sessions are to be made compulsory and they may be arranged over a week covering 3-4 practicals at a time. Theory sessions may be given online with option to clarify doubts online mode or through mobile, email, etc.
- With rapid increase in agribusiness growth, and entry of agribusiness companies establishing their own retail outlets (like Coromandel, Tatas, Nagarjuna Fertilizers etc), it is possible to offer separate diploma course for X level students by some agri-universities, preferably at their polytechnics. and through KVKs.
- DAESI is not known to many youth. There is urgent need to popularize it using mass media like TV, Radio, Newspapers, Social Media etc.
- As agri-technologies are changing rapidly and new methods are being introduced in farm practices. Many government schemes require farmers, dealers, development officials and bankers to work in tandem. Periodic refresher / interaction programmes be organised for acquainting the dealers with emerging technologies and recent policy developments. Thus, periodic short retraining (of 1-3 days) duration is recommended for all dealers.
- The current regulatory mechanism and evolving business systems are not conducive to promoting organic farming or natural farming by dealers. As government policy is

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inclined towards natural farming, there is need to revisit the curriculum on introducing the module on organic agriculture.

- MANAGE should constantly monitor the progress of training programmes to ensure quality. It may also undertake post training feedback from dealers and farmers.
- In most places, dealers shops are concentrated in towns and district headquarters. Dealer shops can serve farmers best if located at block level or at big villages. For providing inputs at reasonable distance to farmers, places not having dealer shops till date may be identified for issue of new licenses.

In brief, the feedback received drives to the conclusion that the DAESI programme has been successful in realising its intended objectives of supplementing and strengthening the agricultural extension system through wide network of input dealers.

1. INTRODUCTION

1.1 Background

Agriculture in India remains the mainstay for more than 58 per cent of its population. Technology led improvements, effective dissemination, streamlining of input supplies, support policies and efforts from Central and State Governments during the post-independence era has transformed the sector from food-deficit; subsistence farming to food-self-sufficient commercial farming. Though the sector is constrained with challenges including seasonality, perishability, vulnerability to climate adversities and lack of sufficient support infrastructure to name a few, agriculture continues to remain attractive to investors. “According to the Department of Industrial Policy and Promotion (DIPP), Indian food processing industry had attracted Foreign Direct Investment (FDI) inflow of USD \$8.57 billion during 2000 and 2018” (IBEF). Recent approval of Agriculture Export Policy, 2018 by the Government of India (GOI) is a major driver for the demand led agricultural development in the coming years.

In 2018-19, the estimated food grain production in the country is 285.2 million tonnes and the country is positive to meeting its growing demand from rising population alongside tackling the challenges of shrinking land available for cultivation. With continued leadership in major commodities such as food grains, milk, sugar, tea, spices and fruits, the country needs to bring in retention strategies and produce more from less and therefore focusing on “per unit productivity enhancement”. Accelerating the growth and achieving its potential in food grain production requires multi-pronged strategy, including effective and efficient farm information delivery mechanism.

Dissemination of farm knowledge and modern agricultural technology continues to lag behind and only 20 per cent of the technological knowledge is reaching the field (The Hindu, 2016). “A greater emphasis towards agricultural research and extension is advocated as the resultant increase in crop productivity will have a concomitant effect of increase in income accompanied by reduction in poverty” (Status of Farmers’ Income: Strategies for Accelerated Growth, Ministry of Agriculture & Farmers Welfare. DAC.2017). To improve extension services to keep pace of agricultural sector needs, Ministry of Agriculture and Farmers Welfare, Government of India emphasized the use of multi-agency extension services. Towards this, radical changes have been brought in to bring synergy in extension efforts by multi-national companies, corporate bodies, voluntary organizations, farmers associations and input dealers etc.

1.2 About DAESI

The country has a large network of about 2.82 lakh agri-input dealers as in 2015; handling seeds, fertilisers, plant protection chemicals (pesticides & insecticides), farm equipment, etc. These input dealers in the last mile play a major role in influencing farmers’ decisions on usage of inputs, adoption of newer technologies, crop management practices, plant protection measures etc. Most of the studies have shown that the agri input dealers were the key information sources to the farmers next to progressive farmers.

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Even though the dealers have been playing a significant role in providing information services to the farmers, nearly 90 per cent of the agri-Input dealers do not have any formal agricultural education. This leads to dissemination of unscientific crop advisory to the farmers, diluting the purpose of agricultural extension and farmer trainings. Alongside, the agri input dealers also do not realize the implication of “laws” related to handling Agricultural Inputs and their environmental concerns.

The dealers have been constrained and their services are limited due to lack of formal know-how in management of agriculture and allied farming activities. If these input dealers are transformed as para-extension workers by providing requisite knowledge, they can offer professional services to farmers through market led extension services. This can bring a paradigm shift in the agricultural extension ecosystem.

1.3 Origin of DAESI

The NSSO survey (2005) showed that about 40 per cent of farmers had access to any source of information on modern technology from the public extension programmes and extension services, of which input dealers contributed 13.1 per cent. In view of this, National Institute of Agricultural Extension Management (MANAGE), the premier agricultural extension institute in the country had realized the importance of imparting scientific knowledge to the dealers. In this context, MANAGE had designed a one-year diploma course titled ‘Diploma in Agricultural Extension Services for Input Dealers (DAESI)’ in the year 2003, which imparts relevant and location specific agricultural education to equip these input dealers with sufficient knowledge to transform them into para-extension professionals. Thus, MANAGE envisioned DAESI to be an instrumental mechanism for accelerating the performance of the dealers and simultaneously benefitting the farming community through value added extension advisory. The NSSO survey on Some Aspects of Farming in India (NSSO, 2016) has shown that the share of cultivating agricultural households accessing technical advice received from private commercial agents (including drilling contractors) was about 44.76 per cent. This includes input dealers also.

In view of the positive feedback about DAESI program, Govt. of India has been implementing DAESI as Central Sector Scheme from the year 2015-16 onwards. During the 12th Plan, the program was upscaled and envisaged for training 12,000 input dealers per year through active involvement of SAMETIs, Agribusiness companies, ATMAs, KVKs, Agriculture Colleges and NGOs under the overall supervision of State Agriculture Departments and facilitation by MANAGE (MANAGE, 2019).

Under the programme, the input dealers are trained on specific crop production technologies of broad-based agriculture and specific package of practices related to field problems; efficient handling of inputs; laws governing regulations of agricultural inputs which will transform the input dealers into an effective source of farm information at the village level for the farmers/farm women.

Since DAESI inception in 2003 to 2018, a total of 9800 input dealers have successfully completed the course and another 9560 registered for 2018-19 batch from the States of Andhra Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal. During 2018-19 states like Kerala, Gujarat, Punjab and Uttarakhand also have come forward to conduct DAESI programs (DAC, 2018).

1.4 Approach and Implementation

DAESI has been designed in such a way that the input dealer can pursue the program without adversely affecting their day-to-day business. The program is spread over a period of 48 weeks comprising of 40 classroom sessions and 8 Field visits to various institutions and farmers' fields. It is being organised in semi-distance mode to suit the dealers as well as course requirements. The course broadly equips dealers with knowledge and skills on crop related technical, extension, business, legal, behaviour and ethical aspects. The classroom sessions and field visits are conducted on Sundays or local market holidays. The field visits are intended to acquaint the input dealers with location-specific field problems and expose them to relevant technologies. They are trained to identify pests, diseases and nutritional disorders. Study material in local language is provided and multi-media instructional devices are used in the classrooms.

All the stakeholders involved in DAESI program i.e. the input dealers, resource persons, facilitators, institutions capable of delivering the program viz. ATMAs, KVKs, NGOs, Agrl. Colleges etc. are located at district level. The knowledge and skill imparted on cropping pattern, the package of practices and the field visits are hence location-specific. "Decentralized approach" is being adopted to cover 300 batches per year. Each batch roughly comprises of 40 input dealers.

1.5 Recent Amendments

In order to cope with the issues related to quality and regulatory mandates, the Ministry of Agriculture and Farmers Welfare (MoAFW) had made DAESI mandatory for all input dealers requiring periodic renewal of licenses. Besides, input business activity like any other agribusiness activity is growing rapidly through individual entrepreneurs as well as by agribusiness companies having their own network of retail outlets. To cope with growing demand and deal effectively with the highly competitive environment, MoAFW has made diploma holders and graduates in agriculture and allied sciences as eligible to obtain and maintain input dealership business license. As the input dealers training is of strategic significance to farm extension services, it is time to assess the effectiveness of the programme from the trained input dealers in terms of their knowledge and skill upgradation, general behavioural change towards farming and regulatory systems and ability to provide services to the farmers in the field.

2. EVALUATION FRAMEWORK

2.1 Purpose of the Study and its Objectives

The study on "Evaluation and Impact Assessment of DAESI program" aimed at assessing the impact of DAESI programme implemented during the years 2009-2010 to 2017-2018 as per the objectives of the overall programme. The study was intended to throw light on the outcomes of the programme and shortcomings in its execution to facilitate corrections, if any, to enable enhanced performance in the future.

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Objectives

Major objectives of the study were to assess and evaluate the

- Impact of DAESI program on behavioural changes it has made on the trained dealers.
- Impact on knowledge of input dealers, quality of Extension services provided by input dealers to farmers, extent of coverage of farmers by the trained input dealers and suggestions for improvement.
- Impact on income level of input dealers and the change in the customer base
- DAESI as a tool for reduction of legal problems at input dealers' level
- Perception of farmers towards the dealers trained under DAESI, acceptance of DAESI certified input dealers as extension source, impact of DAESI on farmers in terms of knowledge, adoption, rational use of inputs, cropping pattern, enhancement in production, productivity and profitability.
- Any other issue relating impact of DAESI at farmers level.
- DAESI scheme in terms of present course fee, cost norms and methodology of implementation and suggest any modifications for improvement.
- Present venues, infrastructure, resource persons, facilitators, partner institutes, course content, study material, methodology, evaluation procedures and to suggest ways and means to strengthen the same.
- Involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other developmental programs like RKVY, Extension Reforms in promotion of DAESI.

2.2 Data Collection Methods and Sampling

The approach and methodology adopted was carefully tuned to the purpose, objectives and scope of the evaluation study as indicated in section 2.1. The methodology was fine-tuned after discussions with the programme authorities, sponsors and pilot studies.

Primarily, Before -After study design was followed in order to analyse the impact of the DAESI programme. The before or pre measurement of impact variables was done through recall method. The study laid emphasis on measuring the impact of DAESI across three levels of stakeholders including the Dealers, Farmers and Non trained dealers in addition to evaluating the implementation aspects. At the dealer level, the focus of evaluation was on the following components:

- Impact of DAESI program on behavioral changes on the trained dealers.
- Impact on knowledge of input dealers, quality of Extension services provided by input dealers to farmers, extent of coverage of farmers by the trained input dealers and suggestions for improvement.
- Impact on income level of input dealers, change in the customer base.
- DAESI as a tool for reduction of legal problems at input dealers' level.

Farmers' perception on the DAESI programme was captured using the following major factors;

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- Perception of farmers on the dealers trained under DAESI
- Acceptance of DAESI certified input dealers as extension source
- Impact of DAESI on farmers in terms of:
 - Knowledge on farming
 - Adoption of farm innovations
 - Rational use of farm inputs, cropping pattern, enhancement in production, productivity and profitability

Following major implementation aspects of DAESI were reviewed as part of the study

- An analysis of the DAESI scheme in terms of present course fee, cost norms and methodology of implementation
- An analysis of present Venues, Infrastructure, Resource persons, Facilitators, Partner Institutes, Course content, Study material, Methodology, Evaluation procedures
- An analysis of involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other Developmental programs like RKVY, Extension Reforms in promotion of DAESI

The study followed a mixed methodology combining quantitative methods such as field surveys supplemented by qualitative methods like Focus Group Discussions (FGDs), Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA), Case Studies etc.

- Review of existing secondary data and reports
- Field surveys
- Focus Group Discussions
- Key Informant interviews
- Case study method
- Socio - Economic impact analysis
- Road map for the future - Stakeholder Consultation (Academia/ Research Institutions, Agri-Input Companies, Extension experts and DAESI facilitators)

2.2.1 Sampling Framework

2.2.1.1 Dealers

From a population of 3,410 dealers trained under DAESI, sample size was calculated using Cochran's formula with correction. With 95 per cent confidence level and a tolerance for error of about 5 per cent in estimates of mean values; the sample was about 10per cent of population, i.e. 345. However, as mandated in the sanction, approximately 20per cent of the 3,410 trained dealers were proposed to be contacted and therefore, the total sample to be contacted as part of the survey was 700 dealers. Accordingly, the study had covered 833 trained dealers across the four states, Andhra Pradesh, Odisha, Rajasthan and Uttar Pradesh.

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Before proceeding for actual survey, a pilot study was conducted with the DAESI trained dealers of Hyderabad and Rangareddy districts to understand the problems and issues at the field level. A workshop was organized at MANAGE, Hyderabad to fine tune details of the questionnaire through discussion with MANAGE officials. Further, the questionnaires prepared were pre-tested at Kadthal, Rangareddy district of Telangana and finalized before using the same for actual survey.

Cluster sampling technique was followed while selecting the dealers for interviews. State-wise sample covered, i.e. dealers interviewed is shown in the **Table 1**.

Table 1. State wise dealers interviewed

State	No of dealers interviewed
Andhra Pradesh& Telangana	456
Odisha	164
Uttar Pradesh	113
Rajasthan	100
Grand Total	833

In each state, the districts were selected in consultation with DAESI State Nodal Agency engaged by MANAGE. Cluster sampling methodology was adopted in selection of trained dealers in the selected districts or individual centres within the district. District wise sample covered as part of the study is shown in the **Table 2**.

Table 2. District wise dealer sample covered

State	District	No of dealers interviewed
Andhra Pradesh& Telangana	East Godavari	80
	Guntur	184
	Karimnagar	10
	Kurnool	101
	West Godavari	81
	Sub Total	456
Odisha	Angul	35
	Cuttack	28
	Dhenkanal	30
	Jagadsinghpur	9
	Kendrapara	5
	Khurda	7
	Puri	50
	Sub Total	164
Uttar Pradesh	Agra	25
	Bareilly	22
	Gorakhpur	20
	Varanasi	46
	Sub Total	113
Rajasthan	Jaipur	4
	SawaiMadhopur	5
	Tonk	91
	Sub Total	100
Grand Total		833

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The districts were selected purposively and those districts where maximum number of dealer-trainees present were selected. While the dealers within the selected district were selected randomly. As indicated in the terms of reference (ToR), the trained dealers were chosen such that various time zones were represented in the study period covering 2010-2018. Further, to assess the long-run impact of the training programme, a sample of trainees who underwent training before 2009-10 were also included purposively in this study. This part of the sample will help us in understanding knowledge retention and utility of knowledge, skill and attitude change in the long-run, say more than 10 years. Table 3 shows the year wise distribution of dealers' sample.

Table 3. Year wise dealer sample covered

Year	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
Before 2010	161				161
2010	36				36
2011	43				43
2012	42	24			66
2013	24	8			32
2014	12	5			17
2015	22	17			39
2016	27	7	22	2	58
2017	43	56	57	61	217
2018	46	47	21	50	164
Total	456	164	100	113	833

2.2.1.2 Farmers

Considering the variation in the sample, 1402 farmers were selected for the study. Appropriate non-probability sampling methods were adopted for selection of the districts and the farmers within the district were selected randomly. The data was enumerated through Personal Interviews (PIs) and Focus Group Discussions (FGDs). Representations from small, medium and large farmers were also ensured. State and category wise farmers contacted are shown in the Tables 4 and 5, respectively.

Table 4. State wise farmers' sample covered

State	No of farmers interviewed
Andhra Pradesh	841
Odisha	311
Uttar Pradesh	207
Rajasthan	231
Grand Total	1590

It can be seen from Table 5 that 45 per cent of the farmers belonged to the "Small" category, owning less than 5 acres of land. 28.30 per cent were medium and 26.60 per cent were large.

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Table 5. Category wise farmers' sample covered

Category	No of farmers contacted	Percentage of total
Large (Above 10 acres)	423	26.60
Medium (5 - 10 acres)	450	28.30
Small (Less than 5 acres)	717	45.09
Grand Total	1590	100.00

2.2.1.3 Non DAESI Dealers

Forty (40) dealers who had not been trained under DAESI were to be covered as part of the study, as mandated in the ToR. However, 54 Non- DAESI dealers were contacted as part of the study. State wise distribution of non DAESI dealers contacted is shown in the Table 6. The non- DAESI dealers were chosen through non -probability sampling. Such dealers were interviewed to comprehend on the reasons for not enrolling in the DAESI programme and the same was documented as part of the results and discussions.

Table 6. State wise Non - dealers' sample covered

State	No of non-dealers contacted
Andhra Pradesh	16
Odisha	14
Uttar Pradesh	14
Rajasthan	10
Grand Total	54

2.3 Stakeholders' Meetings

Focus Group Discussions (FDGs) were conducted during stakeholders' meetings conducted at each selected district to assess the impact of DAESI programme. These meetings were attended by different stakeholders including ATMA/SAMETI officials, DAESI trained dealers, facilitators, representatives of agribusiness companies, officials from seed certification agency, etc. In each group discussion, about 15- 20 stakeholders participated. The details of the FDGs are summarized in Table 7.

Table 7. State wise no of FDGs conducted

S.No	State	Number of FDGs	Locations
1	Andhra Pradesh	4	Kurnool, Guntur, East Godavari, West Godavari
2	Odisha	3	Bhubaneswar, Dhenkanal, Puri
3	Rajasthan	6	Jaipur, Tonk, Deoli and Banasthali
4	Telangana	1	Karimnagar
5	Uttar Pradesh	4	Agra, Varanasi, Gorakpur, Bareilly
	Total	18	

2.4 Data Analysis

Perception scores

The perception scores on various aspects were obtained from dealers, non-dealers and farmers on a scale of 1 to 5, where 1 stands for very low extent and 5 stands for very high extent. The mean scores were obtained as simple average of the responses.

DAESI Impact Index

The dealers' and farmers' perception on the DAESI programme were captured using rating scales (ranging from 1 to 5) and converted into weighted average mean scores. The weights were generated through judgement scaling method where a group of five judges were asked to give a score of 1 to 9, where 1 stands for Not at all useful to 5 for at most useful through consensus. These scores were normalized to one and used as weights for the calculation of cumulative indices. These mean scores were computed into DAESI Impact Index using the below formula.

$$\frac{\text{Actual Value} - \text{minimum value}}{\text{Maximum Value} - \text{minimum value}} \times 100$$

Where minimum value=1 and maximum value=5 in this study.

Wilcoxon Signed Rank Test

The Wilcoxon signed-rank test is the nonparametric test equivalent to the dependent t-test. As the Wilcoxon signed-rank test does not assume normality in the data, it can be used when this assumption has been violated and the use of the dependent t-test is inappropriate. It is used to compare two sets of scores that come from the same participants. In this study, it is used to investigate any change in scores from one time point to another.

The Wilcoxon Signed Rank test relies on the W-statistics. For large samples with $n > 10$ paired observations the W-statistics approximates a Normal Distribution. The W statistics is a non-parametric test, thus it does not need multivariate normality in the data. This test is applicable when the distribution does not approximate a normal distribution and further, both measurements are not independent from each other and therefore the Mann-Whitney U-test cannot be used. The first step of the Wilcoxon sign test is to calculate the differences of the repeated measurements and to calculate the absolute differences.

The next step of the Wilcoxon sign test is to order the cases by increasing absolute differences. For the Wilcoxon signed rank test we can ignore cases where the difference is zero. For all other cases we assign their relative rank. In case of tied ranks the average rank is calculated.

3. RESULTS AND DISCUSSIONS

3.1 Demographic and Business Profile of the DAESI Dealers

The study showed that 37 per cent of the dealer respondents belonged to the age group “35 to 44”, 33 per cent belonged to 45 to 54 and 15 per cent were between 25 and 34 (Table 8). A majority of the dealers (52.38 per cent) were in the age group of 25 and 44.

Table 8. Age distribution of Dealers (per cent)

Age (in completed years)	Andhra Pradesh & Telangana	Odisha	Rajasthan	UP	Average
Under 25	1.81	4.88	12.00	6.25	4.27
25 to 34	13.09	12.80	16.00	25.00	15.02
35 to 44	33.63	50.00	39.00	32.14	37.36
45 to 54	39.50	29.27	26.00	22.32	33.46
55 to 64	10.84	2.44	4.00	12.50	8.55
Above 65	1.13	0.61	3.00	1.79	1.34

Gender distribution of the respondents is shown in the Table 9. It can be seen that 99 per cent of the respondents were male and 1 per cent were female.

Table 9. Gender distribution of Dealers (per cent)

Gender	Andhra Pradesh & Telangana	Odisha	Rajasthan	Uttar Pradesh	Average
Male	100	99	100	96	99
Female	0	1	0	4	1

An analysis of educational level of the dealers revealed that 35 per cent completed Hr. Secondary schooling, 26 per cent were below secondary schooling, 23 per cent had passed secondary, but below higher secondary and 16 per cent were graduates (Table 10).

Table 10. Educational levels of dealers (per cent)

Educational level	Andhra Pradesh & Telangana	Odisha	Rajasthan	Uttar Pradesh	Total
Below 10 th std.	37	4	28	12	26
10 th std	18	34	30	16	23
Higher Secondary	43	30	21	21	35
Graduate and above	2	32	21	51	16
Total	100	100	100	100	100

Forty-one per cent of them indicated that their experience in dealership was between 11 to 20 years, 37 per cent had an experience of 1 to 10 years, 21 per cent possessed 21 to 35 years and 2 per cent had an experience of above 35 years.

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Table 11. Total experience in Dealership (per cent)

Experience	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
1- 10 years	26	58	41	45	37
11-20 years	45	32	34	41	41
21- 35 years	26	9	22	14	21
Above 35 years	3	1	2	0	2

For most dealers it is small business serving farmers from the nearby villages. Most of the dealers shops are located at district and block head-quarters. Dealers having been offering agri-inputs like seeds, agri-chemicals, fertilisers, farm machinery, etc as per the needs of the local farmers. Number of dealers offering each of the inputs represented as per cent to total dealers is presented in Table 12. The data revealed that most dealers were engaged in selling more than one type of input. Maximum number of dealers were doing business in agrichemicals (87.27%) and fertilizers (89.32%), followed by seeds (67.95%) and agri-services (64.95%). Only 42.86 per cent dealers were engaged in agri-machinery and farm equipment.

Table 12. Products or Services offered by the Dealers (per cent)

Products/ Services Offered	Andhra Pradesh	Odisha	Uttar Pradesh	Rajasthan	Total
Seeds	69.96	34.15	81.42	99.00	67.95
Agri chemicals (Pesticides, etc.)	96.49	56.71	84.07	99.00	87.27
Fertilizers	92.32	92.07	75.22	87.00	89.32
Agri Machinery/ Equipment	57.68	15.85	25.66	39.00	42.86
Agri services	95.18	9.15	23.01	66.00	64.95
Others	33.11	5.49	6.19	17.00	22.09

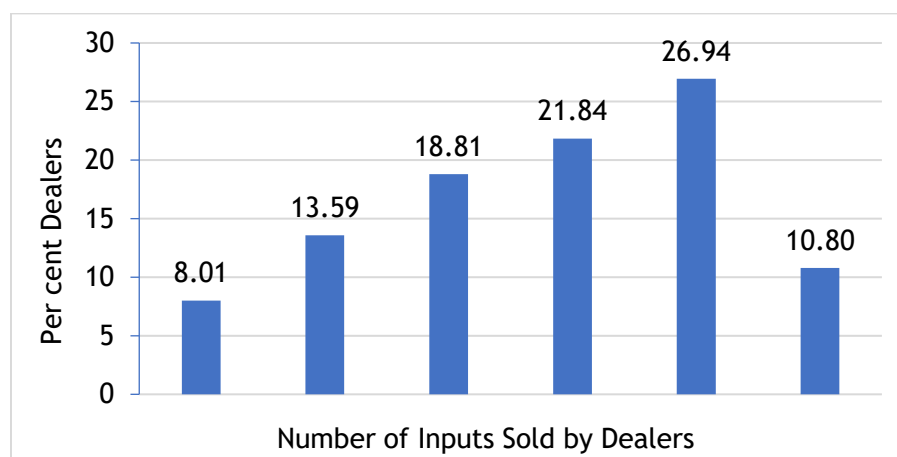
State-wise type of inputs sold by dealers through interesting lights on the nature of agriculture in the respective states. In Andhra Pradesh, dealers were engaged in agri-services (95.18%) at par with agri-chemicals (96.49%), followed by fertilisers (92.32%) and seeds (69.96%). In Orissa, 92.07 per cent dealers were engaged in fertilisers, followed by 56.71 per cent in agri-chemicals. In Uttar Pradesh, dealers' major business was on seeds (81.42%) and agri-chemicals (84.07%), followed by fertilisers (75.22%). Similar pattern was seen in Rajasthan, where in dealers' business was focused on seeds and agri-chemicals (99%), followed by fertilisers (87%) and agri-services (66%). Thus, agri-chemicals and fertilisers were major inputs sold by dealers in all states. Dealers in Andhra Pradesh have equal major focus on agri-services, where as dealers in Uttar Pradesh and Rajasthan have equal focus on seed business. This perhaps emanates from nature of crops being grown and level of technology being used in respective states.

In number of interactions with dealers in the four states, most dealers expressed the business expansion is in terms of adding more inputs so as to provides as many farmers inputs needs as possible. In many places, like minded dealers work in tandem to provide services to farmers complimenting inputs available with them. There are no formal agreements but most such instances happen with close relatives. The dealers' responses on their business is further analysed in terms on number of different inputs being sold by them (Figure 1). It is interesting to note that only 8.01 per cent dealers sell one product or input. On further analysis of state wise data indicate there are no dealers in Andhra Pradesh and Rajasthan with one product business. Dealers in Uttar Pradesh (13 out of 113 dealers) and Orissa (53 out

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of 164 dealers) sell one product. Of the 53 Orissa dealers, 50 were in fertilisers and 3 in seeds; Of the 13 UP dealers, 9 were in fertilizer business and 2 each in seeds and agri-chemicals. About two decades back, most dealers started their business in fertilisers and subsequently entered in to agri-chemicals and seeds.

Figure 1. Number of different inputs sold by dealers



As seen from the figure 1, majority of dealers were in multi-product business. As dealers are engaged in selling more than one input, the DAESI training emphasis on knowledge, skill and attitude towards multi-products will have more impact on their performances. Further, such a focus will also help them in their future business expansion.

Forty-Seven per cent of the dealers interviewed possessed experience in farming between 1 to 10 years, 30 per cent had 11 to 20 years, 15 per cent of them had 21 to 40 years and 7 per cent had more than 40 years of experience in farming (Table 13).

Table 13. Farming Experience of Dealers

Number of years of Experience	Andhra Pradesh	Odisha	Uttar Pradesh	Rajasthan	Total
0	0	0	1	8	1
1 to 10	46	54	49	38	47
11 to 20	26	30	38	35	30
21 to 40	14	15	12	20	15
More than 40	14	0	0	0	7

Table 14 shows that 64 per cent of the dealers interviewed were new to agri input dealership whereas 37 per cent of them had previous experience.

Table 14. Entry into Dealership business (per cent)

Type	Andhra Pradesh	Odisha	Rajasthan	UP	Total
New to dealership Business (First generation)	61	74	56	65	64
Have Previous experience	39	26	44	35	37

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Dealers participation in the training was voluntary and the linking of license requirements to completion of training did not have much influence on their decision to undergo DAESI training

- DAESI Facilitator, Varanasi on Dec 13, 2018

A maximum of 35 per cent of the dealers had an annual turnover of upto rupees ten lakhs only. About 30 per cent of them had a turnover between Rs. 51 to Rs. 100 lakhs. Only about 3 per cent of the dealers had a turnover more than Rs. 500 lakhs (Table 15).

Table 15. Total Annual Business Turnover (per cent)

Total Annual Turnover	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
Less than Rs 10 lakhs	29	56	25	36	35.14
Rs 11- 20 lakhs	8	19	20	11	11.89
Rs 21- 50 lakhs	9	10	30	22	13.34
Rs 51 - 100 lakhs	43	11	14	17	29.59
Rs 101 - 500 lakhs	9	4	7	7	7.27
Above Rs 500 lakhs	3	0	4	6	2.77

A vast majority of the dealers reported an annual profit from the business less than rupees ten lakhs. Only four per cent of them had a profit between Rs. 11 lakhs to 20 lakhs. Only one per cent had a profit of above Rs. 50 lakhs (Table 16).

Table 16. Total Annual Profit (per cent)

Total Annual Profit	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
Less than Rs 10 lakhs	95	99	78	92	94
Rs 11- 20 lakhs	3	1	10	5	4
Rs 21- 50 lakhs	1	0	6	0	1
Above Rs 50 lakhs	0	0	6	2	1

As much as 52 per cent of the dealers interviewed had completed the DAESI programme during 2017 to 2018, rest of them from the period prior to 2010. In case of Andhra Pradesh, about 75 per cent of the dealers had completed the programme before 2016 (Table 17).

Table 17. Year of completion of DAESI training (per cent dealers)

Year of completion of training	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
Before 2010	35.31				19.33
2010	7.89				4.32
2011	9.43				5.16
2012	9.21	15			7.92
2013	5.26	5			3.84
2014	2.63	3			2.04
2015	4.82	10			4.68
2016	5.92	4	1.77	22	6.96

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Year of completion of training	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
2017	9.43	34	53.98	57	26.05
2018	10.09	29	44.25	21	19.70
All above	100.00	100.00	100.00	100.00	100.00

3.2 Behavioural Changes on Trained Dealers

3.2.1 Perceived changes in behaviour and attitude

Perceived attitudinal change was measured on a five-point continuum ranging from “very low extent (score 1)” to “very high extent (score 5)”. The minimum score obtainable was 1 and the maximum score was 5. The study revealed a very high level of positive changes (mean score ranging from 3.47 to 4.07 out of 5) in attitude of dealers which has a greater influence on offering services to the farmers.

The greater change was increased sensitiveness to the problems of farmers (measure 4.01) followed by increased confidence on providing advisories (4.01), greater sense of ethics in business (3.93) and increased realization on extension services provided (3.9), changed positive attitude towards scientists and agricultural officers (3.57), increased scientific orientation (3.56), enhanced confidence in dealing with inspecting officials (3.51).

In every Focus Group Discussion, it was found that one of the impact of the training was increased confidence and providing technical advices to farmers and also dealing with officials of input agencies and interactions with farm scientists.

The DAESI has transformed input dealers from mere traders to extension education and service providers.

Table 18. Perceived changes in attitude due to DAESI training

Areas of attitudinal change	Perceived Attitudinal Changes Score				
	Andhra Pradesh	Odisha	Rajasthan	UP	Total
Increased sensitiveness to the problems of farmers	3.96	4.15	3.71	4.19	4.01
Inculcation of greater sense of ethics in business	3.89	3.99	3.68	4.16	3.93
Increased Confidence in providing advises has increased	3.92	4.03	4.00	4.36	4.01
Perceives role as a provider of agricultural extension services	3.89	3.94	3.61	4.13	3.90
Better Linkages with SAUs, KVKs and Department officials	3.29	3.68	3.62	3.82	3.47
Higher level of Scientific orientation to agriculture has increased	3.29	3.80	3.76	4.19	3.56
Positive attitude towards scientists&agri-officials	3.29	3.79	3.80	4.13	3.57
More Confidence in dealing with departmental or vigilance officials coming for inspections	3.30	3.60	3.73	3.99	3.51

Score ranges from 1- Very low extent to 5- Very high extent

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3.2.2 Farmers perception of changed behaviour of dealers

It is very heartening to find that as much as 75 per cent of the farmers had observed positive changes in behaviour and attitude of dealers due to DAESI programme (Table 19). Among different states, as much as 97 per cent of the Uttar Pradesh farmers had observed changes followed by the farmers of Rajasthan (92 per cent), Odisha (91.24 per cent), and Andhra Pradesh (61.92 per cent).

Table 19. Perceived changes by the farmers on the behaviour of dealers (per cent)

Perceived Change	AP	Odisha	Rajasthan	UP	Total
Did not observe Changes	38.08	8.76	8.14	2.56	24.18
Observed changes	61.92	91.24	91.86	97.44	75.82

The observed changes among the dealers was measured on a five-point continuum varying from “very low change (score 1)” to “very high change (score 5)”. The investigation revealed that farmers had observed a high level of change (scores ranging from 3.37 to 3.87) in all components of behaviour of dealers. The higher level of change had occurred with regard to improvements in interaction with the farmers (score 3.87) followed by providing new farm inputs such as seeds, chemicals and fertilizers (score 3.80), providing new farm information and practices (3.74), enhanced knowledge of dealers about farmers’ problems (3.71), providing improved advises such as farm produce price, marketing, increased use of Information and Communication Technology (ICT) tools for dissemination of farm information (3.52), providing information on government schemes (3.50) and providing literature on crop cultivation (3.37).

Interactions with farmers during Focus Group Discussions on different states also revealed that farmers reposed greater confidence on the advices provided by the DAESI dealers. As per the opinion expressed by the farmers, the DAESI trained dealers were more responsive to the problems and needs.

Table 20. Different components of changed behaviour of dealers as perceived by Farmers

Perceived Change on various components	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average score (1-5)
Providing new farm information and practices	3.80	3.70	3.51	3.74	3.74
Providing of new inputs such as seeds/ fertilizers/ chemicals	3.85	3.85	3.62	3.63	3.80
Improvements in interaction with the farmers	3.95	3.72	3.68	3.85	3.87
Providing advises on farm produce price and marketing	3.84	3.55	3.06	3.26	3.62
Dealer’s knowledge about the issues faced by the farmers has improved	3.84	3.50	3.37	3.65	3.71
Providing information on government schemes	3.76	2.85	3.16	3.17	3.50
Increased use of ICT (mobile, SMS etc.) to advise farmers by the dealers	3.75	2.51	3.33	3.32	3.52
Providing literature on crop cultivation	3.77	2.09	2.42	2.94	3.37

Score ranges from 1 -very low to 5- very high

3.3 Impact on Knowledge, Skills, Quality of Extension Services and Coverage of Farmers

3.3.1 Extent of Gain in Knowledge

One of the major focus of DAESI programme is to enhance the knowledge, skill of input dealers on various aspects of modern farming practices so that they can perform their roles as extension agents apart from sale of farm inputs. The gain on knowledge due to DAESI training was measured through a rating scale consisting of a five point continuum ranging from very low extent of knowledge gain (score 1) to very high knowledge gain (score 5).

It was very encouraging to find out that DAESI programme had enhanced the knowledge of dealers on different components of modern farming practices to a very high level (mean gain in knowledge score ranged from 3.85 to 4.08 out of maximum possible score of 5).

The highest gain in knowledge was on the component of pests and disease control (score 4.08) followed by weed management (score 4.05), soil health management (4.04), seed and seed production (3.99), Irrigation management (3.99), Crop production technologies (3.96), Acts and regulation related to farm inputs (3.95), rainfed farming (3.91), farm implements and machinery (3.91), major schemes related to agriculture (3.85) and optimal use of inputs.

An interaction with dealers through FGDs revealed that the primary motivation for the dealers to join the programme was obtaining the license. However, soon after joining the programme, they realized the importance of knowledge gained through the programme to such an extent that they were willing to forego the subsidy on programme fee. Many dealers had motivated other dealers and their relatives on joining the programme.

Thus, it can be concluded that the DAESI programme has succeeded in imparting modern farming practices to the dealers. There was also a felt need for inclusion of topics related to latest farm chemicals and pesticides as well as seed production and supply through private sector. Further, most of the dealers wanted a refresher course once in 3-5 years as well as training through online courses.

DAESI training helped in offering better advice with confidence to farmers on new crops, new varieties of seeds, soil testing and soil health card, proper use of fertilizers, dangers of over use and misuse of pesticides and their right use for disease control, drip irrigation, etc. It resulted in increased number of farmer clients, sales and profit by about 20-30 per cent.

- Sh Rajesh Mali, Dealer, Chomu, Rajasthan

The batch as a whole enjoyed the training and created their own Whatsapp group to exchange information among themselves. I have acquired knowledge about seeds and fertilizers and their use through interactions with companies. However, that lacked theoretical foundations, and that gap was filled to a major extent in DAESI training

- Shri SudhirMalpani, Dealer, Rajdhani Seeds, Agra

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Table 21. Extent of gain in knowledge level

Knowledge Areas	Perceived Gain in Knowledge Score				
	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Agro-ecological	3.93	4.11	4.07	4.13	3.99
Soil Health Management	4.04	4.04	4.02	4.09	4.04
Rain fed Farming	4.04	3.59	4.07	3.58	3.91
Seed and seed production	4.03	3.99	3.97	3.82	3.99
Irrigation Techniques and management	4.06	3.91	3.82	3.96	3.99
Weed Management	4.09	3.96	4.03	4.06	4.05
Farm Implements and machinery	4.06	4.02	3.20	3.81	3.91
Pests and diseases control	4.08	4.10	4.06	4.05	4.08
Crop Production technologies	4.06	4.04	3.65	3.69	3.96
Input related Acts, Rules and Regulations	4.04	4.03	3.86	3.51	3.95
Major Schemes related to Agricultural sector	3.91	3.93	3.54	3.78	3.85
Extension and Communication Methods	3.92	4.01	3.36	3.64	3.83
Optimal use of inputs	3.92	3.96	3.80	3.46	3.85

Score ranges from 1- Very low extent to 5- Very high extent

3.3.2 Extent of Gain in Skills

Learning skill in modern farming practices is essential to offer advisory services to the farmers. The DAESI programme was designed not only to improve knowledge but also to impart practical skills to input dealers.

Improvement in skills was asserted through a rating scale on a five point continuum which ranged from very low (score 1) to very high (score 5).

Overall improvement in skill was rated to be high (score ranged from 3.58 to 3.84 out of 5). Among different areas of skills, the top five areas of skills were handling of fertilizers (score 3.84) followed by handling of pesticides (3.83), seed treatment techniques (3.82), identification of plant diseases (3.78) and identification of plant pests (3.76) and identification of deficiency symptoms of major nutrients (3.73).

Relatively lower level of skills were gained in areas like use of computer for market information, drip and sprinkler irrigation system and operation and maintenance of plant protection equipment.

While DAESI programme has increased the skills of the dealers on farming practices, the investigation shared the need for making the programme more practical and skill oriented along with an inclusion of more number of field visits.

My skills improved greatly in recognizing deficiency of main soil nutrients, seed management, operating plant protection equipment, recognition of agricultural diseases, maintenance of pesticides, book keeping and legal aspects. After training, number of farmers advised increased by 40 per cent. I could see substantial increase in sales (40-50%) and profits (30 to 40%)

- Mrs. Dimple Bajpai, Dealer at *NawadaSherwan*, FaridpurBlock, Bareilly Dist, UP

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Table 22. Extent of gain in skills

Areas of Skill	Perceived Gain in Skill Score				
	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Soil sampling	3.57	3.95	3.77	3.81	3.69
Identification of deficiency symptoms of major nutrients	3.59	3.91	3.89	3.91	3.73
Interpretation of soil test report	3.60	3.70	3.55	3.64	3.62
Seeds treatment techniques	3.62	4.12	4.28	3.87	3.82
Drip and sprinkler irrigation system	3.61	3.70	3.77	3.28	3.60
Operation of farm implements and machineries	3.61	3.83	3.40	3.57	3.61
Operation&maintenance of plant protection equipment	3.63	3.90	3.46	3.26	3.61
Identification of plant pests	3.63	4.01	3.99	3.78	3.76
Identification of plant diseases	3.64	4.01	3.97	3.87	3.78
Identification of useful and harmful insects	3.62	3.97	3.91	3.95	3.77
Handling of fertilizers	3.61	4.17	4.09	4.07	3.84
Handling of pesticides	3.61	4.10	4.04	4.17	3.83
Major crops and cultivation practices	3.59	3.99	3.73	3.74	3.70
Use of computer for market information	3.59	3.82	3.47	3.35	3.58
Development and delivery of messages through mobiles	3.61	3.76	3.66	3.77	3.66
Extension methods	3.60	3.70	3.42	3.72	3.61

Score ranges from 1- Very low extent to 5- Very high extent

3.3.3 Perceived importance of different topics of DAESI training

The DAESI programme provides a comprehensive training on different topics of modern farming. It is important to understand the relative importance of training topics for the dealers in the context of their business and agro advisory services provided to the farmers.

The perceived importance of different topics of training was assessed through rating scale on a five point continuum ranging from 1 (very low) to 5 (very high). The data in Table 23 shows that the mean importance score of all the topics covered under the training ranged from 3.82 to 4.16. This shows that all the topics of DAESI programme were considered as highly important for the dealers. This indicates that the syllabi of DAESI has been developed suiting the needs of the dealers.

The data also shows that relatively the top six most important topics were pest and disease control, seed and seed production, weed management, irrigation management, soil health management and crop production techniques.

During the FGDs, the dealers expressed the need for greater importance to topics such as bio - fertilizers, organic manures, organic farming, new molecules for pest control etc.

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The course syllabus should aim to train the dealers more on bio-fertilizers in addition to chemical fertilizers as the former will gradually replace the latter. Also include material on organic farming

- Dealer at FGD organized at Agra on Dec 4, 2018

Need more training on operation of POS machines. The service provider are updating the POS software frequently causing inconvenience. Poor net connectivity adds to the problem

- Dealers at FGD, Bhubaneswar on November 14, 2018

Table 23. Perceived importance of topics of DAESI training

Knowledge Areas	Perceived Mean Importance Score				
	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Agro-ecological	3.90	4.01	4.35	3.83	4.03
Soil Health Management	3.93	4.25	4.31	4.31	4.13
Rain fed Farming	3.90	4.01	4.35	3.83	3.98
Seed and seed production	3.89	4.39	4.52	4.12	4.14
Irrigation Techniques and management	3.92	4.32	4.33	4.26	4.14
Weed Management	3.93	4.43	4.34	4.12	4.14
Farm Implements and machinery	3.92	4.34	3.98	3.89	4.00
Pests and diseases control	3.95	4.36	4.40	4.18	4.16
Crop Production technologies	3.93	4.35	4.07	3.90	4.04
Input related Acts, Rules and Regulations	3.94	4.33	4.01	3.55	3.96
Major Schemes related to Agricultural sector	3.71	4.24	3.93	3.79	3.86
Extension and Communication Methods	3.70	4.31	3.93	3.50	3.82
Optimal use of inputs	3.72	4.27	4.20	3.95	4.03

Score ranges from 1- Very low extent to 5- Very high extent

3.3.4 Extent of change in business practices

The impact of DAESI training has to be reflected on changes in business practices of dealers. The data in Table 24 shows that the mean perceived business practices change score ranged from 3.38 to 3.66 which clearly indicates a high level of changes in business practices. The highest level of change has occurred with regard to improvements in interaction with farmers (score 3.66) followed by providing new inputs such as fertilizers, seeds, chemicals etc (score 3.64), providing new farm information (score 3.59), providing advices on farm price and marketing (score 3.56), increased knowledge about farmers issues (score 3.56), increased use of mobile for farm advisory (score 3.46), providing information on government scheme (score 3.43) and providing literature on crop cultivation (3.83).

From the results of the study, it can be concluded that DAESI training has a positive impact on business practices of dealers which is likely to enhance farm productivity and farmers' income.

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Table 24. Extent of change in business practices

Areas of Business practices	Perceived Business Practices Changes Score				
	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Providing of new farm information and practices	3.32	3.97	3.80	3.98	3.59
Providing new inputs such as seeds, fertilizers, chemicals	3.31	4.09	3.87	4.14	3.64
Improvements in interaction with the farmers	3.32	4.10	3.77	4.33	3.66
Providing advises on farm produce price and marketing	3.32	3.95	3.63	3.95	3.56
My knowledge about the farmers issues has improved	3.33	3.96	3.56	3.91	3.56
Providing information on government schemes	3.31	3.51	3.56	3.68	3.43
Increased use of mobile to advise farmers	3.31	3.48	3.32	3.91	3.46
Providing literature on crop cultivation	3.30	3.60	3.73	3.99	3.38

Score ranges from 1- Very low extent to 5- Very high extent

3.3.5 New advisories disseminated to the farmers

The present investigation made an attempt to find out whether the DAESI training resulted in providing new farm advisories to the farmers after attending DAESI training .The DAESI training is expected not only to enhance the knowledge and skills of the dealers but also actually disseminating them to the farmers .The data in Table 25 indicate that as much as 81 to 97 per cent of the dealers had disseminated various farm advisories which they have learnt in their training. Among different new advisories disseminated information about the new seeds took the first place (97%) followed by ‘methods of application of fertilizers (96%) ; new crops to be grown (95%) ; farm chemicals for control of diseases and pests (90%); micro nutrients, liquid fertilizers , herbicides& soil testing (89%) and bio fertilizers (88%) . Other farm advisories disseminated included information on drip irrigation, water testing and value addition and sale of farm produce (81-86%).

Table 25. New Advisories Disseminated by Dealers to farmersafter DAESI training (per cent)

New Advisories Provided	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Information about new seeds	99.33	89.44	100.00	96.43	96.30
Information on new crops to be grown	96.22	90.07	98.00	93.75	94.51
Information on method of application of fertilizer	95.78	98.63	96.00	93.69	96.03
Information on liquid fertilizers	92.44	88.24	79.00	83.64	85.83
Information on micronutrients	89.56	88.89	82.00	95.45	88.98
Information on bio-fertilizers	87.97	96.10	73.74	88.29	86.53
Information on bio-pesticides	88.00	91.72	73.47	85.59	84.70

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New Advisories Provided	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Information about new seeds	99.33	89.44	100.00	96.43	96.30
Advisory on farm chemicals for control of diseases or pests	87.78	93.01	93.00	90.99	91.20
Information on herbicides	91.09	90.00	76.00	90.83	86.98
Information on soil testing/soil health card	89.11	89.47	84.69	92.79	89.02
Information on water testing	89.09	70.54	69.07	69.52	74.56
Information on irrigation -drip, etc.	89.53	74.81	81.25	81.90	81.87
Information on farm implements	88.20	86.40	74.75	80.37	82.43
Information on harvesting/value addition	88.42	88.10	64.52	60.78	75.46
Information on sale of produce	90.65	88.37	82.83	69.44	82.82
Information on government agricultural schemes	89.98	88.55	87.00	89.72	88.81

"Prior to my DAESI training, as retailer, I was selling fertilizer and pesticide to the farmers as per the demand. However, after the training I'm in a better position to advice the farmers confidently on the use of fertilizers and pesticides. About 25 to 30 farmers daily visit my shop for advice especially on treatment of pest and diseases of their crops. I advise each farmer individually and give specific recommendations to solve their field problems. This has resulted in increased reputation for me among the farmers resulting in significant increase in business volume

- Mr. Akshaya Kumar Dash, Dealer of Maa Mangala fertilizer store Mangalpurodisha

3.3.6 Farmers' Benefitted from New Farm Advisories

The study also made an attempt to find out from the farmers whether they received new farm advisories from the dealers post DAESI training. The data in Table 26 clearly indicates as much as 62 to 82 per cent of the farmers had benefitted from new farm information provided by the dealers on different farming practices.

Among the farm information received the advices on farm chemicals for controlling diseases and pests topped the list (81.64%) followed by information on method of application of fertilizer (80.66%), information about the new seeds (80.60%), information on new crops to be grown (79.63%) information on soil testing / soil health cards , information on government agriculture schemes (74.92%), information on sale of produce (73.28%) , information on herbicides (73%), information on farm implements (70.41%), information on liquid fertilizers& market price (70%), information on drip irrigation (67%) , information on harvesting & value addition (66%) and information on water testing (62%).

The FGDs also confirmed the above findings which revealed that farmers were satisfied with the advisories received from the DAESI dealers. The farmers opined that they were benefitted by the recommendations on fertilizer application, pest and disease management, bio fertilizers, irrigation and cultivation practices of the crops. The farmers also mentioned that they had greater access to dealers through mobile phones.

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Table 26. Farmers benefited by new advices provided by dealers (per cent)

New information / advises	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average
a) Information about new seeds	64.08	100.00	96.63	97.01	80.60
b) Information on new crops to be grown	63.97	100.00	92.66	93.24	79.63
c) Information on method of application of fertilizer	66.05	100.00	91.53	93.53	80.66
d) Information on liquid fertilizers	62.98	92.81	66.27	77.66	69.99
e) Advisory on farm chemicals for control of diseases or pests	67.46	100.00	89.77	96.97	81.64
f) Information on herbicides	66.49	100.00	65.85	89.78	73.00
g) Information on soil testing/soil health card	65.00	100.00	82.04	89.34	75.22
h) Information on water testing	62.34	82.35	49.41	72.88	62.35
i) Information on irrigation - drip , etc.	61.11	69.57	68.21	83.51	67.08
j) Information on farm implements	65.54	88.46	65.09	87.85	70.41
k) Information on harvesting/value addition	66.08	75.00	55.29	77.14	66.27
l) Information on sale of produce	68.35	100.00	76.19	80.98	73.28
m) Information on government agricultural schemes	67.07	100.00	78.70	89.25	74.92
n) Information on market price and sale of farm produce	65.63	100.00	70.35	79.43	69.99

3.3.7 New farm inputs provided to the farmers

The study had laid focus on to what extent the DAESI training has enabled the dealers to provide improved farm inputs such as seeds, fertilizers, bio pesticides etc to the farmers. Supply of new farm inputs will have a greater impact on increasing farm production a, productivity and income. It is heartening to see that as much as 81 to 94 per cent of the dealers supplied new and improved inputs to the farmers, post DAESI training (Table 27). Among the new inputs supply of improved seeds topped the list (95%) followed by new brands of fertilizers (92%), safe and better chemicals for control of pests and diseases (90%) , bio fertilizers , & micro nutrients (87%), liquid fertilizers (86%) new herbicides (86%) , bio pesticides (85%) and new farm implements (83%).

Table 27. Supply of new inputs by trained-dealers (per cent)

New Farm Inputs Provided	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average
a) New seeds	99.33	89.44	100.00	96.43	94
b) New brands of fertilizers	96.22	90.07	98.00	93.75	92
c) Liquid fertilizers	95.78	98.63	96.00	93.69	86
d) Micronutrients	92.44	88.24	79.00	83.64	87
e) Better and safe chemicals for control of pests and diseases	89.56	88.89	82.00	95.45	90

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New Farm Inputs Provided	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average
a) New seeds	99.33	89.44	100.00	96.43	94
f) New herbicides	87.97	96.10	73.74	88.29	86
g) Bio-fertilizers	88.00	91.72	73.47	85.59	87
h) Bio-pesticides	87.78	93.01	93.00	90.99	85
i) New farm implements	91.09	90.00	76.00	90.83	83

3.3.8. Purchase of New Inputs by the Farmers

The investigation also made an attempt to find the whether the farmers actually purchased new farm inputs from DAESI trained dealers. The data in Table 28 show that as much as 69 to 92 per cent of the farmers purchased different new farm inputs. Among the new inputs purchased, improved seeds occupied the first place (92%) followed by new brands of fertilizers (89 %), better and safe chemicals of pest and diseases (81%) herbicides (75%) and liquid fertilizers (73%) and farm implements (69%).

Table 28. Purchase of new inputs by the farmers (per cent)

Purchase of new farm inputs	Percentage of farmers who had Purchased New Farm Inputs				
	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average
New or Improved seeds	91.40	99.06	92.61	84.58	91.67
New brands of fertilizers	91.89	97.77	75.29	76.56	88.77
Liquid fertilizers	82.38	86.36	40.00	54.87	73.10
Better and safe chemicals for control of pests and diseases	77.02	99.60	78.18	77.56	81.19
Herbicides	77.82	98.70	52.44	72.54	74.92
Farm implements	78.49	87.50	37.04	56.35	68.60
Any other items	79.97	71.43	36.25	47.62	71.32

Soil testing kits may be given to the dealers during the training so that appropriate doses of fertilizer could be recommended

- Dealers at FGD, Puri on January 23, 2019

3.4 Impact on Income levels of the Dealers and Customer Base

3.4.1 Changes in key business indicators

Improvement in key business indicators including Annual Sales, Profit to the company, no of villages covered and no of farmers covered were included as part of the structured Dealers schedule.

Extent of changes in the above indicators were enumerated using the DAESI dealers' responses where they had to indicate the extent of change from 1 to 6 where 1 indicated "Below 10 per cent", 2 indicated "11 to 20 per cent", 3 indicated "21 to 30 per cent", 4 indicated "31 to 40 per cent", 5 indicated "41 to 50 per cent", 6 indicated "51 to 60 per cent".

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30 per cent”, 4 indicated “31 to 40 per cent” and 5 indicated “41 to 50 per cent” and 6 denoted “More than 50 per cent”.

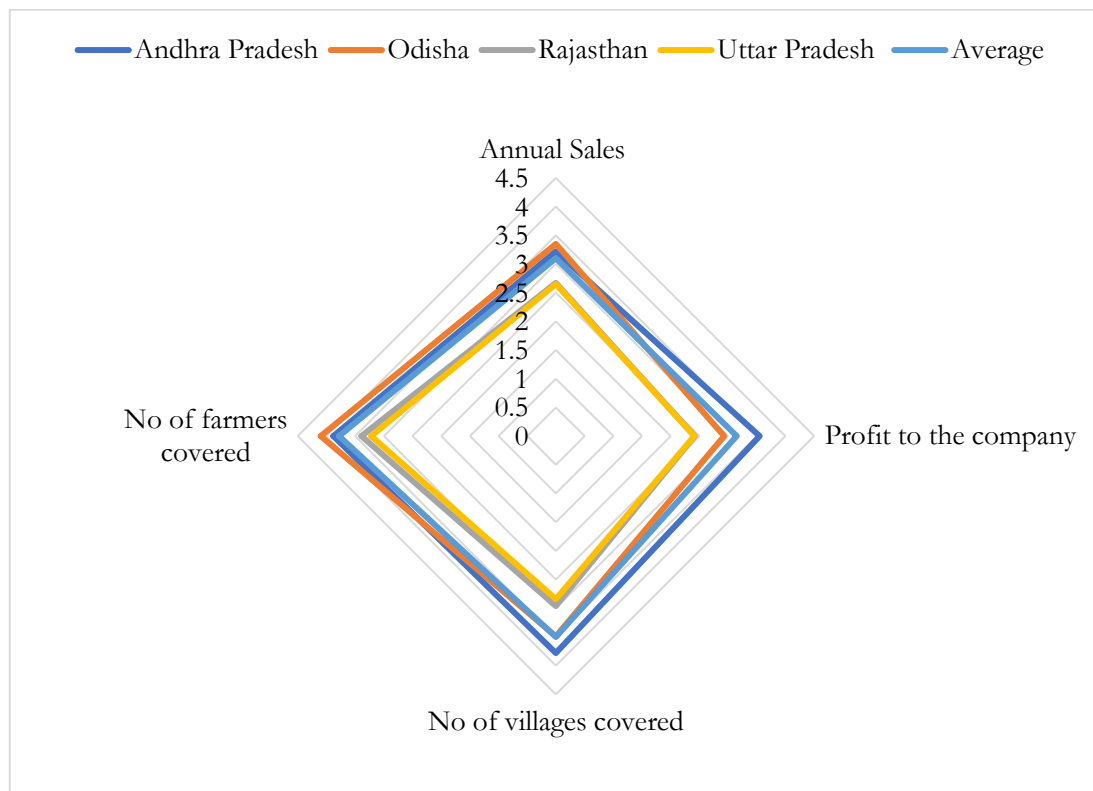
Table 29 and Figure 2 show the composite scores where it can be seen that the “no of farmers covered” has had the maximum change due to DAESI training, according to the DAESI dealers across the states.

Table 29. Change in business

Changes in business	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Average
Annual Sales	3.22	3.35	2.67	2.65	3.10
Profit to the company	3.55	2.93	2.42	2.41	3.15
No of villages covered	3.78	3.49	2.96	2.84	3.50
No of farmers covered	3.88	4.10	3.39	3.22	3.78

Score ranges from 1- Below 10 per cent to 6 - more than 50 per cent

Figure 2. Change in business



3.4.2 Changes in key business indicators using Wilcoxon Signed Rank Test

As indicated in the “Data Analysis” section of the methodology, Wilcoxon Signed Rank Test was employed to measure the incremental change in the following business indicators

- No of products (seed varieties)
- No of products (hybrids)
- No of products (GM crops)
- No of crop protection molecules
- No of herbicides

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- No of farm implements
- No of biofertilizers
- No of biopesticides
- No of organic fertilisers
- No of micronutrients
- Business volume (Total sales in Lakh Rs)
- No of farmers turning up for advices
- No of advices per day during peak season

Tables 30 to 34 show the state-wise results of the rank test

Table 30. Change in key business indicators - Andhra Pradesh

SNo	Key business indicators	Mean scores		Incremental Change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
1.	Seeds (Varieties) - Number of products	14.86	28.24	13.38	8470	9.31**
2.	Seeds (Hybrids) - Number of products	7.97	14.18	6.21	6124	8.96**
3.	Seeds (GM) - Number of products	12.49	21.35	8.87	9991	10.04**
4.	Number of Crop Protection Molecules	29.32	44.93	15.62	70631	16.1**
5.	Number of Herbicides	27.01	41.20	14.19	56586	15.24**
6.	Number of Farm implements	4.82	8.32	3.50	6041	9.01**
7.	Number of Biofertilizers	4.61	7.87	3.26	5969	9.06**
8.	Number of Biopesticides	4.54	7.87	3.34	6105	9.19**
9.	Number of Organic Fertilizers	4.50	7.61	3.11	6.72	9.12**
10.	Number of Micronutrients	4.76	7.71	2.94	6001	8.91**
11.	Business Volume (Total Sales in Lakh Rs)	6.42	16.45	10.03	36484	14.06**
12.	Number of farmers turning up for advices	26.00	46.87	20.87	49285	15..11**
13.	Number of advices per day during peak season	17.36	24.14	6.79	12156	10.77**

* Significance @5per cent level

** Significance @1per cent level

The results reveal that there were significant differences in their performance before and after the training programme in Andhra Pradesh. The incremental change was relatively high for seeds (varieties). For the variables like Business Volume, the incremental change is significant. Similarly, the variables number of herbicides and Number of farmers turning up for advices have recorded significant change (Table 30).

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Table 31. Change in key business indicators - Odisha

SNo	Key business indicators	Mean scores		Incremental change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
1.	Seeds (Varieties) - Number of products	6.15	11.75	5.59	2268	6.72**
2.	Seeds (Hybrids) - Number of products	6.17	10.33	4.16	1668	6.32**
3.	Seeds (GM) - Number of products	7.25	12.14	4.89	378	3.99**
4.	Number of Crop Protection Molecules	7.77	13.69	5.91	593	5.05**
5.	Number of Herbicides	10.84	16.36	5.53	2556	7.34**
6.	Number of Farm implements	6.03	9.13	3.10	462	4.73**
7.	Number of Biofertilizers	4.68	9.95	5.27	2186	6.92**
8.	Number of Biopesticides	5.24	9.00	3.76	2012	6.51**
9.	Number of Organic Fertilizers	6.55	9.74	3.19	3058	7.59**
10.	Number of Micronutrients	4.35	8.03	3.68	2080	6.97**
11.	Business Volume (Total Sales in Lakh Rs)	21.50	31.00	9.50	6075	8.47**
12.	Number of farmers turning up for advices	154.80	252.04	97.24	6175	9.03**
13.	Number of advices per day during peak season	50.43	83.61	33.18	7626	9.64**

* Significance @5per cent level

** Significance @1per cent level

In Odisha, there exists significant differences in the training programme for all the 13 variables chosen. The Wilcoxon test was run with the null hypothesis that there exists no significant differences between their performance before and after training. Most of the parameters like number of seeds (GM) products, number of crop protection molecules, number of herbicides, number of bio-pesticides, number of micronutrients, and Number of advices per day during peak season have shown highly significant (Table 31).

Table 32. Change in key business indicators - Rajasthan

SNo	Key business indicators	Mean scores		Incremental change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
1.	Seeds (Varieties) - Number of products	13.52	28.09	14.57	2560	7.02**
2.	Seeds (Hybrids) - Number of products	14.53	24.38	9.85	2211	7.13**
3.	Seeds (GM) - Number of products	2.32	3.94	1.62	272	4.12**
4.	Number of Crop Protection Molecules	1.78	2.98	1.20	190	3.89**
5.	Number of Herbicides	1.90	3.48	1.58	903	5.71**
6.	Number of Farm implements	1.29	2.63	1.35	300	4.36**
7.	Number of Biofertilizers	11.34	20.98	9.64	211	3.37**

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SNo	Key business indicators	Mean scores		Incremental change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
8.	Number of Biopesticides	1.26	2.20	0.95	101	3.11**
9.	Number of Organic Fertilizers	2.40	4.10	1.70	763	5.30**
10.	Number of Micronutrients	4.21	6.90	2.68	991	5.38**
11.	Business Volume (Total Sales in Lakh Rs)	47.99	55.55	7.56	2610	6.6**
12.	Number of farmers turning up for advices	160.82	194.22	33.40	1955	6.15**
13.	Number of advices per day during peak season	8.88	12.78	3.90	1756	5.49**

* Significance @5per cent level

** Significance @1per cent level

The non-parametric test to compare two means of dependent sample revealed that the dealers in Rajasthan who underwent DAESI training programme had significant gain in business on all the thirteen parameters selected. The difference is more pronounced in the variables Number of Herbicides and Number of Farm implements (Table 32).

Table 33. Change in key business indicators - Uttar Pradesh

SNo	Key business indicators	Mean scores		Incremental change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
1.	Seeds (Varieties) - Number of products	4.84	8.11	3.27	1485	6.42**
2.	Seeds (Hybrids) - Number of products	4.56	7.31	2.74	1275	6.21**
3.	Seeds (GM) - Number of products	2.84	4.90	2.06	461	4.21**
4.	Number of Crop Protection Molecules	3.76	5.25	1.49	476	3.55**
5.	Number of Herbicides	3.53	7.25	3.71	1540	6.48**
6.	Number of Farm implements	4.50	8.44	3.94	1225	6.14**
7.	Number of Biofertilizers	3.38	7.16	3.77	1077	5.88**
8.	Number of Biopesticides	3.04	5.83	2.79	1081	5.84**
9.	Number of Organic Fertilizers	2.98	6.11	3.13	1172	6.02**
10.	Number of Micronutrients	3.92	6.94	3.02	1376	6.32**
11.	Business Volume (Total Sales in Lakh Rs)	54.34	73.43	19.08	1034	5.85**
12.	Number of farmers turning up for advices	69.31	90.15	20.84	1653	6.58**
13.	Number of advices per day during peak season	19.89	31.68	11.79	1711	6.65**

* Significance @5per cent level

** Significance @1per cent level

Dealers from Uttar Pradesh who underwent DAESI training have also expressed that their business acumen has significantly improved in all the parameters selected for the study (Table 33). However, the gain is more pronounced in the parameters

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Number of Biofertilizers, Number of Biopesticides, Number of Organic Fertilizers and Number of Micronutrients.

Table 34. Change in key business indicators

SNo	Key business indicators	Mean scores		Incremental Change	Test statistics (W)	Std. test statistics (Z)
		Before DAESI	After DAESI			
1.	Seeds (Varieties) - Number of products	10.94	21.15	10.21	51715	14.76**
2.	Seeds (Hybrids) - Number of products	8.46	14.51	6.05	40319	14.39**
3.	Seeds (GM) - Number of products	8.78	14.84	6.07	24513	12.30**
4.	Number of Crop Protection Molecules	23.65	36.48	12.83	105812	17.71**
5.	Number of Herbicides	19.38	29.76	10.38	126631	18.75**
6.	Number of Farm implements	4.23	7.38	3.15	22675	12.60**
7.	Number of Biofertilizers	5.56	10.52	4.96	28992	13.16**
8.	Number of Biopesticides	3.93	6.90	2.98	27199	13.04**
9.	Number of Organic Fertilizers	4.43	7.34	2.91	37706	14.30**
10.	Number of Micronutrients	4.40	7.47	3.07	36340	13.97**
11.	Business Volume (Total Sales in Lakh Rs)	20.56	30.53	9.9	123451	18.58**
12.	Number of farmers turning up for advices	74.30	111.82	37.51	147761	19.71**
13.	Number of advices per day during peak season	26.07	40.93	14.86	78553	16.80**

* Significance @5per cent level

** Significance @1per cent level

Overall, the DAESI training programme has resulted in gain in business performance significantly across the states and individually in all the states under the study. This programme has led to a significant in all major business indicators. The dealers have improved their business skills recommending good practices of farm such as biopesticides and micronutrients (Table 34).

3.5 DAESI in Reduction of Legal Problems

The DAESI training not only equipped dealers with knowledge and skill of farming practices but also exposed them to different Acts, Statues and legal procedures related to farm inputs which will help them to confidently deal with legal problems faced by them. The study has shown that about 87 per cent of the dealers did not face any legal problems related to input business (Table 35). Out of 13 per cent dealers who face legal problems nearly three fourth (74.26%) indicated that DAESI training helped them in solving their legal problems (Table 36).

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Table 35. Legal problems faced by DAESI dealers (per cent)

Legal problems	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Legal problem faced	3.31	30.92	20.20	18.18	12.88
Legal problems not faced	96.69	69.08	79.80	81.82	87.11

Table 36. Utility of DAESI training in solving legal problems (per cent)

Utility in legal problem solving	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Training helped in solving their legal problems	78.57	80.85	55.00	75.00	74.26

The FGDs also revealed that DAESI training had inculcated greater confidence in dealing with the legal matters. The dealers in Odisha indicated that the training on legal dimensions has helped them in interacting effectively with inspectors and officials dealing with inputs licence. More over the training also helped them in better book keeping which reduced the fear of administration.

3.6 Farmers Satisfaction of Extension Services Provided by DAESI Dealers

3.6.1 Awareness

The study revealed that about 68 per cent of the farmers knew that their dealers had undergone DAESI training while 32 per cent of them were not aware of that (Table 37)

Table 37. Farmers' awareness about DAESI training

Awareness	Percentage of Farmers				
	Andhra Pradesh	Odisha	Rajasthan	UP	Average
Aware	57.61	72.60	80.60	88.15	67.96
Not aware	42.39	27.40	19.40	11.85	32.04

3.6.2 Extent of Satisfaction

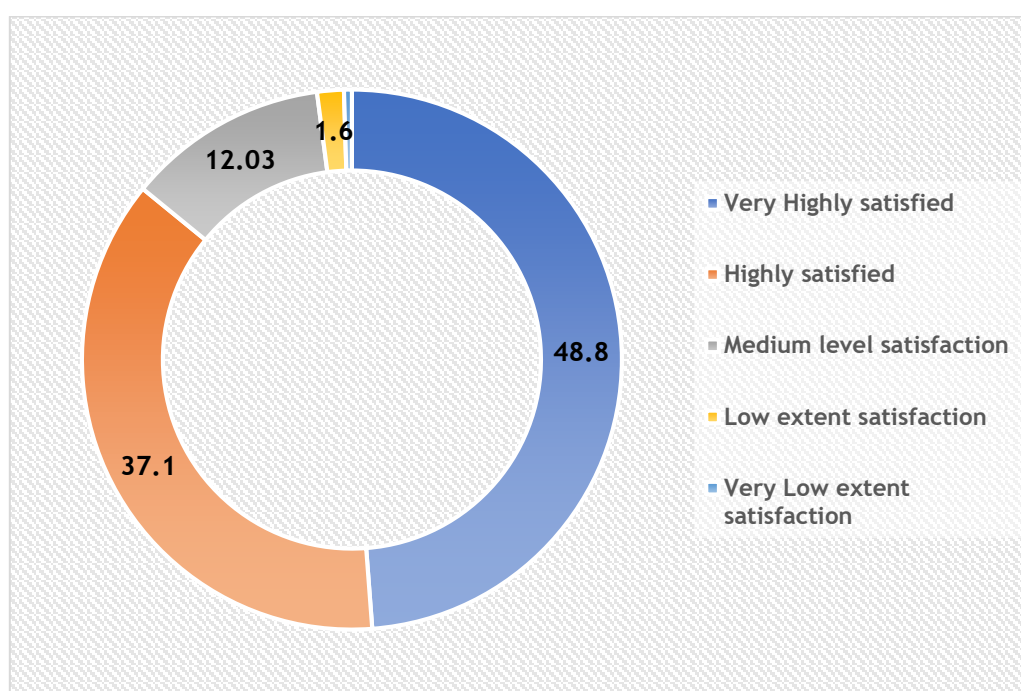
The perceived satisfaction of farmers on services provided by DAESI trained dealers is one of the indicators of impact of DAESI programme. The extent of satisfaction of farmers was measured on a five-point continuum ranging from very highly satisfied to very low extent of satisfaction. It is heartening to note as much as 86 per cent of the farmers were very highly satisfied or highly satisfied with the extension services provided by the dealers. Only two per cent of the farmers came under low extent to very low extent of satisfaction. About 12 per cent of the farmers had medium level of satisfaction. These findings indicate that DAESI trained dealers were able to satisfy them farm information and inputs needs of a vast majority of farming community (Table 38 and Figure 3).

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Table 38. Extent of Satisfaction of the farmers

States	Extent of Satisfaction (% of Farmers)				
	Very Highly satisfied	Highly satisfied	Medium level satisfaction	Low extent satisfaction	Very Low extent satisfaction
Andhra Pradesh	61.27	28.66	7.77	1.53	0.76
Odisha	39.48	42.72	17.80	0.00	0.00
Rajasthan	35.71	50.51	12.24	1.53	0.00
Uttar Pradesh	27.67	48.06	19.42	4.37	0.49
Average	48.80	37.10	12.03	1.60	0.47

Figure 3. Extent of satisfaction of the farmers (per cent)



3.7 Adoption of Advisories and Increase in Yield and Income Level

3.7.1 Adoption

Adoption of farm advisories provided by the DAESI trained dealers indicates the effectiveness of services offered by them. The data in Table 39 reveal a very high level of (72.87 to 95.68%) adoption of different farm advisories and technologies by the farmers. The highest level of adoption (98.68%) was on improved seeds which was followed by adoption of fertilizers (93.50%), farm chemicals for control of disease and pests (92.42%), introduction of new crops (91.10%) and herbicide (85.19%). The other technologies adopted by the farmers were soil testing (82.69%), use of new farm implements (78.05%), better irrigation methods (75.03%), water testing (72.87%) and post-harvest & value addition (78.67%).

The FGDs with the farmers also confirmed a very high level of adoption of new advisories provided by the dealers. The most important sources of farm income to

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the farmers at village level were input dealers and neighbours and friends. Farmers access to formal extension agents such as Agricultural Extension Officers, scientists of SAU's, KVK scientists were limited due to various reasons. The findings of the study reveal that DAESI trained dealers have a greater influence on innovation-decision process of farmers.

Table 39. Farmers' adoption of new advisories (per cent)

New information(advises) /technologies	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Total
Information about new seeds	96.38	98.47	93.75	93.01	95.68
Information on new crops to be grown	95.26	92.79	80.95	88.89	91.10
Information on method of application of fertilizer	94.80	98.64	86.98	90.43	93.50
Information on liquid fertilizers	94.50	94.49	57.76	66.07	82.27
Advisory on farm chemicals for control of diseases or pests	92.62	99.53	82.74	92.55	92.42
Information on herbicides	93.32	98.63	58.60	82.56	85.19
Information on soil testing/soil health card	95.51	98.80	64.81	58.48	82.69
Information on water testing	93.26	83.33	40.24	50.00	72.87
Information on irrigation -drip, etc.	89.16	80.00	52.17	58.82	75.03
Information on farm implements	90.81	100.00	52.44	66.45	78.05
Information on harvesting/value addition	91.15	92.86	50.00	70.70	78.67

3.7.2 Perceived changes in yield of crops and income of farmers

The study revealed that as such as 88 per cent of farmers perceived a positive change in farm yield and income due to the services provided by the DAESI trained dealers. Only about four per cent of the farmers did not experience any positive change. About eight per cent of the farmers were unaware of any changes experienced (Table 40).

The data in table 41 indicates that different components of changes. The data confirm a significant change have occurred in diversification of crops, reduction of cost of inputs and increase in yield and income. The extent of changes varied from 1 to 10% level to 41 to 50 % level. A majority (more than 50%) of the farmers fell under 1to 30% level of changes.

Table 40. Farmers' perception of changes in yield and income

States	Positive Changes in yield and Income (per cent of farmers)		
	Yes	No	I do not know
Andhra Pradesh	96.73	3.14	0.13
Odisha	65.30	1.87	32.84
Rajasthan	70.59	15.51	13.90
Uttar Pradesh	99.51	0.49	0.00
Average	87.98	4.12	7.90

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Table 41 Components of changes in yield and income

Components of change	Extent of change (per cent of farmers)				
	1 to 10per cent	11 to 20per cent	21 to 30per cent	31 to 40 per cent	41 to 50 per cent
Diversification of crops	26.99	21.34	11.46	24.84	8.04
Reduction in cost of inputs	23.98	23.74	14.69	23.90	9.13
Increase in yield of crops	22.94	22.94	16.97	25.20	8.52
Increase in income	25.41	20.89	15.16	23.45	10.41

3.8 DAESI Impact Index (DII)

DAESI impact index to measure different components of impact of DAESI on dealers, farmers, quality of extension services, customer base etc; was developed.

3.8.1 DAESI Impact Index - Dealers level

Simple average of the means of the below components were used to compute DII impact indicators at the dealers' level.

- Change in knowledge
- Change in attitude
- Changes in services provided to the farmers
- Changes in business indicators
- Reduction of legal problems at input dealer' level.

3.8.1.1 Change in Knowledge level

Table 42 provides the knowledge areas and the respective DAESI Impact Index (DII). It can be seen that the DII is the highest in "Pest and Disease control", "Agro-ecological" and "Soil Health Management".

Table 42. DAESI Impact Index - Change in Knowledge

SNo	Change in Knowledge	Average Score	Weights	Impact Index (per cent)
1.	Agro-ecological	4.06	0.03	76.25
2.	Soil Health Management	4.05	0.08	70.50
3.	Rainfed Farming	3.82	0.04	73.75
4.	Seed and seed production	3.95	0.11	73.50
5.	Irrigation Techniques and management	3.94	0.07	75.75
6.	Weed Management	4.03	0.04	69.25
7.	Farm Implements and machinery	3.77	0.11	76.75
8.	Pests and diseases control	4.07	0.12	71.50
9.	Crop Production technologies	3.86	0.11	71.50
10.	Input related Acts, Rules and Regulations	3.86	0.09	69.75
11.	Major Schemes related to Agricultural sector	3.79	0.05	68.25
12.	Extension and Communication Methods	3.73	0.08	69.50
13.	Optimal use of inputs	3.78	0.07	76.25
Composite index (A)		72.43		

Score ranges from 1- Very low extent to 5- Very high extent

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3.8.1.2 Changes in Skill

The DAESI course curriculum included skill-oriented training to a greater extent and accordingly it has imparted skills on various aspects useful for input dealers. The changes in the levels of skills on 16 different topics were recorded through the survey based on their extent of learnings on 1 to 5 point scale where 1 stands for very low extent gain while 5 stands for very high extent of gain. The weights were generated from subject specialists on the utility of different skills for improving the functionality of input dealers. These weights were normalized to 1 and used for computation of cumulative index.

Table 43. DAESI Impact Index - Change in Skills

S.No	Areas of Skill	Average scores	Weights	Impact Index (per cent)
1.	Soil sampling	3.69	0.08	67.25
2.	Identification of deficiency symptoms of major nutrients	3.73	0.09	68.25
3.	Interpretation of soil test report	3.62	0.07	65.50
4.	Seeds treatment techniques	3.82	0.07	70.50
5.	Drip and sprinkler irrigation system	3.60	0.05	65.00
6.	Operation of farm implements and machineries	3.61	0.02	65.25
7.	Operation & maintenance of plant protection equipment	3.61	0.03	65.25
8.	Identification of plant pests	3.76	0.10	69.00
9.	Identification of plant diseases	3.78	0.09	69.50
10.	Identification of useful and harmful insects	3.77	0.08	69.25
11.	Handling of fertilizers	3.84	0.02	71.00
12.	Handling of pesticides	3.83	0.03	70.75
13.	Major crops and cultivation practices	3.70	0.07	67.50
14.	Use of computer for market information	3.58	0.08	64.50
15.	Development and delivery of messages through mobiles	3.66	0.06	66.50
16.	Extension methods	3.61	0.06	65.25
Composite Index (B)				67.62

Score ranges from 1- Very low extent to 5- Very high extent

The extent of gain in skill levels on various parameters ranged from 3.58 to 3.84 (Table 43). This indicates that there is uniform level of skill improvement in all the parameters chosen for evaluation. The composite index is worked out to 67.62 indicating more than desired level of skill improvement happened through this programme.

3.8.1.3 Change in Attitude

Table 44 provides the areas of change in attitude and the respective DIIs. The maximum changes in attitude is seen in “Increased sensitiveness to the problems of farmers”, “increased confidence in providing advices to the farmers” followed by “inculcation of greater sense of ethics in business”.

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Table 44. DAESI Impact Index - Change in attitude

SNo	Change in Attitude	Average Score	Weights	Impact Index (per cent)
1.	Increased sensitiveness to the problems of farmers	4.01	0.20	75.25
2.	Inculcation of greater sense of ethics in business	3.93	0.07	73.25
3.	Increased Confidence in providing advices	4.01	0.16	75.25
4.	Perceives role as a provider of agricultural extension services	3.9	0.18	72.50
5.	Better Linkages with SAUs, KVKs and Department officials	3.47	0.11	61.75
6.	Higher level of Scientific orientation to agriculture	3.56	0.11	64.00
7.	Positive attitude towards scientists&agri-officials	3.57	0.09	64.25
8.	More Confidence in dealing with departmental or vigilance officials coming for inspections	3.51	0.09	62.75
	Composite index (C)			69.79

Score ranges from 1- Very low extent to 5- Very high extent

After DAESI training, I became sensitive to the problems of farmers and dealings with farmers became more cordial. Better advice and service to farmers resulted in serving more farmers and sales rose by 20 per cent

- Sh. Kanaram Yadav, Dealer, Khorabeesal village, Amer Block, Jaipur Dist, Rajasthan

3.8.1.4 Changes in business indicators and Reduction in legal problems due to DAESI

Table 45 provides the key areas of business where DAESI is perceived to have made an impact and the respective DIIs. Maximum change in business can be seen in no of farmers covered by the dealers followed by the extent of villages covered.

Table 45. DAESI Impact Index - Change in extension services to the farmers

SNo	Changes in business	Average Score	Impact Index (per cent)
1.	Annual Sales	3.10	52.50
2.	Profit to the company	3.15	53.75
3.	No of villages covered	3.50	62.50
4.	No of farmers covered	3.78	69.50

Score ranges from 1- Very low extent to 5- Very high extent

Table 46 shows the impact index with respect to reduction of legal problems due to DAESI. It can be seen that there is low impact (22.5%) when it comes to reduction of legal problems. Low impact is to expected as DAESI training sensitised the dealers on government regulations, acts and record keeping. This in turn helped them not to face legal problems.

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Table 46. DAESI Impact Index - Change in extension services to the farmers

Reduction in legal problems	Average Score	Impact Index (per cent)
Training helped in solving legal problems	0.225	22.50

Score ranges from 0- No and 1- Yes

3.8.1.5 Overall composite index for DAESI dealers

The composite index for the dealers who underwent DAESI training was calculated based on the cumulative indices of knowledge, skill and attitude changed due to the training programme. The overall cumulative index (OCI) is worked out as simple average of the three cumulative index.

$$OCI = (CI-A+CI-B+CI-C)/3$$

Where CI stands for Cumulative index of A or B or C

Accordingly, the overall cumulative index of DAESI training impact is worked out to 67.72per cent. This indicates that the overall impact of the training is more than the expected level (more than 65per cent gain).

Back to Farming

As farming was not remunerative, I took up fertilizer dealership in 1993. After the DAESI training in 2016, I am in a better position to advise the farmers on use of fertilizers and pesticides. This has increased reputation among the farmers in the area resulting in annual business touching to Rs 1.5 crores. Further, I am able to do good record keeping and compliance with legal aspects.

Moreover, after the training as my confidence in managing agriculture has increased, I again started cultivating my lands after taking back from the sharecroppers

- Mr Akshaya Kumar Dash, Dealer, Mangalpur, Odisha

3.8.2 DAESI Impact Index - Farmers Level

Simple average of the means of the below components were used to compute DII impact indicators at the farmers' level.

- Change in perception of farmers on the dealers trained under DAESI
- Impact on farmers in enhancement in production, productivity and income.

3.8.2.1 Change in perception of the farmers

Table 47 provides the areas where the farmers perceived changes in DAESI dealers and the respective DIIs. Maximum change in perception can be observed in case of Improvements in interaction with the farmers, providing new inputs such as seeds/ fertilizers/ chemicals and providing new farm information and practices.

Table 47. DAESI Impact Index - Change in perception of the farmers

SNo	Perceived Change	Average Score	Impact Index (per cent)
1.	Providing new farm information and practices	3.74	68.50
2.	Providing of new inputs such as seeds/ fertilizers/ chemicals	3.8	70.00

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SNo	Perceived Change	Average Score	Impact Index (per cent)
3.	Improvements in interaction with the farmers	3.87	71.75
4.	Providing advises on farm produce price and marketing	3.62	65.50
5.	Dealer's knowledge about the issues faced by the farmers has improved	3.71	67.75
6.	Providing information on government schemes	3.5	62.50
7.	Increased use of ICT (mobile, SMS etc.) to advise farmers by the dealers	3.52	63.00
8.	Providing literature on crop cultivation	3.37	59.25

Score ranges from 1- Very low extent to 5- Very high extent

Farmers Acknowledgement

In my four acres of land, I grow paddy in three acres and grow vegetables such as Brinjal, Ridge guard, Bitter guard, Cucumber in one acre. Earlier I was purchasing inputs from different shops in the area. For last three years I have been purchasing fertilizers and pesticides from Mr A K Dash's shop. I decided to change when I experienced that this DAESI trained dealer was giving free and appropriate advice on pesticide for the pest and diseases of vegetable crops. Besides, Mr A K Dash is very knowledgeable, cooperative and reliable. He also provides information on different crops, availability of seeds, soil testing facility, etc that makes my input use more effective

- ShrDilip Kumar Das, Farmer, Mangalpur, Odisha

3.8.2.2 Impact on farmers

Table 48 provides the impact areas on the farmers and the respective DIIs. Maximum change can be observed in case of increase in crop yields.

Table 48. DAESI Impact Index - Impact on farmers

SNo	Impact	Average Score	Impact Index (per cent)
1.	Diversification of crops	2.44	36.00
2.	Reduction in cost of inputs	2.57	39.25
3.	Increase in yield of crops	2.63	40.75
4.	Increase in income	2.59	39.75

Score ranges from 1- Very low extent to 5- Very high extent

3.9 Observations on DAESI Scheme and Implementation Aspects

3.9.1 Satisfaction of the trained dealers

Perceived satisfaction level on organizational aspects of DAESI were computed based on the frequency of responses. The frequency (per cent) of responses were converted into mean scores ranging from 1 (very low) to 5 (very high). The "Perceived Satisfaction Level Score" ranged from 3.81 to 3.93 as shown in the Table 49 and Figure 4.

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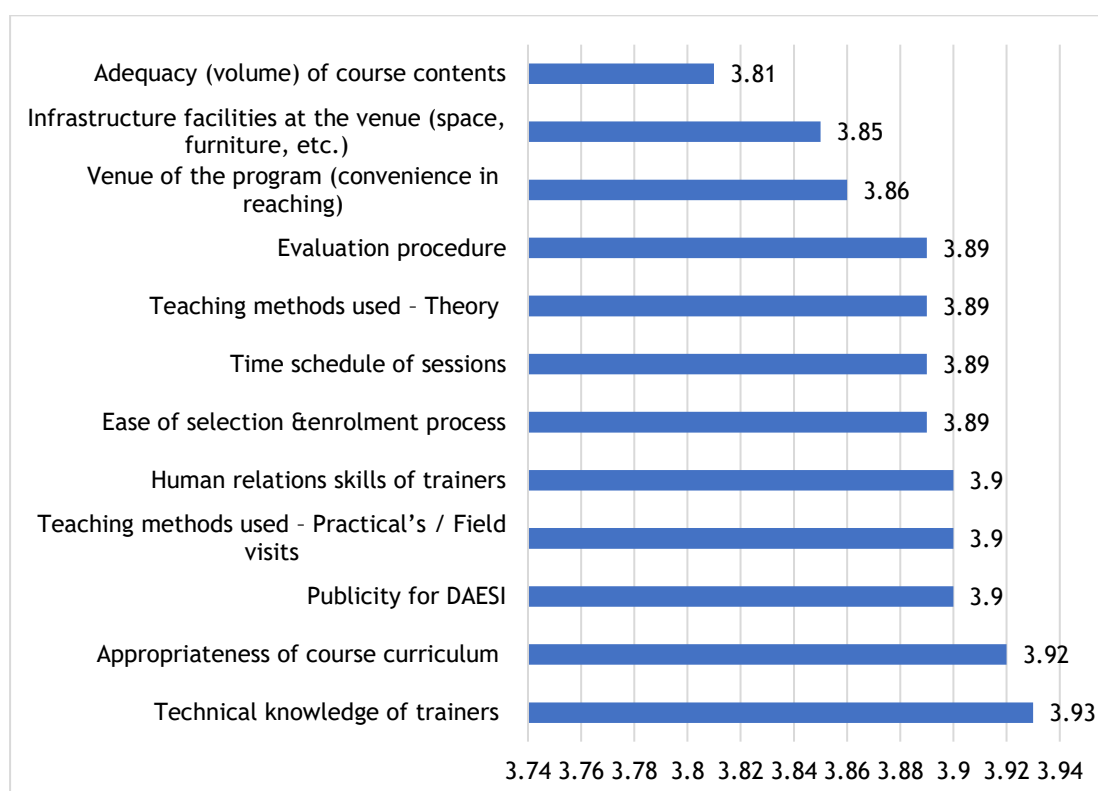
Technical knowledge of trainers with the highest score of 3.93 has been rated the highest in comparison with other organizational and administrative aspects of the DAESI programme.

Table 49. Perceived satisfaction levels of the Dealers

Components of DAESI training	Perceived satisfaction level Score				
	Andhra Pradesh	Odisha	Rajasthan	Uttar Pradesh	Overall
Publicity for DAESI	3.67	4.50	4.02	3.84	3.90
Ease of selection & enrolment process	3.69	4.38	4.05	3.87	3.89
Venue of the program (convenience in reaching)	3.67	4.38	3.90	3.87	3.86
Infrastructure facilities at the venue (space, furniture, etc.)	3.68	4.38	4.06	3.67	3.85
Time schedule of sessions	3.66	4.39	4.06	3.96	3.89
Appropriateness of course curriculum	3.66	4.36	4.17	4.15	3.92
Adequacy (volume) of course contents	3.65	4.22	3.86	3.83	3.81
Teaching methods used - Theory	3.68	4.48	3.95	3.89	3.89
Teaching methods used - Practical's / Field visits	3.67	4.39	4.17	3.91	3.90
Technical knowledge of trainers	3.67	4.55	4.14	3.96	3.93
Human relations skills of trainers	3.68	4.46	4.19	4.06	3.90
Evaluation procedure	3.68	4.43	4.05	4.06	3.89

Score ranges from 1- Very low to 5- Very high

Figure 4. Perceived Satisfaction level of the Dealers



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Given the positive and encouraging feedback coupled with rising demand from the dealers, there is an urgent need to expand the programmes. It was uniformly observed that there is a rising demand for the course from the dealers. Some of the dealers even indicated that they had paid the fee and have been waiting for the training to begin. Therefore, one can interpret that there is an immediate need to strategize multiple ways and means of delivery in order to reach out to larger no of uncovered target population.

3.9.2 Observations on the organizational aspects

The responses of the dealers on other implementation aspects of the DAESI scheme including duration of the programme, requirement of specific training modules, etc. are discussed below:

Course content

Almost all the stakeholders contacted had mentioned that the course structure is quite comprehensive, well-structured and convenient. A uniform observation of the dealers across states is that the relative share of practical work should be more, the content be periodically updated to include the information about the new and emerging techniques and more time to be allotted to methods for disseminating information on new products coming into the market. The content of training for different areas should be flexible and geared to the agro-climatic conditions of the region.

“The course syllabus should aim to train the dealers more on bio-fertilizers in addition to chemical fertilizers as the former will gradually replace the latter. Also include material on organic farming”

- Dealer at FGD organized at Agra on Dec 4, 2018

“Need more training on operation of POS machines. The service providers are updating the POS software frequently causing inconvenience. Poor net connectivity adds to the problem”

- Dealers at FGD, Bhubaneswar on November 14, 2018

“DAESI has succeeded in establishing contacts with agricultural scientific community, which was absent earlier. Dealers now come forward and consult them to clear their doubts. The training content for different areas should be more flexible and geared to the agro-climatic conditions of the region”

-Remarks by KVK & SAU scientists at FGD, Bansthali, Rajasthan on Nov 14, 2018

Also, there was an observation made by the dealers that there needs to be a focused approach and customization where the subjects relevant to the traders' activities are focused upon.

About 34 per cent of the dealer respondents indicated that they require subject matter specific trainings while 65.73 per cent denied.

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Of the dealers who have asked for subject matter specific trainings, 28 per cent (majority) have indicated that the ideal no of training days is 30.

Time and Duration

Ninety per cent of the dealer respondents indicated that they did not require any reduction in the duration of the training programme while ten per cent mentioned that they do.

Seventy-one per cent of the respondents who indicated that they need a reduction in the duration mentioned that the ideal duration for the programme, according to them is between 1 and 6 months.

Some of the dealers contacted had indicated that the duration could be shortened. As the dealers would be busy during the peak crop seasons, majorly, kharif, there is a request that the technology is leveraged to its fullest by introduction of online classes. This also was indicated by Agribusiness Companies where they opined that creating online, interactive platforms may lead to larger no of dealers enrolling in the course.

Dealers in Uttar Pradesh had indicated that crash courses in dissemination of new technologies, varieties or crop production practices shall be of greater significance as they help dealers stay relevant and provide updated advisories to the farmers.

The training should be extended to all existing dealers, irrespective of their qualifications. Addition to their knowledge enables them to give better and objective advice to the farmers

- Shri Somani, Resource Person, Tonk

Follow up of training for keeping continuity with input dealers should be done. Input dealers should ensure quality of inputs as final product will come back to all of us for consumption

- Director, IVRI in the FGD at KVK-IVRAI, Bareilly on Dec 4, 2018

Minimum Educational Qualifications for DAESI

“DAESI is not open to old dealers having below Xth class education. The business of input dealership often passes from parents to children in the family. It is, therefore, essential that such children should be accorded priority in selection for training as otherwise family business gets affected. This may affect the business of dealers who fail to attend DAESI programmes for various reasons”.

- Shri Devendra Singh Rathode, Dealer, Sawai Madhopur, Rajasthan

Course Delivery and Evaluation

- On-line course delivery and evaluation would make it easy for some dealers to pursue the course and complete it at their own pace and convenience.

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- Online DAESI courses may also be offered for the benefit of dealers and private sector officials who could afford to have net connectivity. Training should be given on the use of mobile and other electronic means to impart guidance to farmers

Venue and Logistics related

- A majority of dealers did not face problems with venue in terms of distance. However, “venue” as an issue in terms of distance was one of the reasons for non-enrollment by non-DAESI dealers. The facilities for training in terms of infrastructure was perceived to be adequate by a majority of the dealers. However, in some places problems of poor infrastructure existed.
- In case of Rajasthan, a dealer had to travel 100 km to reach the venue and the logistical inconvenience may lead to ineffective learning. Keeping this in view, there is a need to involve KVKs and Universities to a larger extent in implementing DAESI.

At FTC, Nandyal available hall was not having proper facilities. The dealers came forward to improve it. With motivation from PD, ATMA, Karnool along with pro-active initiative of Facilitator, the dealers contributed Rs. 1.5 lakhs for renovation of lecture hall which is now being used for DAESI regularly.

This is an example on the attitude of the input dealers and officials for the ownership and success of the programme

GURU DAKSHINA BY DAESI TRAINEES

‘DAESI Training Hall’ at FTC. Nandyal, AP

DAESI programme is being conducted at Farmers Training Centre (FTC), Nandyal, Karnool District, Andhra Pradesh since more than a decade. As the available hall was not having proper aesthetics and facilities, the staff and dealers came forward to improve it. With motivation from PD, ATMA, Karnool followed by pro-active initiative of Sri M.Yogi Reddy, Facilitator and Sri A. RavindraGoud, DAESI trained dealer, the dealers have come forward and contributed Rs. 1.5 lakhs for renovation of available lecture hall. The beautiful training hall is now being used for DAESI programme regularly.

Besides, the trained dealers formed an “Association of DAESI Input dealers” in the district facilitating time to time interactions with the Officers of Department of Agriculture and Allied sectors, Scientists, experts etc. which helped them to update their knowledge and provide effective services to the farming community.

This is one of the best examples of the attitude of the input dealers and officials for the ownership and success of the programme.

- As narrated by Sri P.V.Muralikrishna, PD, ATMA, Karnool

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Resource Persons

Most of the dealers were satisfied with the quality of the resource persons. They were happy that the resource persons were drawn from the State Agricultural Universities (SAUs). However, a number of dealers expressed that most often junior faculty members were deputed for training.

Suggestions were offered to invite more number of experienced and successful dealers for sharing their business experiences

Creation of a platform for regular interaction with the resource persons, post training and also periodic refresher trainings are the requirements from the dealers' side.

In general, the dealers were appreciative of the resource persons and the organizers.

Training Manuals/Resource Materials

Non-availability of training manuals / resource materials need to be made available in vernacular languages.

3.9.3 Feedback from non-trained dealers

Responses of the non DAESI dealers were enumerated to comprehend on the reasons for their non-enrolment and their priorities for enrolment. Computed Non-Enrolment Reasons Score (CNRS) was computed using the frequency of responses on a scale of 1 to 5 where 1 indicates very strong disagreement and 5 denoting very strong agreement. Based on the CNRS, rank order was arrived at (Table 50).

Computed Non - Enrolment Reasons Score (CNRS):

$$\text{CNRS} = \text{RVSA} * 5 + \text{RSA} * 4 + \text{RMA} * 3 + \text{RSD} * 2 + \text{RVSD} * 1$$

*means Multiplication (X)

RVSA = Number of responses/respondents with Very Strongly Agree

RSA = Number of responses/respondents with strongly Agree

RMA = Number of responses/respondents with Medium Agree

RSD = Number of responses/respondents with strongly Disagree

RVSD = Number of responses/respondents with Very Strongly Disagree

It can be interpreted from the rank orders in **Table 50** that the dealers strongly believe that the “farmers cannot differentiate between a trained and a non-trained dealer and hence there is no need for the training”.

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The second and third most important reasons cited for non - enrolment were “Inconvenient venue of the programme in terms of distance and dealing with only one or two inputs and hence not interested in training in all aspects of agriculture” respectively.

Table 50. Reasons for non-enrolment

Reasons	CNERS	Rank Order
Farmers cannot differentiate between a trained and a non-trained dealer and hence no need.	961	1
Inconvenient venue of the programme interms of distance	940	2
Dealing with only one or two inputs (such as seed or pesticides) and hence not interested in training in all aspects of agriculture	911	3
Unable to perceive the benefits of the programme	884	4
Unsuitable Timing of the training	865	5
Lengthy duration of programme and lack of time	828	7
Unable to get time due to Lack of manpower	814	8
Already possessing requisite qualifications.	763	9
Any other reasons	560	10

The respondents were also to indicate their suggestions for modifications in the DAESI programme so that they could enrol in the programme. Computed Suggestions for Enrolment Score (CSFES) was hence arrived at. Interpreting the rank order of CSFES from Table 51, it can be inferred that the “Reduction of duration of the programme” is the top-rated suggestion followed by “Easily accessible venue”.

Computed Suggestions for Enrollment Score (CSFES):

$$CSFES = RVSA*5 + RSA*4 + RMA*3 + RSD*2 + RVSD*1$$

*means Multiplication (X)

RVSA = Number of responses/respondents with Very Strongly Agree

RSA = Number of responses/respondents with strongly Agree

RMA = Number of responses/respondents with Medium Agree

RSD = Number of responses/respondents with strongly Disagree

RVSD = Number of responses/respondents with Very Strongly Disagree

It can be noted that these suggestions are in line with the observations made by the trained dealers and other stakeholders as discussed in 3.9.2.

Table 51. Suggestions of non-dealers for enrolment

Suggestions	CSFES	Rank Order
Reduction of duration of the programme	894	1
Easily accessible venue	882	2
Reduction in the fee of the programme	813	3
Developing video based /online distance education-based training	801	4

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Suggestions	CSFES	Rank Order
Developing input specific training with less duration	764	5
Other reasons	206	6

DAESI is not open to old dealers having below Xth class education. The business of input dealership often passes from parents to children in the family. It is, therefore, essential that such children should be accorded priority in selection for training as otherwise family business gets affected. This may affect the business of dealers who fail to attend DAESI programmes for various reasons

- Shri Devendra Singh Rathode, Dealer, SawaiMadhopur, Rajasthan

4. CASE STUDIES

Case studies developed in consultation with State officials, trainers, resource persons and dealers are given in Table 52. This also includes success stories from Coromandel Retail, farmer, dealers and views from two DAESI facilitators and one Deputy Project Director, ATMA.

Table 52. Extent of changes in yield and income

State	Target (no.)	Achieved (no.)	Location
Andhra Pradesh	2	4	Nandyal and East Godavari
Odisha	2	3	Khurda, Puri
Rajasthan	2	3	Jaipur (Chomu), Tonk
Uttar Pradesh	2	2	Agra, Bareilly
All	8	12	

4.1 Case Studies from UP

Case Study 1: SHRI SUDHIR MALPANI, RAJDHANI SEEDS, AGRA (06.12.2018)

Shri Sudhir Malpani is a highly reputed wholesale agri-input dealer in Agra running Rajdhani Seeds in Baluganj area of Agra City. His son Arjit Chola is also a distributor trading in agri-inputs under the banner of Chola Seeds from a part of the same precincts. The two establishments deal in seeds and pesticides only, catering primarily to wholesale dealers in various parts of the district, though some major farmers buy their seed and pesticide needs from these establishments directly.

Shri Sudhir Malpani, aged 65 and a commerce graduate, is in dealership business for about 40 years. In fact agri-input dealership is a family business for him, the family having established dealerships in Kanpur, Kasganj, Agra and Aligarh. His son holds a Master's degree in Business Administration and has been inducted into the family business about five years back. Father and son together are stated to have an annual sales of about Rs. 90,00,000 with a profit of Rs. 4,80,000.

Both father and son had undergone DAESI training organized by MANAGE through an Agra-based NGO in 2016-17 and obtained their diplomas in 2017. Shri Sudhir Malpani candidly admitted that he initially enrolled in the training programme because of the legal requirement of the diploma for continuing in dealership. Soon after joining the course he became increasingly convinced of the additions to his knowledge of agricultural theory and practices and the need for optimizing the use of proper seeds, pesticides and fertilizers. He stated that he is always interested in acquiring new knowledge and whenever seed and pesticide manufacturing firms launched their new products and held demonstration of their use and advantages, he would invariably attend to be familiar with the latest developments in the field.



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Shri Sudhir Malpani was very happy about his experience in DAESI training programme. He was in fact the monitor of the batch and found that about 60 per cent of the dealers in the class were very attentive and serious about the lessons. The batch as a whole enjoyed the training and created their own Whatsapp group to exchange information among themselves. Though he had acquired vast knowledge about seeds and fertilizers and their use through his interactions with companies, that knowledge lacked theoretical foundations, and that gap was filled to a major extent in DAESI.

As regards the conduct of DAESI, Shri Sudhir Malpani was of the view that the



*Shri Sudhir Malpani in conversation with
BVLN Rao, Varsha team member*

programme is well-conceived because the input-dealers are the immediate contact point of advice for the farmers and they invariably had information superior to the local government officials like gram sewaks. It is good that government is taking advantage of the positioning of the dealers vis-à-vis farmers to enlarge the extension services both in reach and quality. He agreed that the course duration, location of the training centre and having the courses on one day a week for a year are appropriate. As far as he was concerned most of the resource persons were good but some were not up-to-date in their knowledge. Moreover, lecturers from government institutions could only recommend seeds and fertilizers from government agencies, while superior varieties are available in the market and the dealers are partly aware of them. It would, therefore, be advantageous to engage retired persons from manufacturing companies as resource persons under DAESI. Also, the course dealt more with seeds and fertilizers and dwelt less on pesticides. More was taught about fertilizers and less about seeds. He felt that training should cover areas relevant to the local agro-climatic conditions and crops and should be market-relevant. Refresher courses should also be organized from time to time to keep the knowledge acquired up-to-date. Changes are taking place in the use of pesticides and the course curriculum should reflect these changes.

On the impact of the DAESI on his relations with various groups of clients, Shri Sudhir Malpani felt that as far as farmers are concerned, to the extent that his position as wholesale dealer allows, his advices now are based on sounder familiarity with the theoretical background of the use, overuse and misuse of the inputs. While some farmers accept his advice, others do not. His relations with input companies are also on more even level now and he is able to discuss the advantages and disadvantages of new products more effectively, having acquired familiarity with the theoretical background of the products. DAESI also helped him to connect with the academic circles in agriculture having met many as resource persons in DAESI.

The overall impressions one gains after interaction with Shri Sudhir Malpani is that he appreciates the conduct of DAESI, though the impact is as yet limited. While the programme is well-conceived, its efficacy can be improved with better choice of subjects taught and proper selection of resource persons.

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Case Study 2: Mrs. Dimple Bajpai

Mrs. Dimple Bajpai is a rare example. She is one of the only three women agri-input dealers who were trained in DAESI and whom the evaluation team came across. Her husband, a computer engineer, is not involved with agri-input business. Mrs. Bajpai runs her establishment Audyogic Utpadakavum Vipanan Sahakari Samiti Ltd., a unit under IFFCO, located in Nawada Sherwan, Bareilly, in the Faridpur Block of Bareilly District, with an annual turnover of Rs. 70 lakhs. She is aged 45, a graduate, and has 20 years of experience as a fertilizer dealer including 15 years of farming experience. She is a regular visitor to the KVK, IVRI.

She got inspiration to start her business from her Uncle who had Horticulture Cooperative Society at Shahjahanpur. She also opened it in Bareilly. At that time, she got information from Horticulture department. Gradually she learnt while doing her work.

Mrs. Bajpai underwent DAESI training in 2016-17. Factors that prompted her most to join the training were the urge to acquire additional knowledge in agriculture, to be in a position to provide better services to farmers, learn about the legal requirements in dealing with pesticides and fertilizers, to fulfil the legal requirement for running input-dealership and the need to improve her business. She rates the training excellent with maximum gain in knowledge in the areas of soil health management and agro-ecological aspects. She considers that her skills improved greatly in recognizing deficiency of main soil nutrients, seed management, operating plant protection equipment, recognition of agricultural diseases, and in maintenance of pesticides. She is satisfied with all aspects of the organization of DAESI in its present form. She reports substantial increase of yearly sales (40-50 per cent) and profits (30 to 40per cent after the training). The number of farmers advised also increased substantially (30 to 40per cent). Other dealers were unanimous in stating that Mrs. Bajpai was very regular in attending the training sessions and always took keen interest in what was taught.



Rashmi Agrawal, Varsha team member with Dealer Mrs. Bajpai

Mrs. Bajpai suggests that from time to time, KVK should provide information on latest agri-inputs to the dealers. One day interaction sessions could be organized once a month for this purpose. In her opinion, visits to villages to provide information to the farmers would be very useful for extension work.

4.2 Case Studies from Odisha

Case Study 3: Mr Akshaya Kumar Dash, Maa Mangala Fertilizer Store, Mangalpur

Mr Dash initially took to agriculture after the demise of his father in 1985. Unfortunately, the income from farming was not remunerative and there after he started looking for other avenues of income generation. Mr Niranjan Mishra, a VLW who was staying as a tenant in their house, advised him to start a fertilizer shop. He also promised him to extend all help. Encouraged by his words, Mr Dash started his fertilizer retail business with a bank loan of Rs20,000/- in 1993. In 1998 he took assistance under PMRY (Prime Minister RojgarYojana) and expanded the business. Subsequently, in 2008 he became a wholesaler, while the retail business was managed by his wife Mrs. Sabita Dash. In 2016-17 he and his wife joined DAESI programme at IMAGE, Bhubaneswar to meet the stipulated requirement of dealership licence.

A K Dash Orissa, Dealer



Mr Dash expressed that joining DAESI training has benefited him many ways specially gaining knowledge about agriculture, optimal use of fertilizer, diagnosing pest and diseases, recommending right cultural practices, business management. Prior to the training, he as a retailer was selling fertilizer and pesticide to the farmers as per their demand. However, after the training he is in a better position to advise the customers confidently on use of fertilizer and pesticide. About 25 to 30 farmers daily visit his shop for advice especially on treatment of pests and diseases in their crops. This has increased his reputation among the farmers in his area resulting in significant increased in his business volume. At present his annual turnover is around 1.5 crores. Moreover, after the training his confidence in managing agriculture has increased and he has again started cultivating his lands after taking back from sharecroppers. In addition, the training has also increased his efficiency in record keeping and compliance with legal aspects. Mr Dash, expressed that the training was very well designed with perfect blend of theory and practical. Resource persons were very experienced, knowledgeable and are helpful in answering the queries even now. He has all the appreciation for the programme coordinator and infrastructural facility at the IMAGE.

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Case Study 4: Mr Basant Kumar Ghadei, KrishiPragati, Chandanpur

Mr Ghadei an intermediate by qualification, is a second generation entrepreneur in fertilizer business. Their family is in this trade since 1976. Mr Ghadei inherited fertilizer retailing from his father in 1986. After four years, in 1990 he became a wholesale dealer for fertilizer and pesticide.

He has completed the DAESI training at ATMA, Puri in the year 2017-18. He was very candid in admitting that he had never felt it necessary to join any training programme. It is only when DAESI training was made mandatory for renewal of licence he decided to join the programme. He applied for the programme in 2014 at Bhubaneswar, but unfortunately, he was not shortlisted. Without being discouraged, he applied for the programme at



B K Ghadei, Dealer Orissa

ATMA Puri and joined the programme in 2017-18, with sole objective of avoiding cancelation of licence in future date. Initially he took it very casually. However, as the training progressed, he could realise its potential and usefulness. There after he took lot of interest in the programme and participated seriously in all activities. Further he opined that this programme should be made compulsory for all the input dealers including wholesalers. While he looks after the wholesale business, the adjacent retail shop is managed by his nephew Mr SubashGhadai who was also a DAESI trainee in the year 2014 at IMAGE, Bhubaneswar. Now with wholesale dealership from over ten fertilizer and six pesticide manufactures, Mr Ghadei caters to the need of about 60 retailers in the designated area with annual turnover of nearly 15 crores. His success has earned him many appreciation certificates and trophies. Mr Ghadei was of the opinion that DAESI training was very useful in his business as with His increased knowledge in agriculture he could gain confidence of the farmers in his locality. About 40 to 50 farmers visit their shop during peak seasons. Being convinced with the usefulness of the DAESI programme in expanding the business he has motivated his second nephew who has joined the 2018-19 programme at Puri. He also expressed that a greater number of DAESI programmes be organised to cover all the dealers. To justify his suggestion, he stated there are 400 dealers alone in Puri district. With a batch size of 40 and one programme per year in a center it would take about 10 years to meet the demand of existing dealers. In brief he was very appreciative of the programme.

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Case Study 5: Mr Dilip Kumar Das (Farmer)

Mr Das owns four acres of land. In three acres he grows paddy and the rest one acre he grows vegetables such as Brinjal, Ridge guard, Bitter guard, Cucumber etc,. He has been purchasing fertilizer and pesticide from Mr A K Dash's shop for last three years. Earlier he was making the purchase from other shops in the area and decided to change his loyalty when he experienced that this DAESI trained dealer besides providing advice gives appropriate pesticide for the pest and diseases of vegetable crops. In contrast to non-trained dealers where he has to ask for specific pesticide. He opined that,

- There is significant difference in knowledge of DAESI trained and non-DAESI dealers.
- Mr A K Dash is very knowledgeable, cooperative, helpful and reliable.
- Besides recommending pesticides and fertilizers, Mr Dash also provides update information on different crops, availability of seeds, soil testing facility etc,



DAESI dealer Mr A K Dash advising farmer Mr Dilip Kumar Das

4.3 Case Studies from Rajasthan

Case Study 6: Shri Rajesh Mali

Shri Rajesh Mali is about 40 years old and is a commerce graduate. He has been in agri-input dealer business for about ten years in Chomu, a town famous for groundnut, fruits and vegetables. His establishment, Saini Beej Bhandar is located close to the Chomu vegetable *mandi*. He is a first-timer in dealership business in his family, his father having retired from a State government job. He deals primarily in seeds, pesticides and fertilizers and caters mainly to vegetable farmers. Many such farmers visit his shop each day and he, apart from selling inputs, offers advice on various aspects of vegetable farming. A brief chat with some of the visiting farmers is sufficient to feel convinced that his advice is generally respected by the farmers. He is stated to have had a business turnover of Rs. 5 lakhs in 2017-18. Shri Mali had undergone one-year DASEI training and obtained diploma in 2017. Though the official requirement of DAESI for doing input dealer's business weighed most in his decision to participate in DAESI, acquiring additional knowledge on the use of inputs in farming, sharpening business skills and developing inter-personal skills also ranked high in influencing his decision. He valued the acquired knowledge of the optimum use of the inputs and the dangers of their overuse and misuse. He held the view that while he offered advice to farmers even before the training, that advice was not based on scientific knowledge as it was post-training. Shri Mali also rated his benefits high in the areas of soil health management, control of diseases, legislative requirements of agri-input dealing, and various official programmes in agriculture.

Post-DASEI, Shri Mali has been offering advice to farmers on new crops, new varieties of seeds, soil testing and soil health card, proper use of fertilizers, right use of pesticides for disease control and drip irrigation, etc. He has sold new varieties of seeds and pesticides. There has been a substantial increase of over 20 per cent in the number of farmers catered to and in sales and profit. He was of the view that the training has developed confidence in him in giving advice to the farmers.

About the organization of DAESI, Shri Mali found that the venue of training is not particularly convenient, being some distance away, but considered the infrastructure at the venue very good, and the course content, session duration and teaching methods very appropriate. In his opinion, the duration of the course should be reduced from one year to six months. He thought that the knowledge available with the officials like Gram Sewaks is often outdated and their advice is at variance with that of the dealers. Certain items are banned but in the lack of knowledge, Gram Sewak advices to use them. These officials also need familiarization with new technology, inputs and practices so that the advice to farmers from various sources becomes consistent. Equipment like projectors used at the venue of training should be maintained properly to ensure that they function without breakdown. Shri Mali also suggests that children of farmers also need training similar to DAESI. More batches can be started.

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Case Study 7: Shri Kanaram Yadav

Shri Kanaram Yadav, aged 52 and a graduate, operates ShyamAgro-Centre in the village of Khorabeesal in Amer Block of district Jaipur and has been in agri-input dealer business for about 27 years. He deals in seeds, pesticides and fertilizers, and has an annual turnover of Rs. 2 crores.

Shri Yadav is also a major farmer owning 17 acres of irrigated land and has 40 years of farming experience. Over the years he has diversified his crops from cereals to vegetables and now grows wheat and bajra on a reduced scale primarily for domestic consumption while concentrating on vegetables for commercial purposes.

Shri Yadav completed the DASEI training in 2017 from SAMETI Jaipur. His first reaction to questions on the utility of the training was that for a dealer of three decades standing, the course did not offer much by way of additional knowledge and that he joined the training only because of its requirement for renewal of dealership license. However, he gradually veered round to the view that while the programme is very good for young entrants into dealership business, even the older dealers stood to benefit as broadened strengthened their knowledge base. Acquiring scientific knowledge in the field of agriculture, being able to offer better advisory services to the farmers, development of business skills ranked high as reasons for his joining the DAESI programme, even though the need of the diploma for obtaining license remained the foremost one.



Shri Kanaram Yadav

Shri Yadav opined that the benefits of DASEI were very high in the areas of soil health management, irrigation techniques and management, pest and disease control, rules and regulations regarding inputs, important agri-related schemes and optimum use of inputs. The enhancement of skills was also very high in areas like analysis of soil testing reports, drip irrigation, use of agricultural implements, identification of agricultural pests, maintenance of pesticides and use of IT and mobile phones in accessing information.

After DAESI training Shri Yadav found that he acquired a greater sensitivity to the problems of farmers, his confidence in advising farmers increased, his contacts with agricultural scientists developed, and his dealings with farmers became more cordial. He also found that the number of farmers served by him and his sales rose by 10 to 20 per cent.

As regards the conduct of DAESI, Shri Yadav had the highest opinion on the attention to mix of theory and practical aspects and the human relations skills of the resource persons. He also considered the choice of venue and availability of infrastructure, choice of syllabus, resource persons and teaching methods very appropriate. He suggested that the duration of the course should be reduced to three months, new techniques should be explained and the syllabus should relate to local climatic conditions and crops. He also suggested that dealers with more than 10 years of experience in the line should be exempted from the requirement of training.

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Case Study 8: Shri Devendra Singh Rathode

Shri Devendra Singh Rathode is an input dealer with business in Sawai Madhopur city the headquarters of the district with the same name. He is the president of agri-input dealers in the town and does business in seeds, pesticides, fertilizers and agri-machinery, and also provides other agricultural advisory services to the farmers. He has in addition considerable farming experience of about 40 years.

Shri Rathode has been in the business of dealership for 30 years and feels that this long experience with the input business has endowed him with adequate and up-to-date knowledge of the input market. In fact, he feels that he has better information than many extension officials. He came to know of DAESI from officials of department of agriculture but has not joined the DAESI programme so far. He deposited the amount of Rs. 10,000 as fee in Kota, but the demand draft had come back after six months and he was not admitted.

He was, however, of the opinion that if the training is of high quality, the benefits to the dealer as well as to the farmers would be considerable. His suggestion was that the duration of training should be compressed to 15 days. Moreover, the choice of venue should be such that it facilitates participation by maximum number of dealers.

The business of input dealership often passes from parents to children in the family. It is therefore essential that such children should be accorded priority in selection for training as otherwise family business gets affected.

The department of agriculture still advises use of pesticides announced in 1984, whereas in the past three decades several new varieties have come up. The schedule of pesticides needs to be updated. Also, many of the officials in the department of agriculture have educational qualifications below graduation only. It is unfair to insist that dealers should be graduates in agriculture. He also stated that the persons of his caliber should be invited as resource persons.



Mr Rathode in his shop

4.4 Case Studies from AP

Case Study 9: Shri A Ravindra Goud, Input dealer from Nandyal

Sri A. Ravindra Goud started his input business as M/s Sri Siva Nandi Traders during 1992 at Nandyal. He was doing just average business and the business volume has not increased much. He was not able to attract the farmers to his shop as he was not able to give proper advice to the farmers on latest input management practices. He was not having much communication skills. He was informed about the DAESI programme and its benefits by Shri M. Yogi Reddy, Facilitator and retired officer of the Department of Agriculture. Shri Goud joined the DAESI programme and completed during 2009-10. He fully satisfied with the training as he has learnt many things during this one year, like crop management techniques, input use efficiency methods, soil manage management, water use, business management skills, communication skills, personal communications etc. Due to this improvement his services to farmers increased tremendously. In addition, his business volume increased from Rs. 1.0 to 3.0 crores in year. He also participated in the “Refresher course of DAESI” at MANAGE, Hyderabad and further gained knowledge. He was fully satisfied with the programme and motivated 14 other dealers to join the DAESI programme. All the dealers are happy with the DAESI for which they extend thanks to MANAGE and wish to continue the programme for the fresh dealers who are from remote areas.



Case Study 10. Success Story of V.Venkateswara Reddy, Nandyal

Sri V.Venkateswara Reddy, a B.A. graduate from Nandyal town in Kurnool district of Andhra Pradesh has started his M/s Sri Venkateswara Seeds business in 2002. The sales and income in his business was not up to his satisfaction. He was not having much knowledge of agricultural practices and not able to give proper advices to the farmers in the input use. His ability to communicate with officers or farmers and inter personal communication was also poor. On the advice of his fellow dealer, he has registered and completed DAESI (ID No. MNG/KNL/1486) programme during 2008-09.



After the DAESI training he is completely a transformed dealer. He gained latest knowledge on management of agricultural inputs, business management and communication skills and improved his relationship with department officials, input supply companies and farmers. As a result, his business volume increased from Rs. 1.5 to 2.5 crores in a short period of two years. He was very happy with the benefits he got with the DAESI programme.

Having realised the benefits of the DAESI programme, he introduced 6 others including his brother Sri V.Ranga Reddy to DAESI and all are very happy for their services/relationships with farmers. They express their sincere thanks to MANAGE for such a good programme

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Case Study 11. Success Story of Vura Venkata Satyanarayana, E. Godavari District

The following success story as told by the Vura Venkata Satyanarayana, dealer.

My name is Vura Venkata Satyanarayana, S/O Lakshmana Murty. I am from Gollaprolu village, Gollaprolumandalam, East Godavari District. I am from a business family and my father was doing kirana business. We started our Agri input Business Shop “Sravanthi Agro Agencis” on March 11, 2009. I was informed about the DAESI programme of MANAGE by Shri Bhaskar Rao, facilitator of the program. He has clearly explained about the benefits of the programme. I was convinced and joined the DAESI programme along with my two brothers and 25 others in 2009 and completed in 2010. The programme was conducted at Pithapuram by Shri Bhaskar



Shri V. V. Satyanarayana

Rao Garu. It was an excellent program. I learnt many new things not only about agriculture, but about business management, legal issues, Acts, Govt. rules and regulations etc. My communications skills improved and I am able to interact with the government officials and farmers with confidence. The course was very useful, interesting, conducted very well in a systematic way. It was conducted on Sundays. The field trips and practical classes were very interesting and useful.

After the course, my contacts with farmers increased because of the confidence I could create in the farmers on my recommendations, more farmers are coming to my shop not only for purchase of inputs but also for my advice on other crop management and so my business increased from 2 crores to 10 crores now (in 2018-19). I am selling seed, fertilizers and plant protection chemicals. The income of my contact farmers also increased due to my timely and correct advices on the input and other crop management practices. My attitude and my relations with my contact farmers changed, and I want to increase income level and living standards of the farming community.

I encourage other dealers also to join the DAESI programme. The DAESI certificate is useful for renewal of agri-input business license also.

Case Study 12. Success Story from Coromandel Retail

From: Mrs M Sravanthi, HR, Telangana, Sales Executive, Coromandel Retail

In Coromandel International Ltd., we are having separate Retail SBU which is having it's own Agri input outlets spread out of 4 States viz., Telangana, AP, Karnataka and Maharashtra, with an objective to provide complete Farm Solutions in a comprehensive manners to the farmers, with the repeated access to the farmers to cater their Agri needs there by providing the value addition to them.

Presently we are operating 800+ stores across these 4 states. We run these store operations with a Store Manager who is of non-technical and masters in Business Management. They provide farm solutions and recommendations and successfully running the business. To have more competent in giving the farm solutions and

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correct recommendations we enrolled them in DAESI course by company sponsorship under self-finance stream.

We have enrolled our store Managers as follows:

Sl. No	Location	No of Candidates enrolled
1	Gaddipally	40
2	Warangal	30
3	Kakinada	40
4	Vijayawada	40
5	Nellore	18
6	Chikballapur	8
7	Mandya	3
8	Hasan	4
9	Chittore	40
10	Mahabubnagar	40
11	Srikalahasthi	8
12.	Mysore	7

Success Story of Mr Janakaiah (one of the RSMs):

He was the looking after Mall store in Nalgonda District, basically he is MBA, rich in communication skills and driving the business, but scarce in the technical knowledge and not confident in giving farm solutions to the farmers.

Before DAESI : Very frequently, he used to depend on the literature, books, scientists and technical cell in the company for technical advices to onward disseminating the technical knowledge to the farmers. This is the only lacking and he is not competent enough to do so.

After DAESI : In due course he has gone through the DAESI which the company sponsored and gone through the process successfully. Now, With the enriched of technical knowledge and rich field experience he is facing the farmers very confidently, giving the recommendations, farm solutions and farm advises to the farmers. Conducting the farmer meetings, organising the campaigns and demonstrations. The life style of the Manager changed significantly and contributing to the farmer prosperity. This course has given him a much more confident to serve better to the farmers there by there by the business.

Impact: He has significantly improved the way of his life in terms of Quality and Quantity as he has improved number of farmers contact, field visits, farm advisory and Business as well as follows.

Topic	After DAESI
Farmers Met	Increase by 24 per cent
Farmer Meetings organised	Increase by 5 per cent
Conversion Ratio (Farmers met vs influenced farmers)	Increase by 12.5 per cent
Demonstrations conducted	20
Improvement in sales	Improved by 10 per cent

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In the words of Mr Janakaiah about DAESI : “My name is Janakaiah, I was working at Mall store as manager, even though we have MBA and rich field experience, we always felt some where we are having some lacuna in rendering the services to the farmers and depend on the other modes for technical knowledge”. “After going through the DAESI, we are much empowered and competent enough to deliver the high-quality services in terms of technical recommendations and farm solutions and felt happy to be part of it. It helped me to be more confident in the field and able to conduct the farmer meetings alone, improved farmer contacts and due to all these actions, I have improved my business to 10 per cent”. “Finally, because of the improved performance company has recognised me by giving the promotion as Area Marketing Manager, so happy”.

4.5 Summary of Case Studies

Review of case studies of dealers in the study area suggests that the DAESI programme has been instrumental in improving their business volume and competency, through increase in relevant professional knowledge, positive change in attitude, gain in farmers' confidence and acceptance by the locals as a change agent. The dealers were appreciative of the programme design, course content, and resource persons. They opined that the programme should continue in its present form. However, they have also registered their reservations regarding the inadequacy of the programme to reach all the perspective participants in the current time frame. Suggestions for improving the programme ranges from making it modular, preference to family members in selection, giving wide publicity, increasing practical sessions, reducing duration and exemption for experienced dealers (>10 years).

In brief, the feedback from the dealers drives to the conclusion that the DAESI programme has been successful in realising its intended objectives of supplementing and strengthening the agricultural extension system through wide network of input dealers.

4.6 Views of DAESI Facilitators

a) P. V. Murali Krishna, DPD, ATMA, Kurnool

ATMA, Kurnool is involved in organizing DAESI programme for the last several years and the demand for this programme is increasing in this district. There are many dealers willing to undergo this Diploma course with self-finance without having subsidy. This is because of the feed back they are getting from the trained Dealers that it would improve the knowledge and skill related to their profession resulting in the increase in business volume and the income.



For up scaling and improving the DAESI programme and to meet the demand the following may be considered DAESI programmes.

- A permanent training hall fully furnished and equipped with required training material at a convenient place is required. Funds may be provided for construction of the training hall. It will help in conducting more number of batches simultaneously. There is required number of resource persons and Facilitators in this district.
- Allocation of budget for each batch to be enhanced from Rs.8 lakhs to the extent possible, at least 10 lakhs.
- Since there is large demand for this programme, more number of batches may be conducted simultaneously or the programme may be conducted at more number of places.

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b) P.Neelakanteswara Rao, Facilitator, Guntur



In Guntur district, Andhra Pradesh DAESI programme is being implemented for 18 years. Under this program several batches of input dealers were trained and dealers are acting as para-extension professional and strengthening the agricultural and Horticultural extension system. The dealers are able to sell the inputs efficiently and improve their business and income due to the DAESI training programme.

The trained input dealers gained knowledge about Agro ecological situations, soil health, rain-fed farming, seed production, Irrigation techniques, weed management, farm implements and machinery, Agricultural and Horticultural crop management technologies, pest and disease management, Acts, Rules and regulations related to Agricultural inputs, extension approaches, different schemes related to agricultural sector.

The input dealers personal relationships with the farmers, communication skills improved due to this training programme. After training the input dealers interaction with scientists, agricultural and horticultural officers increased. The input dealers confidently giving the suggestions to solve the farmers' problems.

Suggestions for further improvement of the DAESI programme:

- Venue for class room: Guntur being the district headquarters and also state capital, availability of class room with audio-visual aids for Rs. 1,000/- has become very difficult. Hence, increase the hall rent upto Rs. 3,000/-.
- Resource persons: The resource persons are available from ANGRAU, RARS LAM and HRS, Lam Guntur.
- Study material: It is better to prepare books in Telugu module wise at the state level and supply to the participants.
- Food: Rs. 75/- for Lunch, Tea and snacks per person is not sufficient. Hence it may be increased to Rs. 150/-.
- Hiring of vehicle for field visit: Rs. 7000/- per visit is not sufficient. Hence, increase it Rs. 10,000/-.
- Remuneration for the facilitator: Present remuneration is Rs. 17,000/month. It may be increased to Rs. 25,000/month.

c) D. Papi Reddy, Facilitator, Guntur

I am D. Papi Reddy retired as ADA, Vijayawada on 30-06-2003. During 2005, DAESI programme started in coastal Andhra at Guntur. The 1st Batch was inaugurated on 1-05-2005 and the programme has been continuing till date. I have completed 10 Batches so far and 11th batch is going on now. Three(3) other facilitators were also involved in organizing the programme and they have completed 6 batches. There are two batches presently going on at Guntur and will be completed before 2019.

In every batch so far I have conducted, the participants have learnt agricultural technologies thoroughly and



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providing extension services to the farmers in the villages.

It is a very good programme and the trained people have become extension tools between farmers and also the department of agriculture in the district.

As far as the finances provided to the programme, it is insufficient, especially for:
1. Hall rent 2. Field visits (More visits to farmers fields to have acquaintance with cultivation aspects through farmers 3. Catering charges and also 4. Honorarium to the facilitators and are to be increased.

Finally, it is a good programme and all the input dealers are to be trained and made them available with the door steps of the farmers.

5. DISCUSSIONS WITH STAKEHOLDERS

The Varsha team had discussions with number of key stakeholders like ATMA, SAMETI, Agri department, KVK, agri-university and research institutes officials, input dealers, private sector executives, farmers, State and district level DAESI nodal officers and Centre facilitators. About 18 Focus Group Discussions were organised across the country in 16 locations with cross-section of the stakeholders for discussion on the DAESI current status, areas for change or improvement, extend its reach and suggestions for future (Table 53).

Table 53. No of FGD meetings

S.No	State	Number of FGDs	Locations
1	Andhra Pradesh	5	Karnool, Guntur, East Godavari, West Godavari, Karimnagar
2	Odisha	3	Bhubaneswar, Dhenkanal, Puri
3	Rajasthan	6	Jaipur, Tonk, Deoli and Banasthali
4	Uttar Pradesh	4	Agra, Varanasi, Gorakpur, Bareilly
	Total	18	

During three FGDs all the stakeholders expressed their wide appreciation of the programme. Specifically, the dealers were appreciative of the programme design, satisfied with its coverage, impressed with resource persons and in praise of organisers. Broad consensus and salient points emerged during FGDs are summarised as under in two headings i.e., The Common Observations from all states and State specific observations.

5.1 Common Observations

The Programme

- A good programme, very useful innovation.
- The demand for the course has been rising rapidly and now outstrips the potential supply by a wide margin.
- The course content is good and useful.
- The training would be useful to those aspiring to pursue agricultural input dealership as their profession,

Objective of Joining DAESI

- The general feeling was that the participants joined DAESI programme primarily to become eligible for getting dealership licence.
- To comply with the statutory requirement to qualify for obtaining or renewing the dealership license.
- To increase their knowledge in various aspects of agriculture.
- To improve business perspectives.

Knowledge Gain of Dealers

- The training enhanced their knowledge in different aspects of agricultural practice. The increased technical knowledge is likely to permeate into their advice to the farmers.

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- The dealers became aware of the benefits accruing from the training by way of new and systematic knowledge.
- The knowledge possessed during the training is update and more relevant in comparison to the same possessed by the official government machinery at the local level (e.g. Gram Sevaks).
- Some dealers claimed that they had long experience in the profession and the training did not add to practical knowledge.

Behavioural Change of Dealers

- Feel more confident in giving technical advice to the farmers based on scientific knowledge, and also in dealing with input companies.
- Dealers consider themselves not merely as traders but advice-givers also.
- Dealers are now confident to consult and interact with the agricultural professionals to clear their doubts.

Reduction in Legal Cases

- With their newly acquired knowledge are better informed in their dealings with companies visiting them to sell their products.
- Knowledge about legal provisions relating to agricultural inputs and procedures has increased.
- Dealers now talk to input companies with greater confidence.

Course Content

- The course structure quite comprehensive, well-structured and convenient.
- In regard to the course itself, the dealers thought that the relative share of practical work should be more.
- The course content be periodically updated to include the information about the new and emerging techniques.
- The content of training for different areas should be flexible and geared to the agro-climatic conditions of the region.
- More emphasis be given to practical than theory.
- More time be allotted to methods for disseminating information on new products coming into the market.

Programme Timing & Duration

- The timings are convenient.
- There were some suggestions that the course could be shortened.
- The courses should be of shorter duration concentrating only on subjects relevant to the traders' activities, who mainly deal in seeds, fertilizers and pesticides.

Resource Person

- The resource persons were appropriately chosen and presented their lessons very well
- Dealers who have good academic qualifications and have long experience should be invited as resource persons.

Farmers' Perception

- Farmers repose greater confidence in their advice now than before.

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- The confidence of the farmers in the dealers has increased.
- The DAESI trained dealers are more responsive to the farmers' problem.

Organizations & Venue

- There is a need for decentralization of training.
- Various agricultural institutions with capacity to train such as KVKs, agricultural colleges, ICAR institutions, etc. should be involved in the programme to give effect to the plan.

Budget

- The budget for the programme may be increased to accommodate the price inflation.
- The budget for the programme is insufficient.
- There is no provision of incentive to the in-charge of the programme in the training centre.
- The provision for lunch and snacks is too low.

Miscellaneous

- Resource materials be supplied in vernacular language for future reference. It should be made mandatory.
- There should be some provision for repeat / supplementary test / extra classes etc, for the trainees who fall short of attendance due to some exigency.
- There should be refresher courses of short duration once in 5 years to update the knowledge of the dealers in optimum use of seeds, fertilizers and other inputs.
- DAESI should be made valid to deal in pesticides as well, at least for the old dealers. It should be urged upon the Central Government to make necessary amendments in the relevant laws. The Diploma course content should also be modified accordingly

5.2 State Specific Observations

Rajasthan

- The training should be imparted at Gram Sewak level also as he is not conversant with the recent developments or new rules and regulations. As a result, sometimes advice given by them becomes contradictory, and also, they fail to sensitise the farmer about banned inputs.
- The demand for the training has grown considerably but the response from MANAGE/SIAM has been substantially inadequate. **Several dealers have deposited the requisite fee of Rs. 10,000 are waiting eagerly for commencement of next programme.**
- An example of this growing demand is the observation by an elderly dealer present in the meeting that he, in spite of advice by the dealers' association not to join the course, obtained the diploma and stood first in his batch. He had three of his sons also take the diploma and he would like to see his fourth son too obtain the diploma.
- The location of some training centre did not suit everyone as some of them had to travel 100 km to attend the classes. Therefore, the training could be decentralized

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to the Block level so that the dealers do not lose much trading time in shuttling between their homes and training venue.

- Training should be given on how to use mobile and other electronic means to impart guidance to farmers.
- The dealers attach so much importance to the diploma that they expressed readiness even to forgo the subsidy given by the government and even suggest that self-financed courses should be started.
- There was also a grievance that even after getting DAESI obtaining a license to start a new dealership has procedural hurdles.
- There was a suggestion that the training courses on Sundays should be avoided in kharif season as that is their peak business season.
- About 30 per cent of the resource persons did not make available copies of their presentations for later reference.
- There is also demand for making available the course syllabus and reading material to supplement the lessons preferably in vernacular language. The reading material in English is still waiting for translation into Hindi at SIAM. SIAM has been requested to expedite the translation work.
- It was pointed out that elderly dealers often pass on their business to youngsters in the family the latter should be given priority in selection for the training.
- On-line courses should be started
- The basic qualification for doing the training is Xth pass. Some dealers are doing work for a long time but do not have the prescribed qualification. Some relaxation should be given to them.
- As training institutes implementing government programme the resource persons could only suggest seeds produced by government agencies. Such seeds, however, are in short supply in the market and farmers depend on seeds produced by private companies, which are sometimes better.
- As the organic fertilizers and pesticides gain popularity, the use of chemicals is likely to go down in future. This aspect should be kept in view while designing future training programmes.
- A commonly observed phenomenon is that dealers who are trained do not many times actually attend to the trading, leaving it to others who are not trained. This negates the very purpose of DAESI. Only those trained should be allowed to run the shop, but this may be difficult to implement.
- Conducting training on Sundays posed its own problems in finding resource persons who would like to be off from work on Sundays. Expression of non-availability at the last minute creates difficulties in finding qualified substitutes.
- Training should be from January to July.
- There should be experts at Call Centers.
- A group cohesion has developed among the dealers as well as with training organizations.
- To help dealers in avoiding training with institutions offering unrecognized training diplomas, MANAGE/SIAM should make available a list of institutions whose diplomas are recognized for issue of license.
- There is unanimity of opinion about the large demand for the training and the existing extremely limited training capacity. It was felt that a time-bound plan has to be drawn up to complete the training of all existing dealers (about 55,000 in the State) within the stipulated period, ensuring that those dealers who have already paid the fee got the highest priority.
- Decentralizing the programme to the Block-level would pose problems in finding qualified resource persons and in ensuring quality.

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- While expanding the programme is necessary, care needs to be taken to ensure that the quality of training remains high. A number of private institutions are floating their own diploma courses in the field with no guarantee of the required standards. MANAGE has to step in and ensure that only institutions recognized by it as competent to run the programme are allowed to do so. MANAGE could periodically put out a list of such recognized institutions in public domain and caution dealers to make sure that they get the training only from such institutions. SAMETIs also could be involved in this activity.
- There should also a good monitoring system in place and evaluation of training should be conducted from time to time.
- There was a great demand that agriculture should be linked to NAREGA. Farmers are ready to pay some extra money.
- Rajasthan needs *Paralifor* for their livestock. Arrangements should be made to send this from Punjab Haryana to Rajasthan. Farmers are ready to share expenditure.

Uttar Pradesh

- There was unanimity of opinion that the training must be continued in future and all the dealers in the region should be trained.
- Crash courses of short duration should be organized from time to time to disseminate new techniques and new products that are developed.
- There should be Similarly, greater attention is required to be given to drip irrigation as it helps farmers to produce more with less water usage.
- The training syllabus should train the dealers more on bio-fertilizers than on chemical fertilizers as the former will gradually replace the latter.
- There should be more focus on government schemes
- There should be a training programme on pesticides
- Some of the dealers regarding dissemination of knowledge to farmers gained through the course were of the view that we provide inputs what farmers demand as there is always a risk to give our advice to them.
- In the opinion of the district officials, participation in the training was entirely voluntary on the part of the dealers and the linking of license requirements to completion of training did not have much influence on their decision to undergo training.
- Selection of dealers to be trained was purely on first-come-first-serve basis and there is no waiting list. However, all the dealers in the district were eager to undergo training as soon as possible. One suggestion was to increase the batch size.
- Initially, in the first batch, the organizers were a bit lenient but became very strict in the second batch in matters of attendance and in conduct of examinations. This paid dividends and the extent of learning increased substantially contributing to a number of dealers obtaining first division in the final examination.
- Availability of microphone and projector would have been of great help in training. It was also pointed out that explaining agricultural pests and crop diseases would be more effective if actual specimens could be shown in field conditions. The possibility, however, of there being no incidence of pests during the whole season was recognized.
- The trained dealers were asked questions during the FGD by the Facilitator to assess if they retained the knowledge that was passed on. The outcomes were very encouraging.

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- There was a suggestion that the curriculum should also include a session of psychology to deal with suicidal tendencies among farmers coming to buy pesticides. Another suggestion was to include material on organic farming.
- There was also a suggestion that no fees should be charged for renewal of license in case of DAESI diploma holders. In fact a few suggested that the license should be life-long for DAESI diploma holders.
- Adequate publicity should be given to DAESI explaining its importance. The course fees should be reduced to make it more attractive.
- In each class, one of the dealers should be asked to speak about a pre-assigned topic for ten minutes which could then be discussed by others.
- The trainees should be asked to come prepared for the lesson to be taken up in the next class.
- Adequate publicity, better faculty, convenient venue and inclusion of sessions on marketing, legal advice and taxation would help. To increase the coverage two batches of trainees may be trained in a year.
- The venue, KVK IVRI, is excellent with modern facilities like projectors, microphones, etc. Resource persons too were excellent and were drawn from reputed institutions like G B Pant agricultural university. Training sessions were very good and highly informative. Adequate practical training was given with visits to Pant Nagar and Kanpur;
- A suggestion was made by dealers that the batch of trainees should comprise a mixture of areas with different crops so that there could be better interaction. Another was that the batch should comprise old and new dealers for better interchange of knowledge and experience;
- The training programme should include a session with dealers and farmers coming together as that would enable the dealers to better appreciate the needs of the farmers;
- Regular interaction between the trained dealers and technical persons like the resource persons would be advantageous;
- It was pointed out that booklets with summary of lectures were distributed among the trainees. However, KVK retained the note books of the trainees containing notes taken during the training sessions for evaluation purposes. Now that the diplomas have been given, the note books may be returned to the dealers enabling them to consult them and refresh their knowledge
- It was also pointed out that delays in flow of funds for the training programme created hurdles. The process should be streamlined.
- It was advised by JD during interaction that Input dealers should place a board indicating Dos and Donts for farmers. It would save their time. They should also be unbiased while selling products of companies about quality and quantity. Farmers can also provide feedback about a product of the company.
- It was also said that there should documentation about general queries of farmers and their instant answers; these could be distributed. For this purpose, visits should be made to farmers as well as input dealers.
- Director IVRI opined that follow up of training for keeping continuity with input dealers should be done. Input dealers should ensure quality of inputs as final product will come back to all of us for consumption.

Odisha

- The minimum qualification of 10th pass may be relaxed for the old dealers.
- The DAESI training may be made mandatory for the wholesale dealers.

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- The programme may consist two parts, one dealing with general topics and other specific to dealers' business.
- Visit to MANAGE may be arranged.
- Maximum number of legal cases pertain to sale of fertilizer above MRP. Such situations arises as the goods supplied to the retailers are not rationally priced. Therefore, minimum profit margin for dealers be specified.
- More training on operation of POS machines. The service provider are updating the POS software frequently causing inconvenience. Poor net connectivity adds to the problem.
- The input on legal dimensions have helped in interacting effectively with the inspectors / supervisors. Moreover, better book keeping has reduced the fear of administration.
- The DAESI requires the trainee should be a registered dealer with minimum qualification of 10th pass, but to get licence DAESI training is necessary. This condition puts old dealers without 10th pass in difficulty.
- There should be some provision retest / repeat / special classes for the trainees who has attendance shortage due to some exigency.
- More time should be allotted for practical such as soil sample collection, pest & diseases identification, etc.
- More classes be allotted for major crops of the region.
- New topics such as Mushroom cultivation, Aqua culture, Fodder cultivation and Poultry may be considered for inclusion in the programme.
- Refreshers / revisit programmes be organised regularly at least for a week every year.
- More field visits and practical be included by reducing topics not related to the region or the dealers such as farm machinery.
- The programme provided a platform for close interaction among the dealers and share the experience for mutual benefit.
- The participants of DAESI programme are in the age group of 21 to 59 years. Sustaining there interest in the classes is a challenge for resource persons. The course design may, therefore, maybe made more flexible.
- Theory classes be taken in the mornings and afternoon sessions be devoted to practicals.
- The programme may be made modular with options for selecting training topics.
- Many dealers could not attend the DAESI programme as they were not aware of such programme. Therefore, it may be given wider publicity i.e., in TV, Newspapers etc., to the benefit of dealers especially in isolated difficult areas.
- Enrolment for each programme may be restricted to 25 or maximum of 30.
- The course fee be subsidised and contribution from dealers towards course fee may be reduced.
- Like POS machines, the soil testing kits may be given to the dealers so that appropriate doses of fertilizer could be recommended. For example in Bramhagiri area fertilizers sold by the dealers as per the demand of the farmer are not effective due to bad quality of soil.

Andhra Pradesh

- DAESI trained dealers have contributed and developed the available space of FTC - Nandyal, for the regular use of DAESI lecture hall, to organize the programme. This achievement is due to motivation of PD, ATMA.

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- All the DAESI dealers formed an “Association of DAESI Input dealers” in the district facilitating time to time interactions with the Officers of Department of Agriculture and Allied sectors, Scientists, experts etc. which helped them to update their knowledge and provide effective services to the farming communities.
- More than two batches of non-trained dealers are waiting for registration and requesting the PD, ATMA to organize the DAESI programme. They are willing to pay the required fees without subsidy components. This clearly shows the utility of the programme and the impact it has created.
- It is observed during the survey, that the farmers are satisfied with the DAESI dealers recommendation with regard to fertilizer applications, pest and disease management, irrigation and other problems of crops and opined to continue the programme. They also felt that the DAESI dealers are easily available over phone and provide appropriate advice.
- They informed that there was delay in giving certificates (Diploma) to them after completing the programme.
- They informed that the field visits were very interesting and the number of such visits to be increased.
- Exposure visits to Research Stations/KVKs and other areas / districts where successful farmers having entrepreneurial business models, are to be increased.
- There is a great demand for this programme. Number of Non-DAESI dealers are waiting to register for this course. It is a clear indication of the utility of the programme.
- The schedule of the programme is highly advantageous among the participants to share ideas / experiences of the location specific situations of agriculture and allied departments and obtain solutions.
- The group suggested to recommend the DAESI programme to be continued for the benefit of the farmers of the district.
- Budget provisions are to be increased as the present allocations are not sufficient due to increased costs.
- Exposure visits are to be increased in the schedule to the new areas where the farmers are adopting latest technologies.
- The new topics like organic farming / natural farming etc. are to be incorporated in the course schedule.
- The programme is very useful and help in gaining knowledge on latest technologies to dealers as the same are highly beneficial to the farming communities using of the recommended inputs.
- The programme should be continued with few modifications as per the latest technologies identified by SAU / ARS / KVK etc and also the farmers of the State.
- Involvement of DAESI dealers in extension services is helping the agriculture, dairy, poultry and animal husbandry sector farmers by way of getting services and supply of quality inputs timely, as and when a critical situation arise.
- The programme should be continued by identifying new centres to facilitate non-trained dealers who have their business in remote areas of the district.

5.3 Summary of Discussions with Stakeholders

The study laid emphasis on assessing various dimensions of DAESI programme through formal and informal discussions involving the stakeholders the in the study area. The feedback and suggestions received during this process are synthesized and summarized as under.

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S.No	Dimensions	Feedback/ Suggestion
The Programme		
1	Objective to join	<ul style="list-style-type: none"> • Obtaining license for dealership • To know more about agriculture
2	Overall impression	<ul style="list-style-type: none"> • Very good programme, knowledge gain is significant and should continue in its present form • Group cohesion has developed among the dealers • Provided a platform for close interaction among the dealers and share the experience for mutual benefit • Training sessions were very good and highly informative
Dealers		
1	Behavioural changes	<ul style="list-style-type: none"> • More confident in giving technical advice to farmers • There is always a risk to give our advice to farmers as there is a probability of failure. • More confident in dealing with input companies. • Feeling free to consult agricultural professionals without any inhibition.
2	Knowledge	<ul style="list-style-type: none"> • Better informed. • Did not add to knowledge of experienced dealers. • Legal provisions relating to agricultural inputs.
3	Quality of Extension services	<ul style="list-style-type: none"> • Confidence of the farmers on the dealers has increased
4	Impact on income level	<ul style="list-style-type: none"> • Significant increase in income after training
5	Change in the customer base	<ul style="list-style-type: none"> • More farmers are visiting shop
6	Reduction of legal problems	<ul style="list-style-type: none"> • Legal cases pertain to sale of fertilizer above MRP. Therefore, minimum profit margin for dealers be specified • Training input helped in keeping records in order • Better book keeping has reduced the fear of administration.
Perception of farmers		
1	DAESI certified input dealers as extension source	<ul style="list-style-type: none"> • Farmers repose more faith on trained dealers than Gram Sevaks • Farmers are satisfied with the DAESI dealers recommendation with regard to fertilizer

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S.No	Dimensions	Feedback/ Suggestion
		<p>applications, pest and disease management, irrigation and other problems of crops</p> <ul style="list-style-type: none"> • The DAESI dealers are easily available over phone and provide appropriate advice.
2	Impact of DAESI on farmers in terms of Knowledge, Adoption, Cropping pattern, Enhancement in production & productivity	<ul style="list-style-type: none"> • Information on new crops and fertilizers. • Know how much dose to give to various crops. • Balanced fertilizer application as recommended by the trained dealer. • Regular soil testing • Not sure to attribute the increased production to trained dealer advice only.
3	Other issue relating to impact of DAESI at farmers level	<ul style="list-style-type: none"> • Taking advantage of various government schemes such as soft loan, crop insurance, marketing at MSP.
DAESI scheme		
1	<p>Course fee</p> <p>Cost norms</p> <p>Methodology of implementation</p> <p>Suggestions for improvement</p>	<ul style="list-style-type: none"> • Fee from the dealers should be waived • Contribution from dealers towards course fee may be reduced. • Budget for the programme is insufficient and may be increased • Remuneration be paid to the programme organizers • Made mandatory for the wholesale dealers • In selection of trainees, preference be given to younger applicants • Preference be given to members / family members of those in business to ensure continuity. • Enrolment for each programme may be restricted to 25 or maximum of 30 • More number of programmes be organised every year to meet growing demand • Self-financing courses be introduced • Online programme could be started
2	<p>Venues</p> <p>Infrastructure</p>	<ul style="list-style-type: none"> • Location of the training centre did not suit everyone • Could be decentralized to the Block level • Infra-structure at nodal centers are good. These need to be strengthened at district level and other centers. • DAESI trained dealers have contributed and developed the available space of FTC - Nandyal

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S.No	Dimensions	Feedback/ Suggestion
	<p>Resource persons & facilitators, partner institutions</p> <p>Course content</p> <p>Study material</p> <p>Methodology and Evaluation procedures</p> <p>Suggestions for strengthening</p>	<ul style="list-style-type: none"> • Qualified experienced dealers as resource person. • Resource persons were appropriately chosen • Could be shortened and made more practical-oriented. • More training on operation of POS machines. • May consist two parts, one dealing with general topics and other specific to dealers' business • The programme may be made modular with options for selecting topics of interest • Should be flexible and geared to the agro-climatic conditions of the region. • Subjects taught should have local relevance • New topics such as Mushroom cultivation, Aqua culture, Fodder cultivation and Poultry may be considered for inclusion • Inclusion of sessions on marketing, legal advice and taxation • More coverage on bio-fertilizers than on chemical fertilizers • More focus on government schemes • The curriculum should also include a session of psychology to deal with suicidal tendencies among farmers • Make available copies of their presentations and notes in Hindi / vernacular language for later reference. • The participation of trainee in discussions be given weightage. • Quizzes may be taken at the end of each topic. • Regular evaluation of the programme be done to ensure quality. • Exposure visits to Research Stations/KVKs and other areas / districts where successful farmers having entrepreneurial business models, are to be increased. • In each class, one of the dealers should be asked to speak about a pre-assigned topic for ten minutes • Should include an experience sharing session with dealers and farmers coming together as that would enable the dealers to better appreciate the needs of the farmers • More field visits and practical be included by reducing topics not related to the region or the dealers

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S.No	Dimensions	Feedback/ Suggestion
		<ul style="list-style-type: none"> • Provision retest / repeat / special classes for the trainees who has attendance shortage due to some exigency • Adopt new technology. • Greater emphasis on practical work • The course design be made more flexible to sustain interest of all participant i.e. in the age group of 21 to 59 years. • Tips for use mobile and other electronic means to impart guidance to farmers • Refreshers / revisit programmes be organised regularly at least for a week every year
3	<p>Involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other Developmental programs like RKVY</p> <p>Extension Reforms in promotion of DAESI</p>	<ul style="list-style-type: none"> • KVKs, agricultural colleges, ICAR institutions, etc. should be involved • Formed an “Association of DAESI Input dealers” in the district facilitating time to time interactions with the Officers of Department of Agriculture and Allied sectors, Scientists, experts etc which helped them to update their knowledge and provide effective services to the farming communities.
4	Miscellaneous	<ul style="list-style-type: none"> • Training to Gram Sevaks • Refresher courses of short duration once in 5 years • Should be made valid to deal in pesticides as well • To start a new dealership has procedural hurdles be removed • Relaxation of eligibility requirement of Std X should be given to old time dealers. • MANAGE should take initiatives to curb unrecognised organisations imparting similar programme. • The programme should be given wider publicity i.e., in TV, Newspapers etc., to the benefit of dealers especially in isolated difficult areas. • The soil testing kits may be given to the dealers so that appropriate doses of fertilizer could be recommended. • Crash courses of short duration should be organized from time to time to disseminate new techniques and new products

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S.No	Dimensions	Feedback/ Suggestion
		<ul style="list-style-type: none">• There should be a training programme on pesticides• Batch should comprise old and new dealers for better interchange of knowledge and experience• Delays in flow of funds for the training programme created hurdles. The process should be streamlined• Delay in giving certificates (Diploma) to them after completing the programme

6. CONCLUSIONS & RECOMMENDATIONS

The following conclusions and recommendations emerge based on the results of the study:

6.1 Conclusions

- The evidences of the study clearly show that the DAESI training has resulted in significant positive behavioural changes as per the objectives of the programme resulting in significant gain in their knowledge and skills related to various dimension of modern farm technologies and farming conditions.
- The dealers have not only gained technical knowledge and skills in modern farming technology but their mental outlook (attitude) has also been positively affected through increased sensitiveness to the problems of farmers, inculcation of positive attitude towards scientists and agricultural officers, increased scientific orientation and enhanced confidence on providing advisories.
- The evidences of the study further show that farmers had observed positive changes in behaviour and attitude of dealers due to DAESI programme with respect to improvements in interaction with the farmers providing new farm inputs such as seeds, chemicals and fertilizers providing new farm information and practices.
- The DAESI training has enabled dealers to provide quality extension services including farm advisories and inputs at the last mile - village level. Thus, the DAESI has transformed the dealers into last mile agricultural extension agents.
- The evidences related to perceived high level of satisfaction of a majority of farmers on services provided by DAESI trained dealers indicate that they were able to satisfy farmers' farm information and inputs needs of a vast majority of farming community. This also shows the greater level of acceptance of DAESI trained dealers as a credible extension agents at village level.
- The study further shows that DAESI training had a significant changes in customers' base and business volume of dealers.
- The results of the study show evidences of impact of DAESI at framers' level through a significant increase in adoption of modern farming practices resulting in enhanced yield and income.
- A higher level of satisfaction level of DAESI dealers with various aspects of organisation and management of DAESI provides evidences for continuation of DAESI in the present structure of implementation even though there os enough scope for further refinements.

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- As the training is imparted at many centres across the country, MANAGE may undertake post-training assessment of trained dealers and beneficiary farmers (after six months after completion of their training) on various aspects pertaining to the training.

6.2 Recommendations

- The programme should continue in its present form with adequate budgetary provision considering the cost appreciation.
- There is an immediate need to upscale the programme as the total dealer population across the country is estimated at 2.8 lakh individuals as in 2015. So far, DAESI has penetrated and reached out to only 4 per cent of the dealer population. Partnerships and alternate modes of delivery of the course including online platforms could be looked into.
- To meet the growing demand more number of programmes may be organised annually covering the entire country.
- Implementation of the program is non-uniform across states in terms of support by respective state government departments. The program showed good results where the concerned state departments identified a senior person who could spend substantial time on this activity. With increasing enrolments in all most all states, the program needs a full time official to coordinate at state level.
- As known, infrastructure facilities have a bearing on the learning outcome. The training hall infrastructure, IT facilities for presentation, facilities for refreshments and wash rooms etc. are highly crucial for sustained interests of the participants. While identifying new centres, this may be kept in mind before a new centre is created.
- Onetime grant be given to deserving centres to improve their infrastructure and ensure quality of training.
- Availability of guest faculty is not uniform across the centres. Centres close to Big cities or well-developed places have access to senior officials from research, academic, government, industry and other departments. Interior places mostly at district head-quarters and away to such established places need differential support to attract senior and experienced persons.
- In almost all the locations, trainees were unanimous in their feedback on importance of practical sessions. Possibilities of exploring field visits as well as guest lectures in and around the vicinity of the training venue seems essential.

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- The course content be made modular with more emphasis on practical to improve the skill of dealers, especially for identification of pest and diseases, nutrition deficiency, etc.
- Attempts be made to provide digital as well as print copy of the reference materials for future reference.
- Resource persons for the programme should be drawn from various organizations - both from government institutes as well from private sector. Most dealers expressed need for serious efforts to invite senior and experienced faculty, officers and executives to conduct theory and practical sessions.
- Both the trained and trainee dealers have provided mixed feedback on exclusive courses in specific sub - sectors like seeds, chemicals, fertilisers, machinery, etc. However, academicians and scientists opined that the persons entering the input dealing business may not have much exposure to farm science. More than 50 per cent sessions (on ethics, business management, law, regulations, quality) are of general nature and common to all. Besides, different participants hail from different business verticals and learn from each other. In many cases, dealers are trying to diversify to provide more than one service to farmer. This is particularly evident from corporate retail outlets and also successful dealers. Therefore, it is recommended to continue offering one program for all in a holistic manner. However, the curriculum may be revised time to time. The flexibility in the current system of implementation is taking care of this aspect as state nodal officers and local facilitators are able to decide location specific case experiences by the choice of faculty and field visit, as per need.
- It is noted that fertiliser and agri-chemical dealerships are given to science graduates. However, agri-experts felt that the science graduates also need to be familiarised with farm science basics. Therefore, they too may be mandated to undergo DAESI training or specially designed training for them.
- There is a greater need for inclusivity and diversification into other allied sectors such as animal husbandry & dairy development, fisheries, poultry etc as the feed industry is one of the emerging businesses. The proposition of launching exclusive courses for feed industry dealers may be explored.
- Dealers are in waiting to enrol in the course and also youth are seeking opportunities to enrol in DAESI and look at it as a means for entrepreneurship. The following options are possible and worth considering.
 - There is need to offer such courses at more research and extension centres of agri-universities.
 - Agri-universities may be encouraged to evolve a separate finishing diploma course as their regular activity towards entrepreneurship development.

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- The course can be offered in mixed mode i.e. partly online and partly on campus with compulsory attendance at contact sessions. The practical sessions are to be made compulsory and they may be arranged over a week covering 3-4 practicals at a time. Theory sessions may be given online with option to clarify doubts online mode or through mobile, email, etc.
- With rapid increase in agribusiness growth, and entry of agribusiness companies establishing their own retail outlets (like Coromandel, Tatas, Nagarjuna Fertilizers etc), it is possible to offer separate diploma course for X level students by some agri-universities, preferably at their polytechnics. and through KVKs.
- DAESI is not known to many youth. There is urgent need to popularize it using mass media like TV, Radio, Newspapers, Social Media etc.
- As agri-technologies are changing rapidly and new methods are being introduced in farm practices. Many government schemes require farmers, dealers, development officials and bankers to work in tandem. Periodic refresher / interaction programmes be organised for acquainting the dealers with emerging technologies and recent policy developments. Thus, periodic short retraining (of 1-3 days) duration is recommended for all dealers.
- The current regulatory mechanism and evolving business systems are not conducive to promoting organic farming or natural farming by dealers. As government policy is inclined towards natural farming, there is need to revisit the curriculum on introducing the module on organic agriculture.
- MANAGE should constantly monitor the progress of training programmes to ensure quality. It may also undertake post training feedback from dealers and farmers.
- In most places, dealer shops are concentrated in towns and district headquarters. Dealer shops can serve farmers best if located at block level or at big villages. For providing inputs at reasonable distance to farmers, places not having dealer shops till date may be identified for issue of new licenses.

In brief, the feedback received drives to the conclusion that the DAESI programme has been successful in realising its intended objectives of supplementing and strengthening the agricultural extension system through wide network of input dealers.

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Annexure 3 Checklist for Discussions with DAESI Stakeholders

Objectives	Key Informants	Lead questions
Impact of DAESI program on behavioural changes it has made on the trained dealers	Dealer (Trained & Non- trained), Customers / Farmers, Input agency representatives, Agril officials	Has the dealer became more honest, sensitive & proactive? Do the dealer gives equal importance to the customers (small & big farmers)? Have the level of interaction with customers changed?
Impact on knowledge of input dealers, quality of Extension services provided by input dealers to farmers, extent of coverage of farmers by the trained input dealers and suggestions for improvement	Dealers (Trained & Non- trained), Farmers, Trainers, Agril officials	Is the dealer able to give correct recommendation Is the dealer able to give up-to date information to customers? What is the change in credibility of the dealer among farmers? How can the dealers be made more responsive to farmers needs?
Impact on income level of input dealers, change in the customer base	Dealer (Trained & Non- trained) Farmers	Is there any change in volume of business? What are new products added in the trade? Change in no of villages / farmers covered by the dealer? What innovative actions has the dealer taken to broad base the customers? What are the limitations in expanding the business?
DAESI as a tool for reduction of legal problems at input dealer's level	Dealer (Trained & Non- trained), Input agencies, Govt officials	What are the changes in type of legal problems faced by dealers ? Any improvement in book keeping, tax filing, inventory, etc. by the dealer? Does specific legal cases discussed in the course?

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		<p>Does the course content deals with these topics and suggestions to improve on these issues?</p> <p>How the dealers manage legal problems?</p>
<p>Perception of farmers on the dealers trained under DAESI, acceptance of DAESI certified input dealers as extension source, impact of DAESI on farmers in terms of knowledge, adoption, rational use of inputs, cropping pattern, enhancement in production, productivity and profitability</p>	<p>Farmers</p>	<p>To what extent do you rely / believe / act on the advice of the dealer?</p> <p>Do you visit the dealer for works other than inputs purchase?</p> <p>Type of information provided by the dealer?</p> <p>Type of advisories, practices received from the dealer?</p>
<p>Any other issue relating impact of DAESI at farmers level</p>	<p>Farmers</p>	<p>In what way the trained dealer is different from other dealers?</p> <p>What new initiatives have been taken by the trained input dealer?</p> <p>Are the recommendations from dealers differ with those from extn officials</p>
<p>Analyze the DAESI scheme in terms of present course fee, cost norms and methodology of implementation and suggest any modifications for improvement</p>	<p>Trained Dealer</p> <p>Officials of MANAGE</p> <p>Officials of Training institute</p> <p>Resource persons</p> <p>Agril. officials</p> <p>Input agency representatives</p>	<p>What are the strength of DAESI programme in its present form?</p> <p>What are the weakness of this programme?</p> <p>Is the cost reasonable?</p> <p>What should be done to improve the course ?</p>
<p>Analyze present Venues, Infrastructure, Resource persons, Facilitators, Partner Institutes, Course content, Study material, Methodology, Evaluation procedures and to suggest ways and means to</p>	<p>Dealer</p> <p>Officials of MANAGE</p> <p>Officials of Training institute</p> <p>Resource persons</p>	<p>Could there be a better venue to organize this DAESI programme?</p> <p>On an average, how many resource persons are involved in the programme?</p>

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<p>strengthen the same</p>	<p>Agril. officials Input agency representatives</p>	<p>What is the pedagogy adopted for the programme?</p> <p>Do all the dimensions outlined in the manual are covered in simple language?</p> <p>Suggest changes in terms of faculty, session duration, frequency, topics, etc</p> <p>Is it possible to deliver it in digital mode?</p>
<p>Focus on involvement of State Department of Agriculture, ATMA, Agri-Business Companies, Universities and other Developmental programs like RKVY, Extension Reforms in promotion of DAESI</p>	<p>Dealers, Officials of govt schemes, companies</p>	<p>In what way your organization can facilitate / supplement DAESI programme?</p> <p>How different developmental programmes be dovetailed for more effective implementation of DAESI programme?</p>

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Annexure 4 Interview Schedule - DAESI Dealers

**Evaluation and Impact Assessment of
“Diploma in Agricultural Extension Services for Input Dealers” (DAESI)**

Interview Schedule for DAESI Dealers

State Code

ID Number:

I GENERAL

1. Name

2. Name of the Company /Shop:

3. Sex: Male /Female

4. Contact Number:

5. Village/Town: ----- 6. Block: ----- 7. District: -----

8. Age in completed years: __ _ years

9. Highest Educational qualification (give code from below): __

(Below Secondary - 1; Secondary but below Hr. Sec. - 2; Hr. Sec. but below graduate - 3; Graduate & above - 4)

10. Total Experience in dealership : ----- years

11. Products/services offered (tick multiple boxes, if more than one)

a. Seeds	
b. Agri chemicals (Pesticides, etc)	
c. Fertilizers	
d. Agri Machinery/ Equipment	
e. Agri services	
f. Others (specify)	

12. Years of farming experience: __ _ years

13. Are you a) a first-time dealer? Yes / No

b) from a family of dealers? Yes / No

14. Total annual business turnover / Total sales (2017-18) : Lakh Rs. -----

15. Total annual profit: Lakh Rs. -----

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II DAESI TRAINING

16. Year of Completion of DAESI Training: _____

17. What were the main reasons for joining DAESI programme:

Reasons	Very Low Extent	Low Extent	Medium Extent	High Extent	Very High Extent
a) To gain more knowledge of agriculture					
b) To provide better services to farmers					
c) To learn about the legal requirements					
d) To learn business communication skills					
e) To learn interpersonal skills					
f) To improve business volume					
g) To obtain/retain license for business					
h) Request of Agricultural Dept officials					
i) Any other (specify)					

18. How was your overall learning experiences with DAESI (Tick one):

Excellent	Very Good	Average	Bad	Very bad

19. What is the extent of gain in knowledge (compared to your pre-DAESI level) and importance of topics in improving your business and providing services to the farmers?

Knowledge areas	Extent of gain in knowledge					Extent of importance for business and services to farmers				
	1	2	3	4	5	1	2	3	4	5
a) Agro-ecological										
b) Soil Health Management										
c) Rain fed Farming										
d) Seed and seed production										
e) Irrigation Techniques and management										
f) Weed Management										
g) Farm Implements and machinery										
h) Pests and diseases control										

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i) Crop Production technologies										
j) Input related Acts, Rules and Regulations										
k) Major Schemes related to Agricultural sector										
l) Extension and Communication Methods										
m) Optimal use of inputs										

*1-Very low, 2- Low, 3- Medium, 4- High, 5- Very High

20. What is the extent of gain in skill (compared to your pre-DAESI level) in the following major areas due to DAESI ?

Areas of change	Extent of Change				
	V.Low	Low	Medium	High	V. high
a) Soil sampling					
b) Identification of deficiency symptoms of major nutrients					
c) Interpretation of soil test report					
d) Seeds treatment techniques					
e) Drip and sprinkler irrigation system					
f) Operation of farm implements and machineries					
g) Operation & maintenance of plant protection equipment					
h) Identification of plant pests					
i) Identification of plant diseases					
j) Identification of useful and harmful insects					
k) Handling of fertilizers					
l) Handling of pesticides					
m) Major crops and cultivation practices					
n) Use of computer for market information					
o) Development and delivery of messages through mobiles					
p) Extension methods					

21. What is the extent of change in your attitude and practices (compared to your pre-DAESI level) in the following major areas due to DAESI?

Areas of change	No change	Extent of Agreement				
		Very Low	Low	Medium	High	Very High
Attitudinal changes						
a) I have become more sensitive to the problems of farmers						

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b) Training inculcated greater sense of ethics in business						
c) My confidence in providing advises has increased						
d) I view myself not only as farm inputs business man but also as a provider of agricultural extension services						
e) My linkages with SAUs, KVKs and Department officials have increased						
f) Scientific orientation to agriculture has increased						
g) Positive attitude towards scientists&agri-officials						
h) More confident of dealing departmental or vigilance officials coming for inspections						
Changes in practices						
i) Providing of new farm information and practices						
j) Providing new inputs such as seeds, fertilizers, chemicals						
k) Improvements in interaction with the farmers						
l) Providing advises on farm produce price and marketing						
m) My knowledge about the farmers issues has improved						
n) Providing information on government schemes						
o) Increased use of mobile to advise farmers						
p) Providing literature on crop cultivation						

22. What are the new advisory or technologies you have provided to the farmers due to your DAESI training ?

New information (advices) /technologies	Advices given to farmers	
	Yes	No
a) Information about new seeds		
b) Information on new crops to be grown		
c) Information on method of application of fertilizer		
d) Information on liquid fertilizers		
e) Information on micronutrients		
f) Information on bio-fertilizers		
g) Information on bio-pesticides		
h) Advisory on farm chemicals for control of diseases or pests		
i) Information on herbicides		

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j) Information on soil testing/soil health card		
k) Information on water testing		
l) Information on irrigation -drip , etc		
m) Information on farm implements		
n) Information on harvesting/value addition		
o) Information on sale of produce		
p) Information on government agricultural schemes		
q) Information on market price and sale of farm produce		

23. What are the new farms inputs did you provide to the farmers due to the training ?

Inputs	Inputs provided to farmers	
	Yes	No
a) New seeds		
b) New brands of fertilizers		
c) Liquid fertilizers		
d) Micronutrients		
e) Better and safe chemicals for control of pests and diseases		
f) New herbicides		
g) Bio-fertilizers		
h) Bio-pesticides		
i) New farm implements		
j) Any other items		

24. a) Have you experienced any legal problem? Yes / No

b) If yes, whether DAESI helped you solve the problem? Yes / No

c) Can you give one or two cases of such experience?

25. Extent of changes in your business due to DAESI (since completion of DAESI)

Areas of change	Below 10 %	11 to 20%	21to 30%	31 to 40%	41 to 50 %	More than 50%
Annual sales						
Profit to the company						
Number of villages covered						
Number of farmers covered						

26. Can you quantify the following aspects of your business Before and After DAESI training

Key business indicators	Before DAESI	After DAESI
Diversification of products		
a. Seeds (Varieties) - Number of products		
b. Seeds (Hybrids) - Number of products		

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c. Seeds (GM) - Number of products		
d. Number of Crop Protection Molecules		
e. Number of Herbicides		
f. Number of Farm implements		
g. Number of Biofertilizers		
h. Number of Biopesticides		
i. Number of Organic Fertilizers		
j. Number of Micronutrients		
Other aspects		
k. Business Volume (Total Sales in Lakh Rs)		
l. Number of farmers turning up for advices		
m. Number of advices per day during peak season		

*Before indicates about THREE years before and After is the current scenario

27. Your opinion on various aspects of organization of DAESI training?

Process	Excellent	Very Good	Fair	Inadequate	Very inadequate
a. Publicity for DAESI					
b. Ease of selection & enrolment process					
c. Venue of the program (convenience in reaching)					
d. Infrastructure facilities at the venue (space, furniture, etc.)					
e. Time schedule of sessions					
f. Appropriateness of course curriculum					
g. Adequacy (volume) of course contents					
h. Teaching methods used - Theory					
i. Teaching methods used - Practical's / Field visits					
j. Technical knowledge of trainers					
k. Human relations skills of trainers					
l. Evaluation procedure					

28. Do you want any reduction in the duration of programme ? Yes / No

29. If yes, then what should be the ideal duration in months ? ----

30. Do you want subject matter specific (such as seed, fertilizers, pesticides, etc) training to target dealers separately and reduce the duration of training ? Yes / No

31. If yes, what should be the duration of each training? --- days

32. What are the suggestions you offer for improvements in DAESI programme as well as enrolment of other dealers?

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Annexure 5 Interview Schedule - Non Dealers

**Evaluation and Impact Assessment of
“Diploma in Agricultural Extension Services for Input Dealers” (DAESI)**

Interview Schedule for Non - DAESI Dealers

State Code:

ID Number:

1. Name

2. Name of the Company /Shop:

3. Sex: Male /Female

4. Contact Number:

5. Village/Town: ----- 6. Block: ----- 7. District: -----

8. Age in completed years: __ __ years

9. Highest Educational qualification (give code from below): __

(Below Secondary - 1; Secondary but below Hr. Sec. - 2; Hr. Sec. but below graduate - 3; Graduate & above - 4)

10. Total Experience in dealership : __ __ years

11. Products/services offered by you (tick multiple boxes, if more than one)

a. Seeds	
b. Agri chemicals (Pesticides, etc)	
c. Fertilizers	
d. Agri Machinery/ Equipment	
e. Agri services	
f. Others (specify)	

12. Years of farming experience: __ __years

13. Are you a) a first-time dealer? Yes / No

b) from a family of dealers? Yes / No

14.Total annual business turnover / Total sales (2017-18): Lakh Rs _____

15.Total annual profit: Lakh Rs _____

16. Are you aware of DAESI programme offered by MANAGE? Yes / No

17. If 16 is yes, how did you come to know about DAESI? (check as many options as applicable)

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- a. Fellow dealers
- b. Officials of Department of Agriculture
- c. DAESI facilitators
- d. Representatives of agri- input companies
- e. News paper advertisements
- f. Television
- g. Others specify

17h. Do you agree that DAESI training will increase your knowledge of farm technologies which will improve your business ?(tick one choice)

Very strongly Agree	Strongly Agree	Medium Agree	Strongly Disagree	Very Strongly Disagree
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18. What are the reasons for not yet enrolling in the DAESI programme:

Reasons	Very strongly Agree	Strongly Agree	Medium Agree	Strongly Disagree	Very Strongly Disagree
a) Programme duration is very long and I have no time					
b) I already have license as I am having requisite qualifications					
c) Lack of manpower and I cannot absent myself from the shop					
d) Timing of the training is not suitable					
e) The venue is far away and not convenient for me					
f) I deal with only one or two inputs (such as seed or pesticides) and I do not need training in all aspects of agriculture					
g) Feedback from trained dealers has not been encouraging					
h) I do not see any benefits of the programme for my business					
i) Farmers cannot differentiate between a trained and a non-trained dealer and hence no need					
j) Any other reasons (specify)					

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19. What are the major areas of improvements that would motivate you to enroll for DAESI?

Areas of Improvement	Very strongly Agree	Strongly Agree	Medium Agree	Strongly Disagree	Very Strongly Disagree
a) Reduce the duration of the programme					
b) Reduce the fee of the programme					
c) Make input specific training with less duration					
d) Develop video based /online distance education based training					
e) Make the venue easily accessible					
f) Other reasons (specify)					

20. Any other suggestions / comments?

Evaluation and Impact Assessment Of “Diploma In Agricultural Extension Services For Input Dealers” (DAESI)

Interview Schedule for Farmers

ID Number :

1.Name of the farmer:

2.Sex : Male /Female

3.Contact Number :

4. Village----- 5. Block----- 6.District -----

7.State-----

8. Age in completed years :-----

9. Highest Education : -----

10. Size of land holdings : Irrigated ----- acres & Rainfed----- acres

11. Major Crops grown during 2017

S. No	Season	Crops grown	Area	Yield per acre	Net returns per acre
1.	Kharif 2017				
2.	Rabi 2017				
3.	Plantation crops				

12. What are the sources for getting technological information about cultivation of crops ?

Sources of information	Extent of Receiving Information				
	Very Low	Low	Medium	High	Very High
a) Friends/ Neighbours/ Progressive farmers					
b) Inputs dealers					
c) State Dept extension officers					
d) KVK scientists					
e) Radio					

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Sources of information	Extent of Receiving Information				
	Very Low	Low	Medium	High	Very High
f) Television					
g) News papers					
h) Others (specify)					

13. How many dealers do you contact to meet the inputs requirements of your farm?-----

14. Name of the main dealer from whom you purchase your farm inputs :-----

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15. Are you aware of the DAESI training programme undertaken by this dealer?
Yes / No

16. If 15 is yes, have you seen any changes in the behavior and practices of dealer after his training or after the programme ? Yes / No

17. If 16 is yes, what is the extent of change?

Areas of change	No change 0%	Extent of Agreement				
		Very Low	Low	Med-ium	High	Very High
a) Providing of new farm information and practices						
b) Providing of new inputs such as seeds, fertilizers/chemicals etc						
c) Improvements in interaction with the farmers						
d) Providing advises on farm produce price and marketing						
e) Dealer's knowledge about the issues faced by the farmers has improved						
f) Providing information on government schemes						
g) Increased use of ICT (mobile, SMS etc) to advise farmers by the dealers						
h) Providing literature on crop cultivation						

18. What are the new advisory or technologies you received (as well as adopted) from the dealers due to his training (during 2017-18) ?

New information(advises) /technologies	Advises received		Advises adopted	
	Yes	No	Yes	No
r) Information about new seeds				
s) Information on new crops to be grown				
t) Information on method of application of fertilizer				
u) Information on liquid fertilizers				

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v) Advisory on farm chemicals for control of diseases or pests				
w) Information on herbicides				
x) Information on soil testing/soil health card				
y) Information on water testing				
z) Information on irrigation -drip , etc				
aa)Information on farm implements				
bb)Information on harvesting/value addition				
cc)Information on sale of produce				
dd)Information on government agricultural schemes				
ee)Information on market price and sale of farm produce				

19. What are the new farms inputs did you purchase from the dealer (the dealer in whose shop the farmer is being interviewed during 2017-18) ?

Inputs	Purchased	
	Yes	No
a) Purchase of new seeds		
b) Purchase of new brands of fertilizers		
c) Purchase of liquid fertilizers		
d) Purchase of better and safe chemicals for control of pests and diseases		
e) Purchase of herbicides		
f) Purchase of farm implements		
g) Any other items		

Note: If the dealer is not dealing with some inputs mentioned in question 19, then you can put “Not Applicable” (NA) against such inputs.

20. Do what extent are you satisfied with of overall extension services received from your dealer ? (Tick)

Very Highly satisfied	Highly satisfied	Medium level satisfaction	Low extent satisfaction	Very Low extent satisfaction
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21. Has the yield of crops and income changed due to better advices received by you from your dealer during 2017-18 ?

Yes/ No/ I do not know

22. If 21 is Yes, what are the extent of changes?

Areas of change	No change 0%	1 to 10%	11 to 20%	21 to 30 %	31 to 40 %	41 to 50 %
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a. Diversification of crops						
b. Reduction in cost of inputs						
c. Increase in yield of crops						
d. Increase in income						

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Annexure 7 Glimpses of DAESI field Survey - Gallery

With DAESI Dealers in East Godavari District



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With DAESI Dealers in Guntur District



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Varsha Team First meeting With MANAGE Team on October 9, 2018



With DAESI Dealers & Farmers for Pilot Testing at Kadthal in R.R. Dist, Telangana (Oct28,2018)



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With DAESI Dealers in Kurnool District



With Tagore Naik, JDA & facilitators



With Ms. Umamaheswaramma, PD, ATMA & Facilitators

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With DAESI Dealers in Agra District, UP



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With DAESI Dealers in Barielly District, UP



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With DAESI Dealers in Gorakhpur District, UP



Final Report - Evaluation of DAESI

With DAESI Dealers in Jaipur



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FGD at KVK, Banasthali, Rajasthan



With DAESI Dealers at Sawai madhopur, Rajasthan



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With DAESI Dealers at Tonk, Rajasthan



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DAESI Field work in Odisha



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With DAESI Dealers in Odisha



at Dhenkanal



• Data collection at Dhenkanal

For more information on this report, please contact

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