Water Management in Natural Farming

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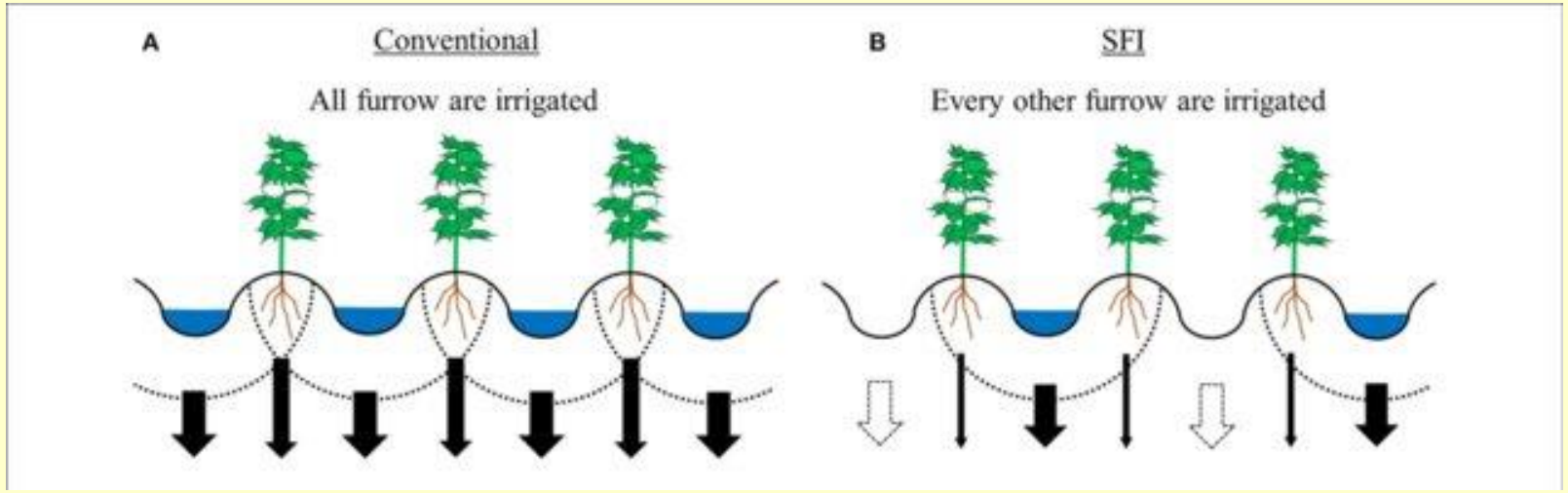
Pillars of natural farming

1) Bijamrita/beejamrutha
2) Jivamrita/jeevamrutha
3) Acchadana-mulching
4) Whapasa-moisture

- Waaphasa refers to the microclimate in the soil, by which the soil organisms and roots can live freely with the availability of sufficient air and essential moisture in the soil.
- Waaphasa means the mixture of 50 % air and 50 % water vapours in the cavities between two soil particles.
- Whapahasa: Soil aeration, a result of jivamrita and acchadana- represents the changes in water management brought about by improved soil structure and humus content
- Increase water availability, water use efficiency, increase resilience to drought

Alternate furrow irrigation



Mulching

Mulching covers the soil and prevents the germination of weeds

Prevents sun light reaching the ground

Live mulching

Organic mulching

- Easily and locally available materials can be used as mulch
- Cocopeat retains water nearly five times than its weight
- Mulches adds organic matter to the soil and controls the weeds.

Organic mulching

Cover crops

- Fast growing crops and varieties cover the soil and smother the weeds Red clover, horse-gram, cowpea are some of the examples.

Agricultural waste generation in India compared to other select nations in the same region

Country	Agricultural Waste Generated (million tons/year)
India	500
Bangladesh	72
Indonesia	55
Myanmar	19

Indian Ministry of New and Renewable Energy (MNRE).

- Used as fodder, fuel for other domestic and industrial purposes.
- Still a surplus of 140 Mt out of which 92 Mt is burned each year.
- It is also interesting to note that the portion burnt as agricultural waste in India, in volume is much larger than the entire production of agricultural waste in other countries in the region.

Residue availability in other states

According to National policy for management of crop residues (NPMCR)

Highest in the state of Uttar Pradesh (60 Mt), Punjab (51 Mt) and Maharashtra (46 Mt)

Grand total of 500 Mt per year. Out of which 92 Mt is burned.

Rice and wheat contribute nearly 70% of the crop residues.

Out of the total waste generated, the surplus residue refers to the waste that remains after utilizing the residue for various other purposes.

A part of the surplus waste is burned, and the remains are left in the field.

Nutrient potential of crop residue for the top ten CR producing crops in the world

Crops	Area (million ha)	Production million tons 2020	Crop residue production in million tons 2020	Nutrient content in crop residue				
				N %	P_2O_5%	K_2O %	Total NPK%	Total NPK potential in million tons
Maize	201.98	1162.35	1162.35	0.52	0.18	1.35	2.05	23.83
Wheat	219.01	760.93	1141.39	0.48	0.16	1.18	1.82	20.77
Rice	164.19	756.74	1135.12	0.61	0.18	1.38	2.17	24.63
Sugarcane	26.47	1869.72	467.43	0.40	0.18	1.28	1.86	8.69
Soyabean	126.95	353.46	353.46	0.88	0.14	0.65	1.67	5.90
Barely	5.16	157.03	235.55	0.52	0.18	1.30	2.00	4.71
Seed cotton	31.84	83.11	124.67	0.40	0.10	0.66	1.16	1.45
rapeseed	35.50	72.38	108.56	0.70	0.22	1.14	2.06	2.24
Potato tuber	16.49	359.07	89.77	0.52	0.21	1.06	1.79	1.61
Sorghum	40.25	58.71	88.06	0.52	0.23	1.34	2.09	1.84
Total	**867.84**	**5633.50**	**4906.36**					**95.67**


THANK
YOU
VERY
MULCH.