A Report on

"Capacity Building Training Programme for Agricultural Value Addition and Marketing Linkages" for The Ministry of Trade & Industry (MoTI) Officials of Malawi

April 01 -April 10, 2025

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About Triangular Development Cooperation

On 2nd May 2022, India and Germany signed a **Joint Declaration of Intent** on implementing Triangular Development Cooperation (TrC) projects. This declaration was formalized during the Inter-Governmental Consultations held in **Berlin**, marking a significant step towards fostering international cooperation for sustainable development.

Triangular Development Cooperation (TrC) is a collaborative development approach involving three key partners: Germany (a traditional donor country), India (a pivotal partner country with relevant expertise and experience), and Malawi (a beneficiary country). This model combines financial resources, technical know-how, and local insights to address development challenges more effectively and sustainably.

In the context of the India-Germany-Malawi partnership, TrC enables the joint implementation of innovative solutions—such as the Agri-Business Incubator Model for Women in Agriculture and Food Systems—by leveraging the strengths and experiences of all three nations.

About the Comprehensive Training Program

As part of the Triangular Development Cooperation (TrC) project between India-Germany-Malawi, a "Comprehensive Training Program on Agricultural Value Addition, Innovation, and Market Readiness in India" was proposed to strengthen the value addition sector for agricultural commodities in Malawi. The Program was sponsored by the Ministry of Trade and Industry, Government of Malawi. It aimed to provide learning opportunities through expert sessions, hands-on training, and field visits to leading value addition institutes across India. The initiative was designed to build capacity, promote innovation, and enhance market readiness for agricultural stakeholders in Malawi.

Key focus areas included value addition technologies, agribusiness trends, innovation, financial management, and entrepreneurship promotion. Participants also gained exposure to India's industrial practices, government support initiatives, and strategies for empowering women entrepreneurs. This initiative was expected to build capacity and promote sustainable agribusiness development in Malawi.

Bringing together the expertise of three leading Indian institutions — MANAGE, AIC-ADT Baramati Foundation, and AIC Banasthali Vidyapith Foundation — this specialized training program was designed to empower officials from the Department of SMEs, Cooperative & Value Addition (Ministry of Trade & Industries, Government of Malawi). The initiative focused on enhancing their capabilities in agricultural value addition, fostering innovation, strengthening market readiness, and promoting entrepreneurship development.

Structure of the Comprehensive Training Program

The program spanned 20 days across three different states in India under three leading Indian institutions — MANAGE - Hyderabad, AIC Banasthali Vidyapith Foundation - Jaipur, and AIC-ADT Baramati Foundation - Pune, providing participants with unique perspectives and hands-on experience in various aspects of agricultural value addition. Additionally, it offered valuable insights into community-level agri-entrepreneurship development in India.

During the first 10 days (April 1–10), the "Capacity Building Training Programme for Agricultural Value Addition and Marketing Linkages" was conducted at MANAGE, Hyderabad. This was followed by a 5-day training program (April 11–15) at AIC Banasthali Vidyapith Foundation, Jaipur, titled "Technical Exchange Program on Innovation, Value Addition, and Women Entrepreneurship."

The final phase consisted of a 5-day hands-on training program (April 16–20) on "Agricultural Value Addition, Packaging, Branding, and Marketing," conducted at AIC-ADT Baramati Foundation, Pune.

Training Aim & Learning Objectives offered under this Comprehensive Training Program

This comprehensive training initiative provided a blended learning experience, combining theoretical sessions, hands-on training, practical field visits, and interactive activities. The program covered (but was not limited to) the following key areas:

- Indian value addition technologies emerging in the agricultural and allied sectors.
- Value addition techniques for millets, oilseeds, cassava, dairy, and other agricultural commodities.
- Insights into local value-adding enterprises and technology suppliers.
- Understanding of agri-business trends and innovations.
- Exploration of the scope of value addition in agriculture and allied sectors.
- Financial management for agribusiness and promotion of sustainable practices.
- Development of competencies for building strong networks to support agripreneurship.
- Understanding of government support for small-scale value addition enterprises, demonstrated through successful initiatives and practical examples.

- Exposure to industrial processes, innovation-driven enterprises, and business innovation practices.
- Enhancement of officers' capacities in developing policies and strategies to support women entrepreneurs and promote economic growth.
- Understanding of how institutional support fostered entrepreneurship and the growth of small and medium enterprises (SMEs).

Participants of the Training Program

A total of five officials from Department of SMEs, Cooperatives, and Value Addition, Malawi, took part in the training program.

The information regarding the participating officials is provided below-

1. Ms. Jacinta Chipendo - Deputy Director of Value Addition
2. Mr. Geoffrey Chimowa - Acting Chief Value Addition Officer
3. Mr. Master Mzuzi - Principal Value Addition Officer
4. Ms. Lisbert Kumatso - Principal Enterprise Development Officer
5. Mr. Roy Kalima - Enterprise Development Officer

About the "Capacity Building Training Programme" conducted at MANAGE, Hyderabad

As part of "Comprehensive Training Program on Agricultural Value Addition, Innovation & Market Readiness in India", National Institute of Agricultural Extension Management (MANAGE), Hyderabad has conducted 10 days "Capacity Building Training Programme for Agricultural Value Addition and Marketing Linkages" for officials of Ministry of Trade & Industry, Malawi.

Objectives of this Capacity Building Training Programme

In order to strengthen the skills and knowledge of participants, this Capacity Building Training Program has been designed with a focus on key aspects of value addition, business management, and entrepreneurial leadership in the agricultural sector. The specific objectives of the program are as follows:

- To explore emerging Indian value addition technologies in agriculture and allied sectors.
- To understand current trends and innovations in agribusiness.
- To identify the scope and opportunities for value addition in agriculture and allied sectors.

- To learn financial management strategies for agribusiness and promote sustainable practices.
- To acquire essential skills required for successfully running an enterprise.
- To develop risk management abilities and agri-entrepreneurial leadership competencies.
- To familiarize participants with various revenue generation models for agri-business.
- To build competencies for creating strong networks to support agripreneurs.
- To derive key learnings from case studies of successful agripreneurs.

Structure of this Capacity Building Training Programme

During the program, a total of 11 official visits were conducted to various National, and State institutes in Telangana, working in the field of marketing and value addition of agricultural products. Additionally, two online sessions with value addition experts were organized for the participants at MANAGE.

Inaugural Session

The inaugural session of the program was held on April 1st, 2025. The Chief Guest for the session was Dr. Sagar Hanuman Singh, IPoS, Director General, MANAGE, Hyderabad. Mr. Shankar Kumar, Advisor, Private Sector Development, representing GIZ (German Development Cooperation), also graced the event. Dr. Saravanan Raj, Director (Agricultural Extension), MANAGE, and CEO, MANAGE–Centre for Innovation and Agripreneurship (CIA), warmly welcomed the Chief Guest, GIZ representative, and all participants. Dr. Saravanan Raj also shared the background of the Germany-India-Malawi Triangular Cooperation Project and highlighted the key milestones achieved so far under the project. Dr. Sagar Hanuman Singh delivered the inaugural address and officially inaugurated the program.

Following the inaugural address, the participants introduced themselves and conveyed their expectations from the program, which set a collaborative and engaging tone for the upcoming sessions. The inaugural session concluded with an air of enthusiasm and eagerness among all attendees, laying a strong foundation for the program ahead.

Visits conducted during the Training Program

Visit-1

Venue - Visit to the Nutrihub, Indian Council of Agricultural Research – Indian Institute of Millets Research (ICAR-IIMR).

Coordinator Name- Ms. V. Usha Sree & Ms. Priyanka

Introduction

The **Indian Institute of Millets Research (IIMR)**, located in Hyderabad, is a premier research institution dedicated to the cultivation, processing, and utilization of millets. Recognized as a Global Institute of Excellence on Millets, IIMR plays a crucial role in promoting sustainable agriculture, ensuring food security and supporting millet-based entrepreneurship.

Objectives

- Conducting research to improve millet crops such as sorghum, pearl millet, and finger millet.
- Promoting millet-based food products for better nutrition.
- Providing training and support to farmers and entrepreneurs.

On April 1, 2025, we had the privilege of visiting the Millet Processing Center at Prof. Jayashankar Telangana Agricultural University alongside participants from Malawi. Hosted by Dr. J. Stanley, Principal Scientist & Director, Nutrihub, the visit provided an in-depth understanding of millet cultivation, processing, and value addition—critical pillars for sustainable agriculture and food security.

Types of Millets

During this visit, participant learned about eight different types of millets and their unique characteristics:

1. **Sorghum** (*Sorghum bicolor*)

    - Drought-tolerant and grows under residual moisture.
    - A multipurpose crop used for grain, fodder, feed, and biofuel.

2. **Pearl Millet** (*Pennisetum glaucum*)

    - A short duration crops tolerant to drought and high temperatures.
    - Rich in essential nutrients, including iron and zinc.

3. **Finger Millet** (*Eleusine coracana*)

    - Highly productive and tolerant to bird damage.
    - Grains are rich in calcium, iron, and zinc with a high shelf life.

4. **Barnyard Millet** (*Echinochloa crusgalli*)

    - Rich in fiber and essential nutrients.

5. **Foxtail Millet** (*Setaria italica*)

    - A short-duration crop with protein- and fiber-rich grains.
    - Beneficial for diabetics as it helps maintain glucose levels.

6. **Little Millet** (*Panicum sumatrense*)

    - Has two adaptive types, Nana and Robusta.
    - Grains are rich in protein and micronutrients.

7. **Kodo Millet** (*Paspalum scrobiculatum*)

    - Adapted to grow in hilly regions and is tolerant to salinity.
    - Rich in fiber and magnesium.

8. **Proso Millet** (*Panicum miliaceum*)

    - A short-duration, early maturing crop.
    - Grains are rich in protein.

Millet Incubation Centre

After learning about millets, participant visited the Incubation Millet Centre, where Dr. J. Stanley gave a presentation on value addition in millets and the incubation facilities at Nutrihub, ICAR-IIMR. He explained how millets can be integrated into daily life and how farmers cultivate them. The centre provides both online and offline training programs, lasting 2-3 days, to support farmers and entrepreneurs. Following

the presentation, participant observed various millet-based products developed by startups, highlighting their practical applications and commercial potential.

Millet-Based Initiatives and Food Processing Units

The IIMR operates multiple millet-based initiatives and food processing units. The processing system works with 5 quintals of millets at a time, producing mixed millet powder used for various food products.

Nutribar Production Line

The production of Nutribar involves the following steps:

- Selection of ingredients and weighing.
- Syrup preparation and mixing with other ingredients.
- Sheeting, cutting, and cooling.
- Final packaging of the product.

Conclusion

The visit to the IIMR Millet Research Centre provided valuable insights into millet cultivation, processing, and value addition. The institution plays a significant role in promoting millets as a sustainable and nutritious food source, supporting farmers and entrepreneurs in the millet industry. The initiatives and training programs offered by IIMR contribute to the development of millet-based businesses, ensuring food security and economic growth.

Visit-2

Venue - Visit to Farm Machinery Implementation – J-Farm & Product Testing Center, Rajendranagar (Hyderabad).

Coordinator Name- Ms. V. Usha Sree & Mr. Arvind Singh Rao

Introduction

As part of the Capacity Building Training Programme for MoTI officials from Malawi, a field visit was conducted on April 2, 2025 to the ***J-Farm & Product Testing Center***, Rajendranagar, Hyderabad.

Objective of the Visit

The visit aimed at familiarizing participants with advanced farm mechanization techniques, integrated farming models, and skill development initiatives in India.

Welcome and Orientation

Dr. A.S. Rao, Resident Advisor of the J-Farm & Product Testing Center, welcomed the delegation. A detailed presentation was shared, covering the background, objectives, and evolution of J-Farm.

Overview of J-Farm

J-Farm, an initiative by TAFE (Tractors and Farm Equipment Ltd.), began its journey in 1964 in Chennai as a pioneering effort to transform Indian agriculture through integrated farming and skill development. Spread across 200 acres, it was envisioned as a model to empower smallholder farmers with sustainable solutions and modern techniques. Over the years, this vision expanded—with new J-Farms being set up in Bhawanimandi (Rajasthan) in 2016, Hyderabad in collaboration with Professor Jayashankar Telangana Agricultural University (PJTAU), Hyderabad in 2022, and most recently in 2024 at Vasantrao Naik Marathwada Krishi Vidyapeeth (VNMKV) University, Parbhani, Maharashtra, through public-private partnerships. More than just farms, these centers became living classrooms—demonstrating the use of advanced machinery, showcasing innovations like drone seeding, and building rural capacity. In partnership with prestigious institutions like

Indian Institute of Rice Research (IIRR), Banaras Hindu University (BHU), and state agricultural universities, J-Farm has become a beacon of agri-innovation, blending tradition with technology to uplift the rural economy and contribute to the mission of doubling farmers' income.

Field Visit Highlights

The field visit to J-Farm unfolded like a live demonstration of the future of farming—beginning with the awe-inspiring farm automation unit, where technology seamlessly managed operations that once relied heavily on manual labor. As we walked through, we witnessed how smart systems are transforming routine agricultural tasks into precise, efficient processes. The excitement grew as we approached the paddy field, where a drone hovered above, skilfully seeding the land—a perfect example of innovation meeting tradition.

The journey continued into the Product Training Centre, where the mechanical heart of agriculture was revealed. We explored the engine section showcasing various tractor models, moved through the hydraulic section displaying machines that power tractor operations, and finally observed the intricate transmission systems with gearboxes and clutch assemblies—all pieces of a powerful puzzle that keeps modern farming moving.

Learnings and Takeaways

- Insights into integrated farming systems and mechanization models aimed at smallholder empowerment.
- Understanding of how drone technology is revolutionizing seeding and crop management.
- In-depth exposure to farm machinery components, enabling better understanding of their operations and applications.
- The importance of J-Farm initiatives in addressing labor shortages and enhancing efficiency in agriculture.

Conclusion

The visit to the J-Farm & Product Testing Center was an enriching experience. It provided valuable insights into the latest trends in farm mechanization and the vital role of innovation and partnerships in promoting sustainable agricultural practices. The exposure gained during this visit is expected to foster knowledge exchange and capacity building for the visiting officials from Malawi.

Visit-3

Venue - Visit to Millet Processing Center, Prof. Jayashankar Telangana Agricultural University (PJTAU), Rajendranagar

Coordinator Name- Ms. V. Usha Sree & Mr. Arvind Singh Rao

Introduction

As part of the Capacity Building Training Programme for MoTI officials from Malawi, a field visit was conducted on April 2, 2025 to the **Millets Processing and Incubation Center – Prof. Jayashankar Telangana Agricultural University (MPIC-PJTAU),** Rajendranagar, Hyderabad.

Objective of the Visit

The visit aimed to understand the millet value addition process and explore the infrastructure and technology used in millet-based product development.

Welcome and Orientation

The officials were received and welcomed by Ms. Paul Pradeepa Roberts, Research Associate, Millets Processing and Incubation Center (PJTAU).

The visit began with a brief orientation and was followed by a structured tour of the millet processing facility.

Genesis of Millet Processing Unit

The Millets Processing Unit at PJTAU is initiated in 2013 by the Ministry of Food Processing Industries (MoFPI) under the PMFME scheme. The unit was officially established in 2014 under the Rashtriya Krishi Vikas Yojana (RKVY) project. The unit works on both major and minor millets and is known for commercializing over 100 millet-based value-added products such as millet pasta, biscuits, and noodles, thereby contributing significantly to millet entrepreneurship and nutritional security.

Field Visit Highlights

The visit began at the Primary Processing Area, where the foundational work of cleaning, dehulling, and grading millet grains is carried out. Machines like **Centrifugal and Abrasion Type Dehullers** efficiently separated husks from grains, while the **Rava Making Machines**—both Plate Mill and Flour

Mill types—converted millets into semolina and flour. From there, the tour moved into the *Secondary Processing Area*, where raw millets were transformed into delightful products. We observed the **Cold Excluded Machine** turning millet flour into pasta and noodles, the **Planetary Mixer** blending ingredients for snacks, and the **Biscuit Dropping Machine** automating cookie production.

Technologies like the **Vacuum Fryer**, **De-stoner**, and **Gravity Separator** illustrated how hygiene, quality, and efficiency are maintained. Finally, the team explored the *Packaging and Product Selling Area*, where the processed items were professionally packed and prepared for commercialization—an inspiring look at how millet value chains can be built and scaled.

Learnings and Takeaways

- A detailed understanding of the millet value chain from grain to consumer-ready products.
- Familiarity with primary and secondary millet processing machinery and their respective roles.
- Insights into the structure and operations of incubation centers that promote agri-based entrepreneurship.
- Exposure to innovative millet-based products that cater to modern food trends while maintaining nutritional value.

Conclusion

The visit to the Millets Processing and Incubation Center at PJTAU offered a practical learning experience in the field of agricultural value addition. It showcased how technological interventions and institutional support can drive the millet revolution in India. The participants from Malawi found the experience enriching and relevant to replicable models of agro-processing in their own contexts.

Visit-4

Venue - Value Addition of Oilseeds – Visit to Indian Council of Agricultural Research - Indian Institute of Oilseeds Research (ICAR-IIOR), Rajendranagar

Coordinator Name- Ms. V. Usha Sree & Ms. Maithri K.

Introduction

On April 2, 2025 visit was conducted at **ICAR – Indian Institute of Oilseeds Research**, a leading institute under the Indian Council of Agricultural Research dedicated to the research and development of oilseed crops in India. The institute focuses on enhancing productivity, sustainability, and value addition in crops such as groundnut, sunflower, safflower, soybean, sesame, and castor.

Objective of the Visit

To understand the scientific processes involved in oilseed value addition and how the research outcomes support production, processing, and marketing efforts in India.

Overview of the Visit

The visit began with a detailed introduction to ICAR-IIOR's work on nine major oilseed crops, out of which six are currently under active value addition initiatives. The discussion covered crop productivity, nutritional benefits, and how different by-products are derived from oilseed processing.

Then, participants were taken to the oil processing unit where they observed how oil is extracted and how oil cakes and other residues are utilized efficiently. The practical exposure to this processing unit provided a better understanding of the scientific and commercial aspects involved.

Key Learnings:

- Practical exposure to oilseed value chains and processing
- Significance of scientific methods in oil extraction and by-product utilization
- Understanding oil consumption trends and public health relevance

Conclusion

The visit concluded with an informative session that clarified the differences between oil and fat, discussed the health benefits of oils, and provided insights into chemical structure of oil, and even a detailed report on state-wise consumption of oils. It gave a holistic understanding of oils from farm to table.

Visit-5

Venue - Value Addition of Dairy & Products through Cooperative Society – Visit to Mulkanoor Cooperative Society, Mulkanoor, Bheemdevarapalle.

Coordinator Name- Ms. Maithri K.

Introduction

On April 3, 2025 visit was conducted at **Mulkanoor Cooperative Society**, a well-established rural cooperative society established in 1956, that supports over 18 villages with a wide range of services including dairy, rice processing, credit, storage, and value addition. It is recognized for its integrated approach and inclusive participation, especially of women.

Objective of the Visit

To learn how cooperative models enhance value addition, empower farmers, and support community-level economic development.

Overview of the Visit:

All participants received a warm welcome at Mulkanoor, and the session began with a presentation on the cooperative's origin, vision, and key services. The Chairman shared insights on how this cooperative stands apart by offering comprehensive support—from processing infrastructure to marketing services.

Participants from Malawi discussed the functioning of cooperatives in their own country and highlighted challenges they face, such as lack of machinery maintenance and quality control. The contrast between their experience and Mulkanoor's model—where farmers are actively supported—stood out as a key learning point. They also visited their rice mills, packaging units, and storage facilities,

which demonstrated how organized systems can help reduce post-harvest losses and improve product value.

The visit to the dairy unit was particularly impactful. The entire unit was managed by women farmers and Self Help Group (SHG) members who were responsible for milk collection, temperature regulation, packaging, and local marketing. Their work has helped build leadership and economic independence for many women in the area.

Key Learnings:

- Importance of institutional support in cooperative models
- Role of collective infrastructure in improving product quality and marketing
- Women's participation in dairy value chains as a tool for empowerment

Conclusion:

This visit demonstrated how rural cooperatives can function as comprehensive support systems for farmers. The involvement of women and the integrated nature of Mulkanoor's operations set a strong example for community-led development.

Visit-6

Venue - Value Addition of Meat & Products – National Research Centre on Meat (NRCM), Chengicherla.

Coordinator Name- Mr. Saurabh Kumar & Ms. Jeena Paul

Introduction

National Research Centre on Meat (NRCM) is a premier institution of meat research to solve the problems and face challenges of meat and allied sectors development. Its objective is to develop a modern organised meat sector through meat production, processing and utilization technologies to serve the cause of meat animal producers, processors and consumers.

A visit was conducted on April 04, 2025 for the participants at National Research Centre on Meat (NRCM). Dr. S. B. Barbuddhe, Director, ICAR – National Meat Research Institute (NMRI) addressed the guests and introduced about the Institution. Dr. Muthukumar, principal scientist, ICAR-NMRI presented the activities and research carried by the institute. Visited the Centre for Agribusiness Incubation, where NRCM provides incubation support for startups working on meat value addition. Later visited different processing units of NRCM, and also experienced the live demo of meat value addition.

Meat Value Chain

India is having a 10.7 % of global livestock contribution with a 535 M of livestock population. India places first position in number of buffalo, second in goat, third in sheep and fifth position in poultry. The thematic areas focused by NRCM includes:

- Organic meat production: Animals grown without any chemical exposure and ensured clean, quality, and traceability.
- Value addition: Preparation of novel meat products.
- Packaging: Implementing eco-friendly packaging methods with extended shelf life.

Challenges

The animals are reared in mainly three ways; purely grazing (no feed), semi-intensive (Grazing feed), and intensive (Purely feed).

- Reduction in body weight of animal
- Less number of animals per farmer
- Lack of infrastructure
- Difficulty in traceability

Value addition & Processing

Value addition of meat done in three ways, selling products as raw meat as fresh, Ready to cook (RTC) as semi-processed, and Ready to eat (RTE) as completely processed. Value addition is also focussed on introducing special cuts to sell at higher prices (lollipop, breast), cured & smoked meat, marination by adding spices, and also impressive packaging. Retort processing technology involves heating the meat at 121º C, where the meat got sterilized and preventing the bacterial growth, which can be preserved for months. Other technologies include freeze drying, and preparation of pickles and jerky.

Conclusion

The visit to ICAR-National Meat Research Institute was really interesting and knowledgeable. Understanding the possibilities of meat processing and value addition was relevant to meet the objective of the training. The Malawi officials could experience about various value-added meat products, and had the opportunity to familiarize the machineries and process in the processing unit.

Visit-7

Venue - Value addition for fighting Malnutrition – Visit to Indian Council of Medical Research - National Institute of Nutrition (ICMR-NIN), Hyderabad

Coordinator Name- Mr. Saurabh Kumar & Ms. Jeena Paul

Introduction

Indian Council of Medical Research - National Institute of Nutrition (ICMR-NIN) is a premier nutrition research institution in India is committed to advancing the science of nutrition and addressing public health challenges in India and beyond. It is a 105-year-old institution established in 1918, only institution in India conducting research on nutrition and diet intake.

A visit was conducted on April 04, 2025 for the participants at National Institute of Nutrition (NIN). Dr. Ananthan received the guests and given a brief on the research activities conducted at NIN. He introduced the Indian nutrition composition table to the participants. And explained the process involved in developing the book, how the samples have collected from all over India, how the sample prepared and analysed. Later visited different laboratories where the food samples are analysed for specific nutrient contents.

Objectives of NIN

- Conduct scientific research in nutrition and related fields.
- Provide nutritional guidelines and dietary recommendations for the population.
- Support national policies related to food and nutrition security.

Activities undertaken at NIN

- **Provide Evidence:** NIN offers evidence-based insights on food and nutrient intake, nutritional trends across age groups, micronutrient content of foods, maternal and child nutrition, non-communicable diseases biomarkers, environmental toxins, drug-nutrient interactions, and immune-nutrition links.

- **Provide Guidelines:** Develops RDAs, Dietary Guidelines for Indians, and region-specific diet plans for pregnancy, diabetes, heart disease, and infections.
- **Influence Policies:** Supports national programs like Integrated Child Development Services (ICDS), Mid-Day Meal (MDM), Clinical Management of Severe Acute Malnutrition (CM-SAM), and initiatives like Vitamin A prophylaxis, Iron and Folic Acid (IFA) supplementation, food fortification, and safety regulations (e.g., fluoride, lead).

- **Raise Awareness:** Promotes nutrition literacy through mobile apps, e-learning modules, videos, events, and community engagement to encourage healthy lifestyles and disease prevention.
- **Develop Human Resources:** Offers M.Sc., PhD, certificate courses, faculty and public health training, assessments (anthropometry, diet), and custom modules for regulatory and health bodies.

Laboratory visits

The foods samples collected from 120 spots across the country and are collected in the centres at six zones of India. These are brought to NIN, Hyderabad and sample is prepared for analysis. The food composition is analyzed along with ingredients. There are different labs which analyzing each nutrition component. There are labs for Amino acid, Fats & fatty acid, Carbohydrate, Dietary fiber, and vitamins.

Conclusion

NIN is conducting evidence-based research which is applied in policy making and Indian standards are set according to that. Understanding the efforts behind finalizing the nutrition contents in each Indian food was mind-blowing. Visiting very elaborated and sophisticated labs in NIN was different experience. Participants could relate with the nutrition composition table of their country and understand how it is helped in formulating the policies.

Visit-8

Venue - Value Addition of Agricultural Commodities through Farmer Producer Organization – Visit to Kattangur Farmer Producer Company Limited, Kattangur, Nalgonda.

Coordinator Name- Mr. Saurabh Kumar & Ms. Maithri K.

Introduction

A visit was conducted at **Farmer Producer Organisation, Kattangur** on April 5, 2025. This FPO is a community-based organization formed by local farmers to add value to agricultural produce, especially lemon, which is abundantly grown in the region. It focuses on minimizing wastage and increasing income through processing and marketing, with support from National Bank for Agriculture and Rural Development (NABARD) and private agencies.

Objective of the Visit

To observe how FPOs are enabling farmers to address market gaps, reduce wastage, and add value through processing, innovation, and technology integration.

Overview of the Visit:

The FPO shared how they initially faced issues with lemon wastage due to poor market access. Over time, they developed a range of value-added products such as lemon squash, lemon powder, pickles, and even lemon-based floor cleaner. This not only reduced losses but also created additional income sources.

Support from NABARD and other agencies enabled the establishment of a solar-powered processing and cold storage unit. The FPO also provides training and facilities to SHG women, including solar panel installations at their homes, enabling them to participate in production and marketing. They further support farmers with input provisions such as seeds,

fertilizers, and drones for fertigation. The Custom Hiring Centre (CHC) offers access to farm machinery on a rental basis, which has improved farming efficiency in the area.

Key Learnings:

- Innovative approaches to reducing crop wastage and improving farmer income
- Integration of renewable energy and women participation in FPO operations
- Practical support systems for farming inputs and equipment access

Conclusion:

The visit to Kattangur FPO offered valuable insights into how a farmer-led institution can address multiple challenges in agricultural marketing and processing. Participant learned, how the coordinated efforts between farmers, SHGs, and funding bodies present a strong and scalable model for others.

Visit-9

Venue - Visit to Rural Technology Park, National Institute of Rural Development & Panchayati Raj (NIRD&PR), Rajendranagar

Coordinator Name- Mr. Arvind Singh Rao

Introduction

As part of the Capacity Building Training Programme for MoTI officials from Malawi, a field visit was conducted on April 7, 2025 at **Rural Technology Park, National Institute of Rural Development & Panchayati Raj (NIRD&PR),** Rajendranagar, Hyderabad.

Objective of the Visit

The visit aimed to expose participants to practical models of rural enterprise creation and low-cost technologies that support livelihood development in rural areas.

Welcome and Orientation

The officials were received and welcomed by Mr. Mohammad Khan (Senior Consultant, RTP).

He began the session by screening a few informative videos focusing on:

- NIRD&PR and its mandate in rural development.
- The vision and mission of RTP.
- A documentary titled *"Mud Matters"* highlighting eco-friendly building technologies.

These visual presentations helped participants grasp the broader picture of India's approach to sustainable rural entrepreneurship.

Knowledge Exchange Session

Following the orientation, a **comparative discussion** was held between Mr. Khan and the visiting delegates on the **cooperative systems** in India and Malawi. This exchange offered valuable insights into structural and functional differences and opportunities for mutual learning.

Mr. Khan also discussed an important **agreement signed in 2014** between NIRD&PR and five African nations including **Malawi**. The agreement involved an

investment of **₹42 crores** for establishing an RTP in these countries. Under the agreement, the center would be operated by NIRD&PR for the first three years before being handed over to the respective governments. The **Detailed Project Report (DPR)** of the initiative was also shared with the participants.

Field Visit Highlights

Participants toured several production and skill-training units inside the RTP campus. Each unit demonstrated a low-cost, environment-friendly, and livelihood-generating rural technology:

1) Compressed Brick Making Unit

- Utilizes natural soil to create **eco-friendly compressed mud bricks**.
- These bricks are a **sustainable alternative** to traditional red bricks with **zero carbon emissions** in their production.

2) Handmade Paper Making Unit

- Promotes forest conservation by using recycled materials instead of wood pulp.
- Aims to **reduce deforestation** caused by commercial paper industries.

3) Mushroom Production Unit

- Displayed a variety of mushrooms such as **Oyster, Button, and Dry Mushrooms**.
- Highlighted potential for **micro-enterprise and nutritional security**.

4) Eco-friendly Bag Making Unit

- Produces **plastic-free, biodegradable bags**, helping reduce environmental pollution.

5) Leaf-Based Plate Making Unit

- Demonstrated the **eco-friendly production of disposable plates** from plant leaves.
- A sustainable alternative to plastic-based cutlery.

6) Bee-Keeping and Honey Production Unit

- Showcased **different types of honey** with diverse medicinal properties.
- Demonstrated value addition through **flavouring and packaging**.

7) Neem Products Unit

- Highlighted the preparation of **bio-pesticides and neem-based products**, contributing to organic farming solutions.

8) Pearl Jewellery Making Unit

- Showed the crafting and commercialization of **handmade pearl jewellery**, especially as a **women-led enterprise opportunity**.

Each unit is not only operational but also serves as a **training hub**, where rural youth and entrepreneurs can receive hands-on skills for enterprise development.

Learnings and Takeaways

The visit to RTP offered comprehensive exposure to India's rural innovation ecosystem.

Key takeaways included:

- Practical demonstrations of low-investment rural enterprises.
- Scalable models for employment generation and women empowerment.
- Environmental sustainability through reduced deforestation and non-plastic alternatives.
- Feasibility of replicating such models in Malawi with context-based customization.

Conclusion

The visit to Rural Technology Park, NIRD&PR, provided a valuable platform for cross-learning, showcasing India's success in creating sustainable rural livelihoods through appropriate technologies. The experience encouraged the visiting MoTI delegation from Malawi to explore the possibilities of adapting similar models in their local contexts for rural development and enterprise promotion.

Visit-10

Venue - Success Story of Women Cooperative through Value Addition of Agricultural Commodities – Visit to Deccan Development Society (DDS), Zaheerabad

Coordinator Name- Dr. Raahalya & Ms. Sonam Chandrakar

Introduction

A visit was conducted on April 8, 2025 at Deccan Development Society (DDS), an organisation that has been working closely with rural communities, especially Dalit women, for several decades. The visit started with a short interaction where both sides introduced themselves and got comfortable with each other.

Welcome and Cultural Start:

The team at DDS welcomed us with a traditional folk song. The song shared a simple but strong message about how families work together to grow food for their children and fodder for their animals. It was a warm and meaningful start to the day.

About Deccan Development Society

DDS was started in 1983 with a small investment of around ₹4–5 lakhs. Today, they have grown to a turnover of about ₹80 lakhs. From the beginning, the focus has been on working with Dalit women and supporting them through different initiatives – mainly around farming and self-reliance.

What They Do

- **Farming and Stakeholders:** DDS works with farmers across 42 villages. In total, there are 2,600 farmer stakeholders. Each farmer can hold one share, which costs ₹100. Every three years, they receive a dividend based on the profit.
- **Focus on Millets:** The farmers mainly grow millets. DDS supports them in production, processing, and marketing.
- **Product Making and Sales:** DDS runs a Millet Café and also makes products like cookies, snacks, ready-to-eat mixes, flours, and pulses. All products are organic and

chemical-free. Orders are taken in advance, mostly from urban customers, and production is done based on demand.

- **Women and Technology:** One of the standout things at DDS is how women are being trained in using technology. Many of them now handle cameras, shoot videos, and also run a community radio station.
- **Village Groups (Sangams):** In each village, informal groups called Sangams have been formed. These groups bring women together to discuss, decide, and lead local activities.

Conclusion

Visiting DDS gave us a good understanding of how a community-led model works in real life. Instead of just charity or aid, the focus here is on helping people build something of their own. Seeing how women are managing farms, making products, learning new skills, and running their own radio station was quite eye-opening. It showed how change doesn't always need big resources — it needs the right mindset and support.

Visit-11

Venue - Modern Packaging Techniques – Visit to Indian Institute of Packaging (IIP), Hyderabad

Coordinator Name- Mr. Arvind Singh Rao & Ms. Jeena Paul

Introduction

On April 9, 2025 visit was conducted **at Indian Institute of Packaging (IIP)**, a national apex body which was set up in 1966 by the packaging and allied industries and the Ministry of Commerce, Government of India, with the specific objective of improving the packaging standards in the country. The Institute is an autonomous body working under the administrative control of the Ministry of Commerce. The Institute has its head quarter at Mumbai and six regional centers located at Delhi, Kolkata, Assam, Ahmedabad, Hyderabad, and Chennai.

Mr. Bala Kishan, Technical Officer, IIP, Hyderabad received the guests and introduced about the Institution. Later visited each laboratory at centre and he explained about different equipment and how it is used for assessing the packaging materials.

Visit Insights

IIP is undertaking majorly four activities, which include Training & Education, Testing & Certification, Research & Development, and Consultancy.

- **Testing of Packaging Materials:** The testing at IIP mainly focuses on four aspects, which include standard (ISO, BIS), unit of test, observation, and accuracy. Packaging materials including corrugated fibre boxes (CFB) and plastic materials (covers, drums) are tested in the lab. Basically 10 – 15 mandatory tests are conducted for each sample. Five to ten samples of the same material are tested using random sampling from a lot.

- **Testing Laboratory:** The lab was advanced with very sophisticated equipment which are used to assess different physical properties of the packaging materials submitting at IIP for testing. Equipments ranges from dead weight micrometer, thickness tester, stiffness tester, weighing balances, smoothness & porosity tester, bursting strength tester, tearing tester, melt flow tester, puncture resistance tester, and scuff proofness tester.

- **Chemical Laboratory**: Lab where chemical reactions and resistance of packaging materials are tested. The lab equipped with hot air oven, muffle furnace, and de-laminator where tests such as migration test, and rigorous test are conducted.
- **Transport Laboratory:** The lab where the strength and resistance during transportation and handling of the packaging materials are tested. Dummy products are kept inside the packages for safety and it is tested by creating the conditions of sudden impacts and hits. Drop test and vibration test are conducted.

- **Barrier Testing Lab:** A sophisticated and protected lab where advanced properties of the packaging materials such melting point, oxygen transmission rate, water vapour transmission rate, folding endurance, brightness, and opacity are tested.

Conclusion

Visit to IIP was a new experience, knowing about the conditions behind approving a packaging material was amazing. Received a clarity on how the materials are tested, different equipments and purpose, standards for each test and materials, and the role of IIP in providing the report. Also had a hands-on experience of testing in the transport Laboratory, understood the impact of drop test and vibration test.

Session-1

Topic - Session on Value addition in Horticulture – College of Horticulture, Sri Konda Laxman Telangana State Horticultural University (SKLTHU), Mojerla.

Speaker- Dr. J. Shankaraswamy (Assistant Professor)

Coordinator Name- Ms. V. Usha Sree & Ms. Jeena Paul

About Speaker

Dr. J. Shankaraswamy is a distinguished expert in the field of Horticultural Science, specializing in post-harvest technology, value addition, and processing of horticultural crops. With extensive experience in these areas, he has contributed significantly to enhancing the shelf life, quality, and marketability of fruits and vegetables.

In addition to his core expertise, Dr. Shankaraswamy is skilled in cheminformatics, research methodologies, nano-biotechnology, and food science, enabling a multidisciplinary approach to solving challenges in the horticulture sector.

He currently heads the Post Harvest Technology Laboratory at the College of Horticulture, Mojerla, where he actively engages college students in practical, hands-on training. Under his mentorship, students work on developing various value-added products from fruits and vegetables, promoting innovation and entrepreneurship in the domain of horticultural processing.

Insides of the Session

The session was conducted on April 7, 2025. During the session, **Dr. J. Shankaraswamy** provided an insightful overview of the activities, facilities, and technologies available at the Post Harvest Technology Laboratory. He elaborated on the various value-added products developed from horticultural crops and discussed the practical approaches adopted in the laboratory.

He explained the different drying procedures used for fruits and vegetables, emphasizing the importance of maintaining moisture levels below 6 percent to ensure product stability and quality. He highlighted the use of a radio frequency dryer as a common technology in their lab. Additionally, key concepts such as water activity, preservation effects, and case hardening were discussed to deepen participants' understanding of post-harvest processes.

The laboratory has successfully developed a range of innovative products from fruits and vegetables, including:

- Thread from citrus waste
- Flower petal-based tea
- Effervescent powders
- Dehydrated papaya
- Carrot noodles
- Watermelon rind candy
- Pomegranate peel powder

Furthermore, He introduced advanced processes such as super citric fluid extraction — a method used to extract bioactive components from fruits and vegetables — and freeze-drying technology.

The Post Harvest Technology Laboratory at the Mojerla campus operates on low-cost investment models aimed at supporting smallholding farmers. The technologies employed are simple, affordable, and designed for easy adoption. In addition, students at the college gain valuable practical exposure by participating in the development and production of these value-added products, bridging theoretical knowledge with hands-on experience.

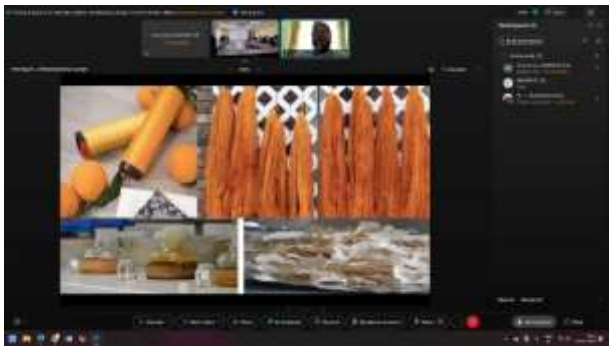
Key Learnings of the Session

- Participants learned about various drying methods, moisture management, and preservation techniques critical for enhancing the shelf life and quality of horticultural products.
- Exposure to innovative value-added products such as citrus waste thread, flower petal tea, watermelon rind candy, and pomegranate peel powder demonstrated practical ways to utilize agricultural by-products.

- The session emphasized simple, affordable technologies suitable for smallholding farmers, promoting sustainable and scalable agri-business opportunities.
- Participants were introduced to techniques like super citric fluid extraction and freeze drying, gaining insights into modern methods for extracting bioactive compounds and preserving fruits and vegetables.

Conclusion

The session provided participants with a comprehensive understanding of post-harvest technologies, value addition, and innovative product development from horticultural crops. Dr. Shankaraswamy's detailed explanations on drying techniques, preservation methods, and cost-effective technologies offered valuable insights, especially for those interested in practical, scalable solutions for smallholding farmers.



The exposure to real-time processes and value-added product development activities at the Post Harvest Technology Laboratory inspired participants to explore new opportunities in post-harvest management and entrepreneurship. Overall, the session was highly informative, interactive, and motivating, equipping participants with practical knowledge and ideas to apply in their own agricultural and business ventures.

Session-2

Topic - Session on Value Addition in Cassava – Indian Council of Agricultural Research – Central Tuber Crops Research Institute Scientists (ICAR-CTCRI), Trivandrum.

Speaker- Dr. T. Krishna Kumar & Dr. Pradeepika, Scientist (Section of Crop Utilisation), ICAR-CTCRI.

Coordinator Name- Ms. V. Usha Sree & Ms. Jeena Paul

About the Organisation

The Indian Council of Agricultural Research – Central Tuber Crops Research Institute (ICAR-CTCRI) was established during the Third Five-Year Plan to intensify research on tropical tuber crops (excluding potato). The Institute began functioning on 1st July 1963, with its headquarters located at Sreekariyam, Thiruvananthapuram, Kerala. It also operates a Regional Station at Bhubaneswar, Odisha.

The All India Coordinated Research Project on Tuber Crops (AICRP-TC) was launched at ICAR-CTCRI in 1968 to test and popularize location-specific tuber crop technologies across various regions of India. Currently, the AICRP-TC operates through 21 centres, including the ICAR-CTCRI headquarters and its regional station.

Additionally, ICAR-CTCRI serves as one of the centres for the All India Coordinated Research Project on Pre- and Post-Harvest Technology. The Institute is engaged in basic, strategic, and applied research on a variety of edible tropical tuber crops.

About Speaker

Dr. T. Krishna Kumar and Dr. Pradeepika are scientists working in the Crop Utilization section at ICAR-CTCRI. Both are actively engaged in different projects related to cassava production and value addition. Their work keeps them closely connected to various aspects of cassava crop value addition.

Insides of the Session

The session was conducted on April 9, 2025. During the session, **Dr. T. Krishna Kumar** provided a n insightful explanation on the production of starch from cassava. The process involves several key steps: peeling, rasping, sieving, settling, purification, and starch drying. He also elaborated on the production of 'sago' or 'sabudana,' commonly known as tapioca pearls, which are commercially sold in two forms — roasted and steamed — with the steamed variety, often referred to as "nylon sago," offering higher solubility.

Dr. Kumar highlighted the role of 'Sagoserve,' a cooperative society based in Salem, Tamil Nadu, which facilitates the marketing of sago. The price of cassava for farmers is determined based on the starch content of the produce, which is assessed by testing samples from the procured tapioca lots. After processing, the tapioca starch is dried and converted into sago, while the leftover fiber is utilized as cattle feed, ensuring minimal waste.

He further mentioned that there are nearly 60 varieties of tapioca, out of which only select varieties with starch content exceeding 30% are preferred for sago production. Prominent among these are Black Thailand, Sree Raksha, Sree Apoorva, and Sree Kaveri.

Dr. Pradeepika provided detailed insights into the production of cassava flour, including high-quality cassava flour (HQCF) produced through dewatering and pressing, as well as pre-gelatinized cassava flour. She highlighted a range of products developed using technologies owned by ICAR-CTCRI, such as cassava chips, tapioca rava, and fried snacks.

She further explained the development of nutritionally fortified wafers by enriching cassava flour with cheese, defatted soy flour, prawn powder, and whey protein concentrate. To enhance the protein and fiber content of cassava-based products, cassava flour is blended with carrot, orange-fleshed sweet potato, oatmeal, or bran.

Beyond food products, Dr. Pradeepika discussed innovative uses of cassava derivatives. Cassava starch is being utilized in the production of nano-composite films for food wrapping, promoting sustainable packaging solutions. Additionally, bio-pesticides are produced from cassava leaves, contributing to eco-friendly agricultural practices.

In the livestock sector, cassava silage serves as a valuable cattle feed, while 'Thippi' — the starch factory waste — is effectively used as a feed ingredient for broilers.

All these advanced technologies are available at ICAR-CTCRI and can be licensed or accessed by entrepreneurs through the Community Incubation Centre and the Technology Business Incubator (TBI) located at CTCRI, Thiruvananthapuram.

Key Learnings of the Session

- Participants gained an understanding of the detailed steps involved in producing starch and sago from cassava, including innovations like 'nylon sago' and the role of cooperative marketing through Sagoserve.
- The session highlighted the use of cassava derivatives in sustainable packaging (nano-composite films), eco-friendly bio-pesticides, and livestock feed solutions like cassava silage and 'Thippi.'
- Participants learned about access to cassava processing technologies through ICAR-CTCRI's Community Incubation Centre and Technology Business Incubator, encouraging agribusiness ventures.

Conclusion

The session highlighted cassava's potential for food, feed, and industrial uses. Participants gained insights into processing techniques, value-added products, and innovative applications. ICAR-CTCRI's technologies and incubation support offer opportunities for entrepreneurship, emphasizing scientific innovation and value chain development.

Valedictory Session

The Valedictory Session of the **Capacity Building Training Programme on Agricultural Value Addition and Marketing Linkages** was successfully held on 10th April 2025 at MANAGE-CIA.

The session commenced with an overview of the program's journey, presented by **Ms. Usha Sree, Manager, RKVY-RAFTAAR**. She highlighted the key sessions conducted during the training, the various expert interactions, and emphasized the successful completion of the program, appreciating the participants' active engagement throughout.

Following this, participants enthusiastically shared their feedback, reflecting on their learning experiences, field visits, sessions attended, and their overall impressions of the MANAGE-CIA team and facilities. They also highlighted the key takeaways that they plan to implement in their respective fields.

The event concluded with a valedictory address delivered by **Dr. Saravanan Raj, Director (Agricultural Extension) and CEO, MANAGE-CIA**. In his address, he congratulated the participants on their successful completion of the training and encouraged them to apply their learnings to strengthen agricultural value chains and marketing linkages in their country.

Certificates were then distributed to all participants, marking the formal closure of the program. The event concluded with a group photograph, capturing the memorable moment with all the participants and the MANAGE-CIA team.

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