



पूर्णतः सहकारी स्वामित्व
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The role of organic/bio inputs in
non-chemical sustainable
agriculture

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मिट्टी की जान
किसान की शान

Chemical Versus Non Chemical

- Chemicals combine and recombine to give physical existence to every living thing, and this physical entity dissolves again to form lesser and lesser complex chemicals, so non chemical agriculture appears as misnomer.
- When we classify inputs in agriculture the difference among them can be pure chemical compound, synthetic organic compound or organic compound, most of these ultimately break into ions before their entry in to plant system.
- Before organism returns to mineralised form the intermediaries in the process can play multiple roles like store house of nutrients and water, carrier of nutrients, cement in building and maintaining soil structure etc.

- Putting in simpler words soil as we know is alive only because of organic matter and microbes in it without these it will turn in mere dust where nothing can germinate or grow.
- Microbes have been used as symbiotic/non- symbiotic nutrient fixers, nutrient solubilises and mobilisers, crop pest and disease control agents, they also act as PGPR products
- Other forms of bio inputs have been successfully used and bio stimulants and plant growth promoters, soil conditioners etc.

Need of Reduction in use of Chemical Inputs

Reduction in all forms of inorganic chemicals in Agriculture is very essential to

- Prevent pollution they cause in their manufacture & use and their residual impact on environment
- Very high cost
- Declining use efficiency
- Ill effects on health of consumers

Scientific community

- Developing effective microbe cultures which perform under diverse agro climatic conditions with proven efficiency
- Increasing lab to field program in collaboration with industry
- Combination products which address multiple issues in farming
- Developing commercially scalable products w.r.t.
 - Production
 - Shelf life
 - Ease of application
 - Logistics
- Joint ventures with Industry



Industry

- Sincerity and honesty in production and marketing
- Openness to change
- Marketing bio inputs as standalone input rather than as tagging product with input in short supply

FPO

- **Imparting education on importance of soil health**
- **Educating on correct usage of microbial and bio products**
- **Educating users regarding slow but effective impact of microbial and bio products**

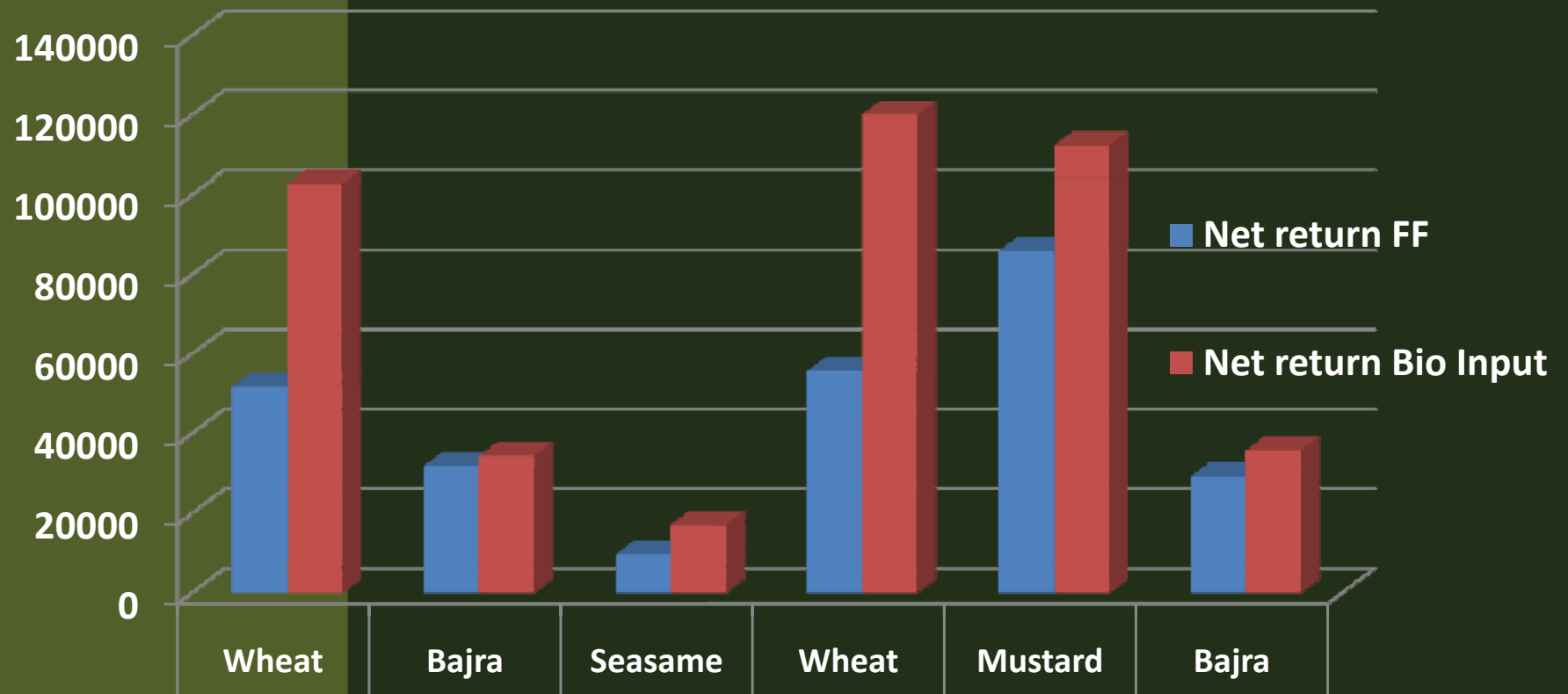
Rewari Treatment Details

Season	Crop	Traditional	Bio Input				Nano Input		
		N:P:K:S	FYM/ City Compost	NPK Consortia	Sagrika Gr	Sagrika Foliar	Nano N	Nano Zn	Nano Cu
Rabi 2019	Wheat	115:60:30:25	2500	1.2	25	625	One Spray		
kharif 2020	Pearl Millet	60:30:0:0	2500	1.2	25	625	Three Sprays		
kharif 2020	Seasame	37.5:0:0:0	1250	1.2	25	625	Two sprays		
Rabi 2021	Wheat	150:60:30:25	2500	1.2	25	625	Three sprays		
Rabi 2021	Mustard	80:30:20:25:25	1250	1.2	25	625	Three sprays		
Kharif 2021	Pearl Millet	60:30:0:0	2500	1.2	25	625	Two sprays Nano N & Nano DAP		

Rewari Experiment Yield

Season	Crop	Area Acre	Seed yield (kg/ha)		Straw yield		Gross cost (Rs./ha)		Gross return		Net return		B:C ratio	
			FF	Bio Input	FF	Bio Input	FF	Bio Input	FF	Bio Input	FF	Bio Input	FF	Bio Input
Rabi 2019	Wheat	50	4905	4887	5650	5820	56890	58580	108546	161160	51656	102580	1.9	2.75
kharif 2020	Bajra	30	2250	2345	3490	3550	27020	28837	58845	61067	31825	34320	2.23	2.3
kharif 2020	Seasame	20	396	492	0	0	20100	19780	29700	36900	9600	17120	1.41	1.68
Rabi 2021	Wheat	50	5050	5320	5540	5860	57025	54242	113588	174250	55563	120008	1.99	3.21
Rabi 2021	Mustard	10	2620	2840			39763	37818	125760	150020	85997	112202	3.16	3.98
Kharif 2021	Bajra	30	2430	2625	3560	3810	33687	32217	62925	62925	29238	35650	1.87	2.11

Season & Crop wise Net Return



Rewari Trials



Economics

S. No.	Product	Farmer Price
1	Farm Yard Manure 25 Quintal	In House
2	IFFCO Liquid Consortium – 1 Litre	200
3	Sagarika 10Kg Granule Bag	450
4	Nano Urea – 500ml	240
5	Sagarika Liquid – 1Litre	550
Total Cost per Acre		Rs. 1440/-
Farmer paid premium of at least 20% for chemical free output plus improved soil health.		

Conventional Fertiliser Dose – Most Crops

2 Bags Urea =	Rs. 533
1.5 Bag DAP =	Rs. 2025
1 Bag MOP (30-40Kg minimum) =	Rs. 800
Total Cost =	Rs. 3358/Acre

Bulk Fertilizer Cost and Efficiency

Bulk Fertiliser Cost

1. Urea Bag International Price = 1300\$/MT = Rs. 4387.50/Bag Subsidized Price = Rs. 266.50/45Kg Bag Subsidy/Bag = 4145.50/Bag
1. DAP Bag International Price = 1200\$/MT = Rs. 4500/Bag Subsidized Price = Rs. 1350/50Kg Bag Subsidy/Bag = 3150/Bag

Subsidy Cost to Government of India = 1.5 Lakh Crores

Nutrient Use Efficiency of Bulk Fertilizer

1 Bag Urea \approx 45Kg \approx 46% (N) \approx 20.70% (N)/Bag \approx NUE – 30% \approx 6.21% Nitrogen Uptake by the plant.

1 Bag DAP \approx 50Kg \approx 46% (P) \approx 23% (P)/Bag \approx NUE – 20% \approx 4.60% Phosphorous Uptake by the plant.

1 Bag MOP \approx 50Kg \approx 60% (K) \approx 30% (K)/Bag \approx NUE – 30% \approx 9.00% Potassium Uptake by the plant. ●

Nutrient Use Efficiency of Organic Inputs

- 2500Kg of FYM will deliver the following Macro Nutrients
 - N = 12.50Kg
 - P = 5.00Kg
 - K = 25.00Kg (most crops requirement/acre)
- Due to IFFCO Liquid Consortium treatment 35% of ground locked Phosphorous and Potassium also becomes available to plant.
- Sagarika Granules besides seaweed nutrition also delivers 1% Zinc and 0.25% Boron and fulfils the micronutrient need of the crop





Thanks

