

# 3rd INDIA INTERNATIONAL SEAWEED Expo & Summit 2020

30th -31st January 2020 at National Institute of Ocean Technology, Chennai

Seaweed Extract based "SAGARIKA"  
for Increasing Farmers Profitability & Agricultural  
Sustainability.

Tarunendu Singh

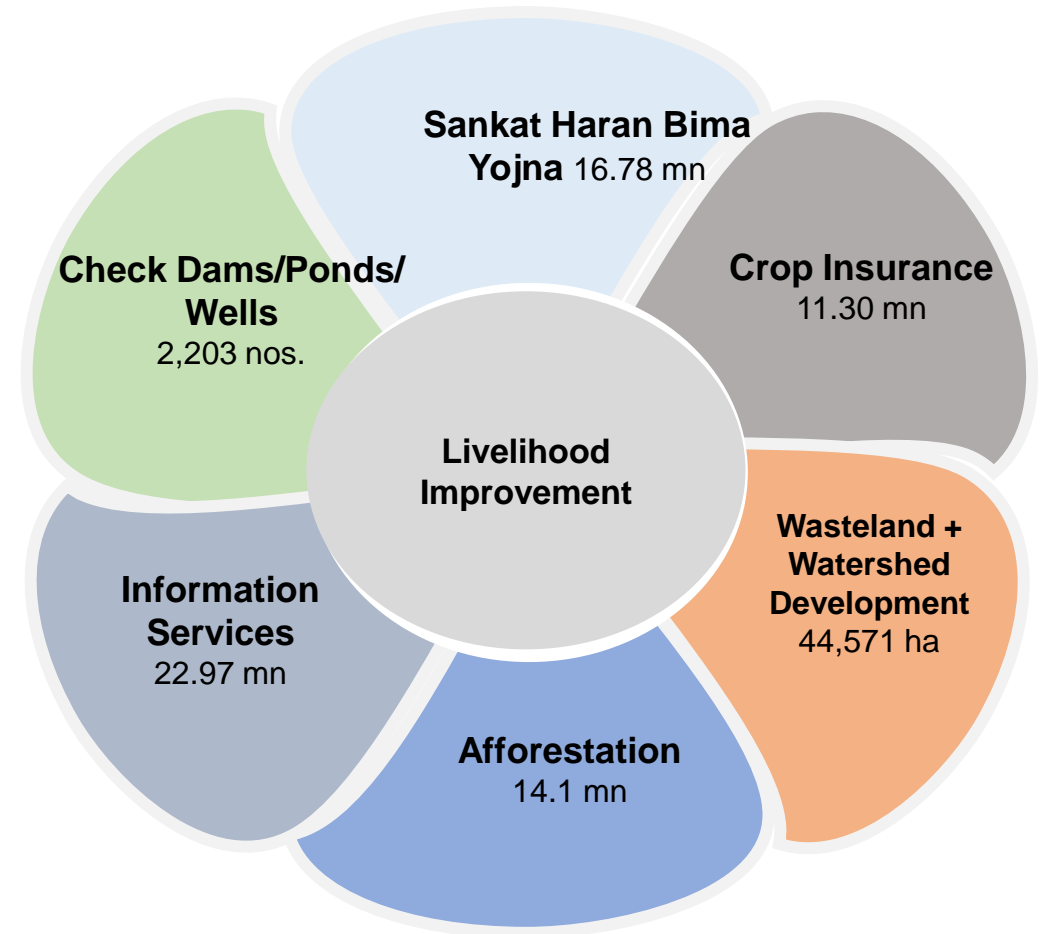
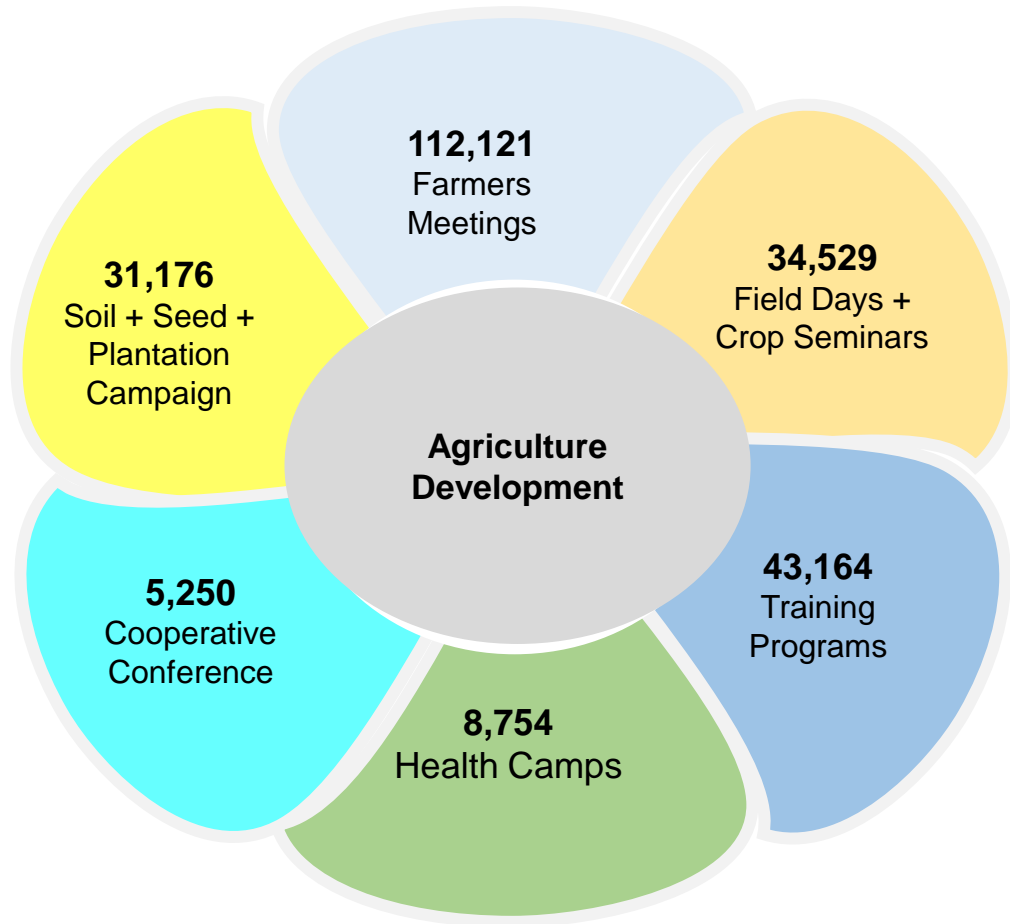
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Wholly owned by Cooperatives

INDIAN FARMERS FERTILISER COOPERATIVE LIMITED  
IFFCO Sadan, C – 1, District Centre, Saket Place, New Delhi – 110017

# Farmer's Trust - IFFCO's Approach



2.9 million soil samples tested ; 18,501 Villages Adopted ; 58,093 Field Demonstrations ; 0.24 million Critical Input Kits distributed (Note : Average 30 such programmes are being held across India daily.)

# Indian Agriculture – Focus

## Doubling Farm Income by 2022

- Average Income Farmer household: In 2015-16 - US\$ 1,505.27 to be increased to US\$ 3,420.21 by 2022-23 ( at current prices )

## Infrastructure Development

- Irrigation facilities
  - Micro-irrigation fund by NABARD (US\$ 750 million)
  - Pradhan Mantri Krishi Sinchai Yojana (PMKSY) (US\$ 7.7 billion)
- Warehousing and cold storage // Processing Units

## Ensuring Sustainability

- Soil Health
- Organic Agriculture
- Resource conservation
- Input Optimisation

## Promoting Crop Diversification

- Horticultural and High Value crops
- Crop Diversification e.g. Coconut, Jojoba, Quinoa, dragonfruit, Oil palm etc.

## Climate Resilience Smart Agriculture

- Low Ecological Footprint
- Green House Gas (GHG's) / pollution reduction
- Make Agriculture less Energy Intensive
- Adaptive Crops /Stress tolerance

# India Trend : New Opportunities



- Increase in Area under Drip
- Govt. Policy Support for 1) Secondary & Micronutrients and 2) Organic Agriculture
- Technology Infusion through promotion of Fertigation (precision agriculture)

- ✓ Direct Benefit Transfer (DBT) on Subsidised Fertilisers
- ✓ Premium on Optimum & Balanced use of Mineral Fertilisers
- ✓ Scope for Speciality Fertiliser / Value added Fertilisers

- ❖ Setting up of Indian Council for Fertiliser and Nutrition Research (ICFNR) on 16th September, 2016 by GOI
- ❖ Focus on - New nutrient grades; Innovation through partnership and collaboration; promotion of eco-friendly micronutrients and pesticide coated Slow Release fertilisers

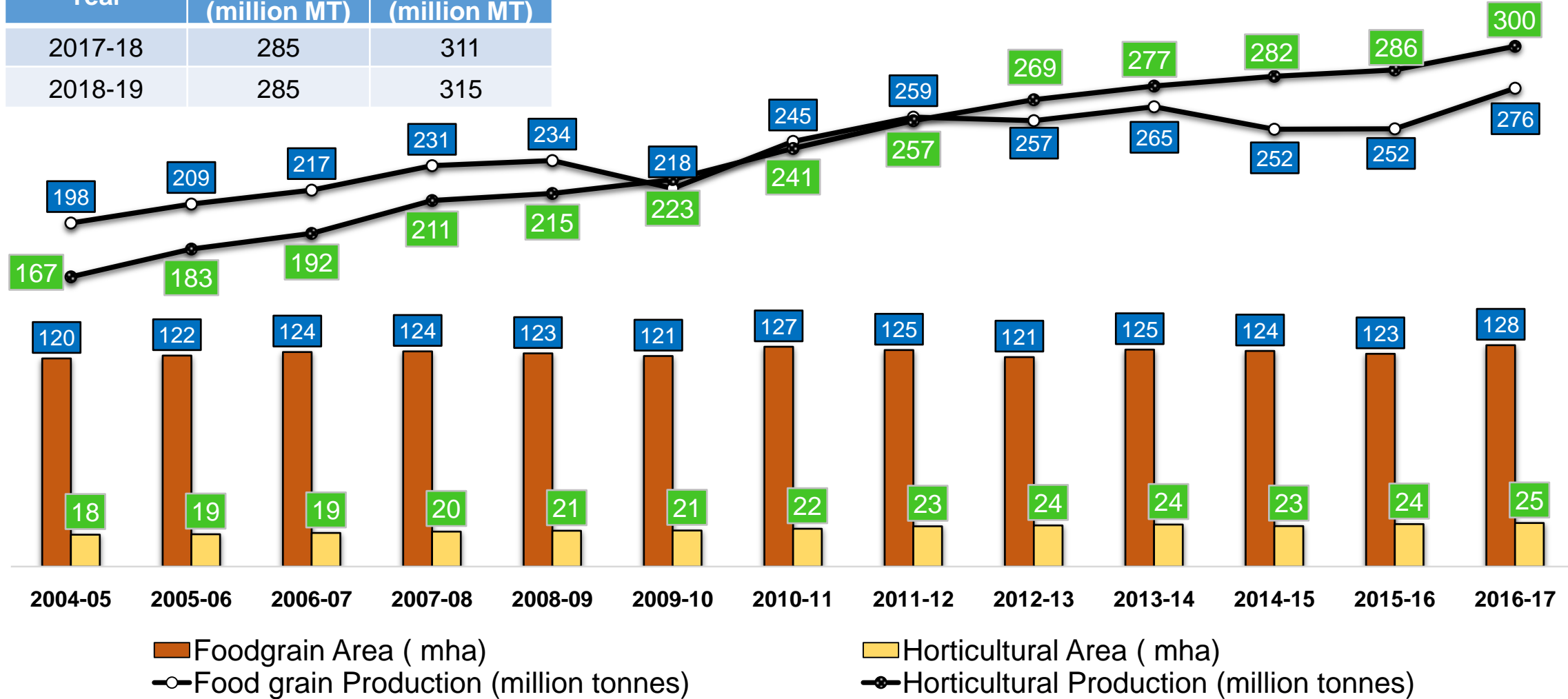
- ❑ WSF's (Value added products) Market Evolving
- ❑ Crop Specific & Area Specific Requirement of Water soluble Fertilisers
- ❑ Blends with Micronutrients / Humic – Amino Acids / Seaweed and Additives such as Silicon etc.
- ❑ Market of Micronutrients & Bio Stimulants Merging

# Tech-Impact Across Agri Value Chain - India

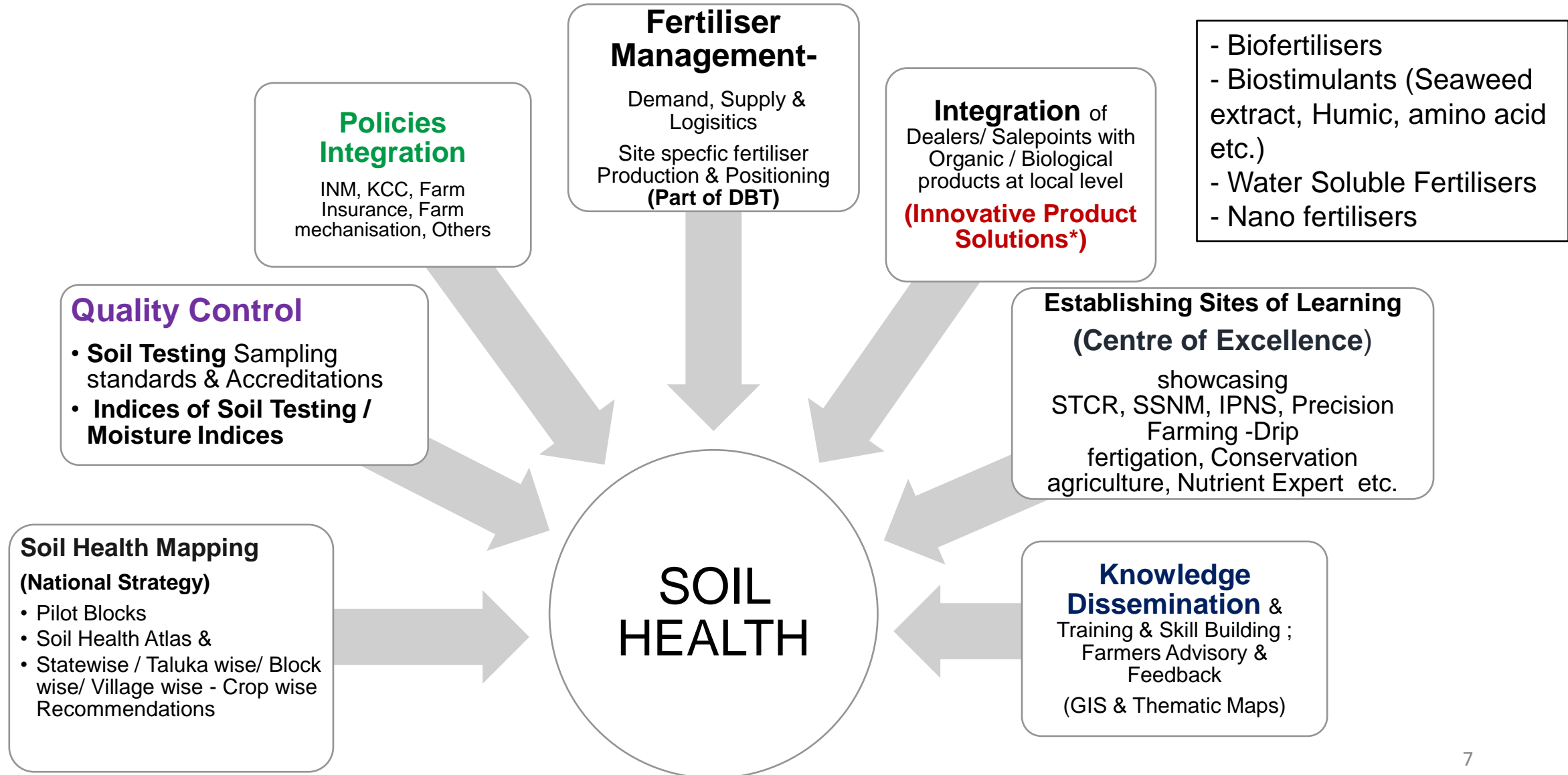
Application (Potential Tech. )	Impact (Billion USD)	Reach	Productivity & Value gains
Hybrid & GM crops	1-4	10 % of 92 million MT produce under modified crop	5-10 % Productivity Improvement
Precision Farming	8-30	20 % Arable land under Precision Agriculture	15-60 % Yield Improvement
Real time Market Information	10-15	90 million ( 60 % ) of farmers use real time market information	Increased productivity & price realization; Cheaper Inputs
Reducing Leakages and Wastage	27-32	47 Billion USD worth of wastage in India (Post Harvest)	65 % reduction in Wastage & leakage through Integrated Value Chain

# India Trend : Food Grain vs Horticulture Production

Year	Food grain (million MT)	Horticulture (million MT)
2017-18	285	311
2018-19	285	315



# Efficient Input Marketing & Management A Model Approach



# Status of Value Added Fertilisers In India

100 % WSF's (Complex)

6 Grades In Fertiliser Control Order (FCO);

Other mixture grades ( > 40 grades)

Urea Super Granule

USG Improves NUE by 15-25 %;

Needs policy push for Viability & Acceptability

Neem coated Urea

Both Indigenous & Imported Urea is Neem coated

Fortified Fertilisers

20 Grades NPK complex fortified with zinc, Zincated NP, Zincated Urea; Boronated NPK and SSP

Customised Fertiliser

27 Customized Fertiliser Grades for Different Crops

## \* Coated & Slow Release Fertilisers

Sulphur Coated Urea (SCU) ?

Polymer coated ?

Nitrification / Urease Inhibitors ?

## Biofertilisers

- ❖ 10 different strains & Consortia of biofertilisers (Solid & Liquid)
- ❖ Component of INM as well as in Organic farming

Bio Stimulants/  
Organics

- Nano fertilisers
- Seaweed
- Humic / Protein hydrly. /
- Decomposers
- Compost / Manures



# Plant Growth Promoter ( PGP) / Biostimulants

‘SAGARIKA’– Liquid  
(28 % w/v)  
SAGARIKA Z++ (Granules)



- **Globally Patented Technology** : CSIR- CSMCRI, Bhavnagar, Gujarat, India
- **Components:** Contains natural seaweed sap derived Proteins, Carbohydrates, Inorganic salts /nutrients, Vitamins, Natural hormones ( Auxin, Cytokinins, Gibberellins) Betaines, Mannitol etc.
- **Packing Size** : 100ml / 250ml / 500ml / 1000ml ; 10 Kg Bucket / Bag
- **Source** : Aquagri Processing Private Ltd.( A JV of IFFCO)
- **Benefits** :
  - Acts as Soil Conditioner & Soil Microbes Activator
  - Improves Stress Tolerance & Pest Resistance Ability
  - Yield Booster & Quality Enhancer
- **Application Rate & Method**
  - Seed soaking / Seedling treatment - @ 0.1 – 0.3 %
  - Foliar - @ 0.25 – 0.5 % ( 1 – 2 litre / hectare)
  - Fertigation : Apply as per soil, crop Growth Stage & Schedule
  - Basal Application @ 25 Kg /ha ; Horticultural plants @ 100-150 gram / plant
- **Shelf Life** : 5 Years
- **Quality** : Certified by IMO and Indian Society for Certification of Organic Products (ISCOP) as per APEDA NPOP Standards



# Key Drivers - Sagarika

## Effective Biostimulant.

- Major and micro nutrients, phytohormones like indole-acetic acid, cytokinins and gibberellins; Quaternary ammonium compounds like glycine betaine, choline chloride leads Carbohydrate content improves because of application of seaweed sap.

## Economic Yield improvement

- Oilseeds > pulses > cereals > sugar/starch > grass/fodder crops. ( Can enhance the pulse yield in India and rainfed crops)
- Positive Results found in floriculture and vegetable crops

## 'GREEN' plant Biostimulant

- Life cycle assessment of *Kappaphycus* seaweed sap production revealed a very favourable carbon foot print (118.6 kg CO2 equivalent per kilo litre)

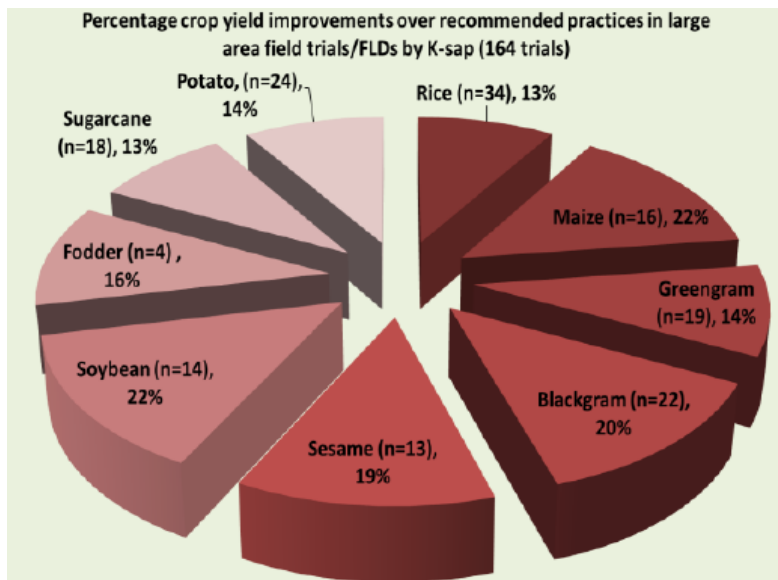
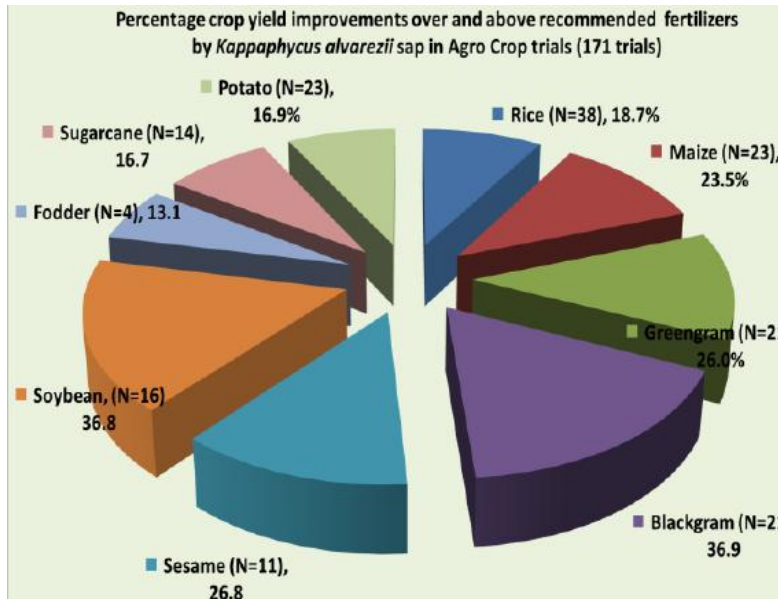
## Suitability for Climate Resilient Agriculture & Organic Farming

- In moisture stress condition maize crop yield enhanced with one application at grain filling stage.
- Work done on maize revealed a significant reduction in Global warming potential (GWP) upon the use of sap

## Pest Control

- It modulated the action of plant disease related genes and confers tolerance against plant diseases.
- Soil microbes in moisture stress conditions found at par with that in normal irrigated conditions.

# Seaweed Extract Demonstrations( CSIR- CSMCRI)

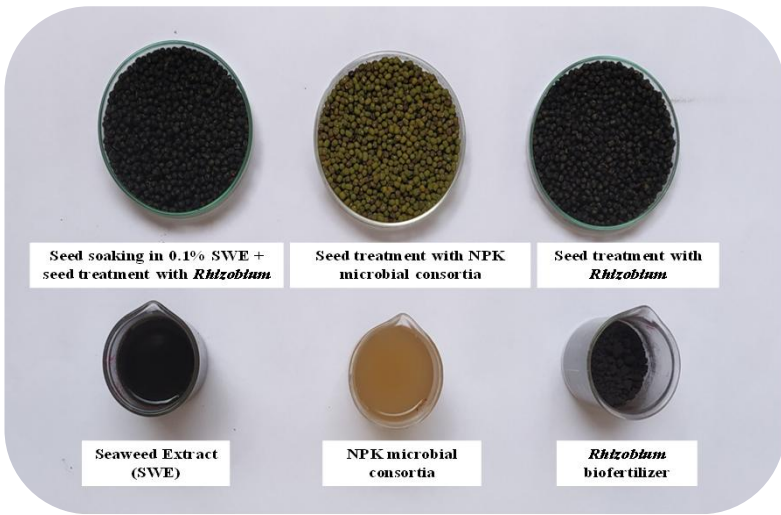


✓ 335 trials carried out Pan-India ( 20 States ; 43 SAU's/ ICAR Institutes ) affirmed that Kappahycus biostimulant improves crop yields.

✓ Yield increase in range of 11 % - 36 % recorded in different crops.



# Effect of seaweed extract on Growth, Productivity & profitability of Greengram (*Vigna radiata*) (CO8) :TNAU, Coimbatore, Tamil Nadu



Seed soaking in 0.1% SWE + seed treatment with *Rhizobium*

Seed treatment with NPK microbial consortia

Seed treatment with *Rhizobium*

Seaweed Extract (SWE)

NPK microbial consortia

*Rhizobium* biofertilizer



T<sub>1</sub>

T<sub>7</sub>

Treatments		Germination (%)	Shoot length (cm)	Root length (cm)	Vigour Index
T <sub>1</sub>	RDF + ST with <i>Rhizobium</i>	92 (73.7)	17.6	18.8	3367
T <sub>2</sub>	RDF + ST with NPK microbial consortia at 10 ml/kg of seed	94 (75.9)	18.2	20.6	3647
T <sub>3</sub>	RDF + ST with NPK consortia + SWE spray on 25 DAS	94 (75.9)	18.4	20.8	3685
T <sub>4</sub>	RDF + ST with NPK consortia + SWE spray on 25 and 35 DAS	94 (75.9)	18.6	20.2	3628
T <sub>5</sub>	RDF + seed soaking in SWE and ST with <i>Rhizobium</i>	97 (80.1)	19.2	21.9	3926
T <sub>6</sub>	RDF + ST with SWE & <i>Rhizobium</i> + SWE spray on 25 DAS	97 (80.8)	19.3	21.7	3936
T <sub>7</sub>	RDF + ST with SWE & <i>Rhizobium</i> + SWE spray on 25 and 35 DAS	97(80.1)	19.6	21.6	3994

ST: Seed treatment, SWE: Seaweed extract, RDF (recommended dose): 25:50:25 kg of NPK/ha)

# Effect of seaweed extract on Growth, Productivity & profitability of Greengram (*Vigna radiata*) (CO8) :TNAU, Coimbatore, Tamil Nadu



Treatments		Grain yield	Haulm yield	Harvest index
T <sub>1</sub>	RDF + ST with <i>Rhizobium</i>	989	1993	33.2
T <sub>2</sub>	RDF + ST with NPK microbial consortia at 10 ml/kg of seed	1018	2036	33.3
T <sub>3</sub>	RDF + ST with NPK consortia + SWE spray on 25 DAS	1078	2121	33.7
T <sub>4</sub>	RDF + ST with NPK consortia + SWE spray on 25 and 35 DAS	1118	2192	33.8
T <sub>5</sub>	RDF + seed soaking in SWE and ST with <i>Rhizobium</i>	1037	2061	33.5
T <sub>6</sub>	RDF + seed soaking in SWE & ST with <i>Rhizobium</i> + SWE spray on 25 DAS	1145	2233	33.9
T <sub>7</sub>	RDF + seed soaking in SWE & ST with <i>Rhizobium</i> + SWE spray on 25 and 35 DAS	1248	2416	34.1

Application of 100% RDF (25:50:25 NPK) + Seed soaking in (0.1%) SWE followed by seed treatment with *Rhizobium* & Foliar application of SWE (0.25%) on 25 & 35 DAS resulted into 26 % increase over RDF + ST with *Rhizobium*)



# Effect of seaweed extract on Growth, Productivity & Profitability of Greengram



## IFFCO Chair ( State Agriculture Universities)

## Results

**BCKVV, Nadia, West Bengal**  
(Effect of Sagarika on Performance of Green gram Crop ( SAMRAT ( PDM-9)



- 1) Sagarika liquid applied as seed soaking (0.1 %) & 2 foliar sprays (@ 0.25 %) at 21 & 42 DAS along with RDF ( @ 120 Kg NPK/ha) resulted into 35 % increase in yield (2.58 qtl /ha) over RDF (7.3 qtl /ha)
- 2) Basal Application of Sagarika granule @ 25 Kg /ha alongwith RDF (@ 120 Kg NPK/ha) resulted into 33.2 % increase in yield (2.43 qtl/ha) over RDF (7.3 qtl/ha).
- 3) 25 % Reduction in RDF ( @ 90 Kg/ha) alongwith application of Sagarika granule @ 25 Kg /ha resulted into 31.5 % increase in yield (2.3 qtl/ha) over RDF (7.3 qtl/ha)

**UAS, Dharwad, Karnataka**  
(Efficacy of sagarika (liquid) for enhancing the productivity of greengram)



Application of RDF (75 Kg NP/ha) + Sagarika @ 0.1 % seed soaking + seed treatment (Rhizobium+ PSB) + Foliar spray of Sagarika @ 0.25 % at pre flowering stage resulted into 16.2 % more yield (1.45 qtl) over control yield (8.93 qtl/ha) receiving 100 % RDF (75 Kg NP /ha) + seed treatment ( rhizobium and PSB)

IFFCO Chair ( State Agriculture Universities)	Results
<p><b>SVBPUAT, Meerut, Uttar Pradesh</b> Nutrient management in Wheat for improving fertilizer use efficiency, soil biodiversity and productivity in Indo Gangetic plains of U.P.</p>	<p>31.8 % higher yield in 2017-18 &amp; 27.9 % higher yield in 2018-19 over RDF was recorded by treatment receiving RDF + FYM @ 5 MT/ha + NPK – BF + Foliar spray of NPK (18-18-18) +Sagarika Liquid (0.25 %) at 55 -70 DAS</p>
<p><b>CCSHAU, Haryana</b> Nutrient optimization through organic &amp; inorganic resources in wheat</p>	<p>8.7 % higher yield ( 5 qtl/ha) was recorded with 75% NPK + seed treatment with NPK Consortia @5ml /kg of seed + FYM 10t/ha</p>
<p><b>CSAUAT, Kanpur, Uttar Pradesh</b> Nutrient optimization through organic and inorganic resources in rice- wheat cropping system. Rice( NDR-359) – Wheat (PBW -343) Cropping System</p>	<p>Highest average yield of grain (48.33 q ha<sup>-1</sup>) and straw (60.40 q ha<sup>-1</sup>) in rice and grain (3.93 q ha<sup>-1</sup> ) and straw yield (53.59) in wheat was recorded with the application of 75% NPK alongwith basal application of 25 kg/ha Sagarika granules + 2 sprays of 0.25% of Sagarika &amp; 2% of WSF (18:18:18)</p>

Cotton +  
Pigeonpea (Mixed  
Crop) 2017-18

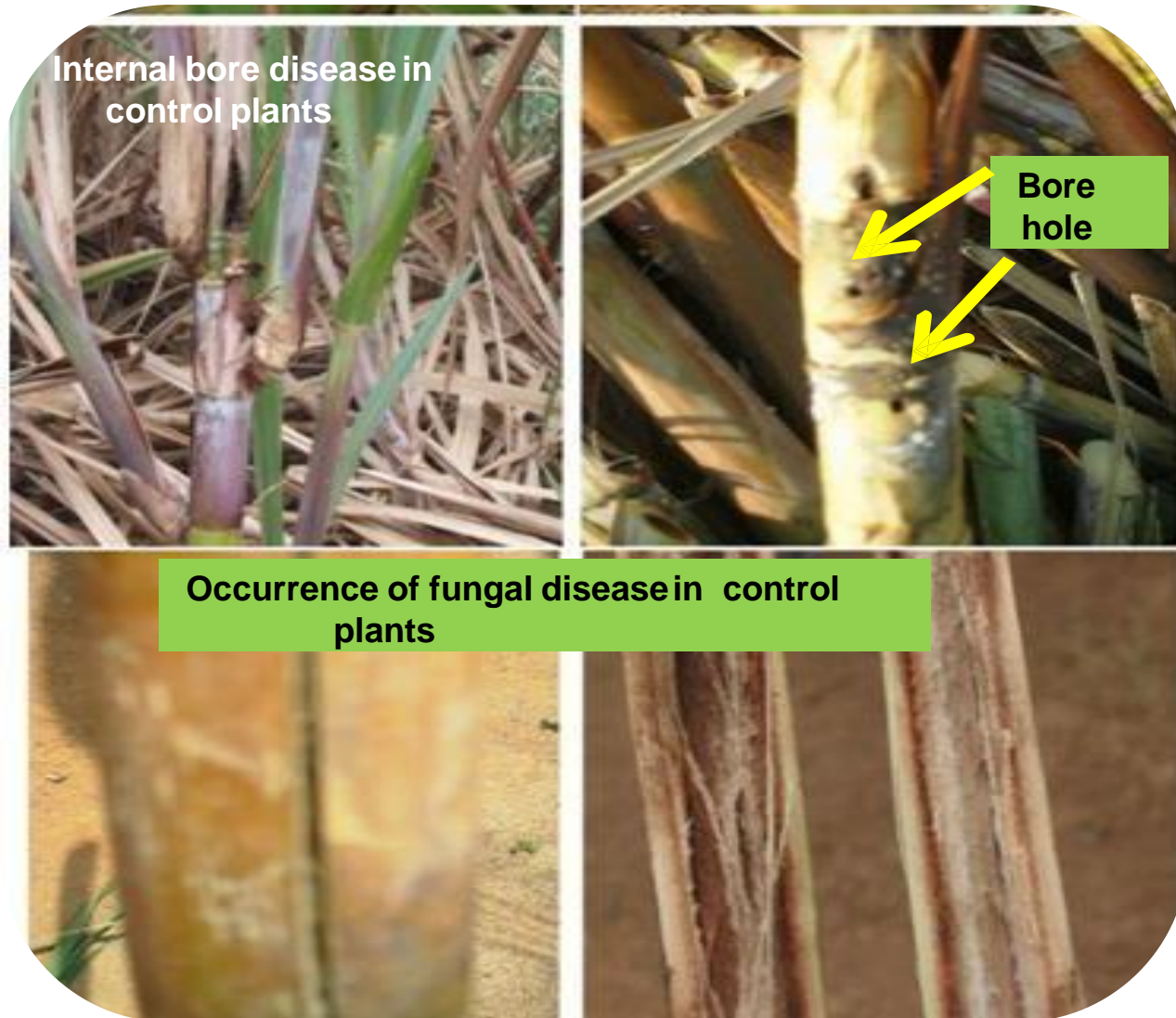
Location : 1) Central Institute of Cotton Research (CICR), Nagpur Farm and  
2) Farmers Field ( 30 Nos.); Kamleshwar Taluka, Nagpur

Experiments – 1) Evaluation of Sagarika as Seed Treatment, Foliar & Soil  
Application ; 2) Evaluation of Foliar application of Sagarika at different critical  
growth stages of cotton under 2 supplemental irrigation

Results :

- 1) Soil application of Sagarika (28 %) granule @ 25 Kg / ha lead to 28 %  
higher seed cotton yield over RDF with 25 % saving in Fertiliser
- 2) Single spray of Sagarika Liquid before squaring resulted into 20 % more  
boll formation and 25 % increase in seed cotton yield over farmers practice
- 3) In spite of severe seedling drought conditions of about 1 month in 2018, 2  
supplemental irrigation alongwith 2 foliar application of Sagarika (@ 2ml /  
litre) before squaring and flowering resulted into higher seed cotton yield





- Red rot (*Colletotrichum falcatum*) adversely affects Cane yield and have en led to decimation of many varieties.It reduces :
  - Cane yield by 29 %
  - Sugar recovery by 31%
  - Sucrose content by 75 %
  - Juice yield by 90 %
- In India, it has been estimated that Annual loss of revenue ( India estimated): 500 and 1000 million USD
- Sagarika treated sugarcane were found to have no such fungal disease whereas it was observed with control plants (J. Appl. Phycol. 2017, 29, 3245-3252)

# Phytotoxicity study of SAGARIKA



Sagarika Treatment (%)	Yield of Snake gourd / plant (Kg)			
	1 <sup>st</sup> harvest	2 <sup>nd</sup>	3 <sup>rd</sup>	Total
0.25	1.80	0.51	1.79	4.10
0.50	1.86	0.59	1.62	4.08
1.5	2.09	0.70	1.44	4.23
2.0	1.62	0.49	1.91	4.02
2.5	0.76	0.28	1.45	2.49
6.25	0.68	0.51	0.94	2.13
Control	0.69	0.26	2.20	3.14

- No phytotoxicity of any kind was observed on snake gourd grown under field conditions when treated with Sagarika Liquid used as foliar applications at various dosage rates.



# Effect of Sagarika on Tea Productivity, Assam

Name of Tea Planter & Location	Area (sq. ft.)	Yield (Kg)	
		Planter Practice	IFFCO Practice (Application of Sagarika @ 5ml/lit. + WSF 18:18:18 @ 2 gm/lit.)
Bangshi Saikia (Melamati, Titabar, Jorhat, Assam)	8640	45	55.5
Putul Das (Melamati, Titabar, Jorhat, Assam)	5760 sq. ft.	29	40
Rajib Saikia Borpothorua, Golaghat	5760 sq. ft.	42.5	53

**Economics** ( 1 ha Area) : Price of 1 Kg Tea leaf Rs 15

Treated Plot : Production @ 650 kg per plucking (4 times)= 9750\*4= Rs 39000

Control plot: Production @ 525 kg per plucking (4 times) =7875\* 4 = Rs 31500

Additional Cost in Treated plot ( Sagarika 3 litre, WSF (18:18:18), 3 Mandays) = Rs 2330

Benefit in Treated plot over Control (BCR) = 3:1



# “Effect of Sagarika on Grape Productivity, Karnataka

Grapes Varieties :	Dilkush & Bangalore Blue
IFFCO Adopted Village ( District)	Kolavanahally (Chikkaballapura )
Demonstration (Area)	6 Ha
Farmers (Nos.)	9
Sagarika Application @ 2.5 ml/ Litre of Water ( 250ml/Acre):	1 <sup>st</sup> Spray Pruning ; 2 <sup>nd</sup> Spray Before Flowering ; 3 <sup>rd</sup> Spray During Flowering; 4 <sup>th</sup> Spray Berries development
Yield	
Control Plot	39.42 MT / ha
Treated Plot (Avg)	48.41 MT / ha
% Increase	23 ( Rs 2.15 Lakhs)





# Effect of Sagarika on Sugarcane Productivity, Karnataka

<b>Crop</b>	<b>Ratoon Sugarcane ( Co 86032)</b>
<b>Village ( District)</b>	Yakkeri, Savadatti ( Belgaum)
<b>Name of Farmer</b>	Pujar Yallahoovappa
<b>Application :</b> <b>Root Dip @ 0.1 % V/V &amp; Foliar</b> <b>@ 2.5 – 5 ml/ Litre</b>	1 <sup>st</sup> Spray at Tiller Sprouting ( 45 Days; 2 <sup>nd</sup> Spray 90 Days & 3 <sup>rd</sup> Spray at 125 Days



K sap Conc. (%)	Quality Parameters				Quantity Parameters		
	Brix (%)	POL (%)	Purity (%)	Recovery (%)	Cane Yield /Ha (MT)	Sugar Yield (Kg)/MT	Cane Yield Increase Over Control (%)
10	21.20	19.95	94.10	12.24	125.089	1224	19.92%
30	20.84	19.46	93.38	12.29	133.467	1229	27.95%
50	21.92	20.34	92.79	12.81	146.198	1281	40.16%
Control	19.86	18.59	93.60	11.75	104.308	1175	----

# Promotional Efforts for Sagarika





## सागरिका

### SAGARIKA

100% Natural Seaweed Extract



Technology developed by:



CSIR - CSMCRI  
Bhavnagar, Gujarat



Certified organic by:



ISCOF

**Use Sagarika to Increase Yield by 10 to 15% Across Crops**

BENEFITS	RECOMMENDED DOSAGE RATE	BENEFITS
<ul style="list-style-type: none"> <li>Helps in development of stronger roots</li> <li>Increases the ability of the plant to withstand the stress caused by extreme temperature, drought etc.</li> <li>Increases photosynthesis resulting in healthier foliage</li> </ul>	<p><b>Sagarika</b></p> <ul style="list-style-type: none"> <li>250ml-500ml/spray/acre</li> <li>2-3 sprays are required per crop cycle                             <ul style="list-style-type: none"> <li>➢ 1st spray Pre flowering</li> <li>➢ 2nd spray Post flowering</li> </ul> </li> </ul> <p><b>Sagarika 2++</b></p> <ul style="list-style-type: none"> <li>8-10 Kg/acre in case of field crops</li> <li>Application protocol                             <ul style="list-style-type: none"> <li>➢ 10 days after sowing/transplanting</li> <li>➢ 30 days thereafter</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Increases flowering and decreases fruit drop</li> <li>Acts as a natural soil-conditioner by increasing microbial soil activity</li> <li>Increases the quality and yield of all crops</li> </ul>

**Launch of Sagarika**



प्रौद्योगिकी दिवस 2016  
11 मई 2016, विज्ञान भवन, नई दिल्ली

Technology Day 2016  
11 May 2016, Vigyan Bhawan, New Delhi

"Coastal seaweeds have great potential for human health care and agriculture. We should work on scientific methods of seaweed agriculture. Seaweeds are important raw material and can play a significant role in improving crop productivity."

"Seaweed cultivation neither requires land nor irrigation water nor any fertilizer, instead it yields fertilizers, which will be used in land based crops."

Shri Narendra Modi, Honorable Prime Minister

Late Dr. APJ Abdul Kalam, Former President of India



Technology :  
Central Salt & Marine  
Chemicals Research Institute  
(CSMCRI) Bhavnagar Gujarat

Certified by :  
CSIR New Delhi  
Patents : IN 224938;  
US 6893479 EP 1535757

**1 ലിറ്റർ ഇഫ്കോ സാഗരിക 28% ഇപ്പോൾ 500 രൂപ മാത്രം**



## കരുത്തുറ്റ ജൈവകം ഇഫ്കോ സാഗരിക

കടലിൽ വളരുന്ന ചുവപ്പ് തവിട്ടുനിറത്തിലുള്ള കടൽ പായലുകൾ (Red & Brown Algae) സംസ്കരിച്ചുണ്ടാക്കുന്ന സവീഡ് എക്സ്ട്രാക്റ്റ് കാർഷിക വിളകൾക്ക് വ്യാപകമായി ഉപയോഗിക്കുന്ന 100% ജൈവികമായ ഭാര്യപാദന വർദ്ധന സഹായിയാണ്. പ്രാവർത്തികതയും തരി രൂപത്തിലും സാഗരിക എന്ന പേരിൽ ഇഫ്കോ രാജ്യത്തെമ്പാടും ലഭ്യമാക്കുന്നു. CSIR, ICAR, വിവിധകാർഷിക സർവ്വകലാശാലകൾ എന്നിവ സവീഡ് എക്സ്ട്രാക്റ്റ് വിളകളിൽ നടത്തിയ പഠനങ്ങളിൽ 11 % മുതൽ 36% വരെ വിളവർദ്ധന ലഭിക്കുന്നതായി തെളിയിച്ചിട്ടുണ്ട്.

**ഇഫ്കോ സാഗരിക - പ്രത്യേകതകൾ**

28% വീര്യമടങ്ങിയ 100% ജൈവ ഉൽപ്പന്നമാണ് ഇഫ്കോ സാഗരിക ലിക്വയ്. തരിരൂപത്തിലുള്ള സാഗരിക ബോറോൺ, സിങ്ക് എന്നീ സൂക്ഷ്മ മൂലകങ്ങളാൽ സമ്പുഷ്ടമാക്കിയത്

സമ്പു വളർച്ചയെ പ്രോത്സാഹിപ്പിക്കുന്ന കാക്സിൻ, സൈറ്റോകൈനിൻ, ഗിബെറില്ലിൻ, ബെറ്റയിനെസ്റ്റ്, മാനിറ്റോൾ തുടങ്ങിയ ഘടകങ്ങളും പ്രോട്ടീനുകളും കാർബോഹൈഡ്രേറ്റുകൾ, വിറ്റാമിനുകൾ എന്നിവയും സാഗരികയിൽ അടങ്ങിയിട്ടുണ്ട്. കൂടാതെ പ്രധാന പോഷകങ്ങളായ NPKയും സാഗരികയിൽ അടങ്ങിയിട്ടുണ്ട്

ജൈവകൃഷി, വിഷരഹിത പച്ചക്കറി കൃഷി, അടൂക്കളത്തോടും മറ്റുമകൃഷി, കൃത്യത കൃഷി, ഹൈടെക്ക് കൃഷി തുടങ്ങി ഏതു കൃഷിരീതിയിലും വിളകളിലും ഇഫ്കോ സാഗരിക ഉപയോഗിക്കാം

വിവിധത ഫലങ്ങളോ പാർശ്വഫലങ്ങളോ ഇഫ്കോ സാഗരികയുടെ ഉപയോഗമൂലം ഉണ്ടാകുന്നില്ല. സാഗരിക കൃഷിക്ക് ഏറ്റവും അധികമായ മുൻപണിയാണ് ഇഫ്കോ സാഗരിക

കാർഷിക ഉല്പന്നങ്ങളുടെ ഗുണമേന്മ, രൂപരേഖ, വലുപ്പം, നിറം, രുചി എന്നിവ വർദ്ധിപ്പിക്കുന്നു

നെല്ല്, പയർവർഗ്ഗ വിളകൾ, പച്ചക്കറി വിളകൾ, ഫലവർഗ്ഗ വിളകൾ, ഏലം തേയില, കാപ്പി, വാഴ കൈതച്ചക്ക, കപ്പ, ഇഞ്ചി തുടങ്ങി എല്ലാ വിളകൾക്കും ഉപയോഗിക്കാം

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# Special Sales Campaign & SPPT Programmes

- **Location** : Warud Block, Amrawati, Maharashtra
- **Selection** : 500 Orange plants from orchards of 20 farmers of 6 villages' (Pusla, Singori, Hiwarkhed, Benoda, Jamgaon khadka and Palsona )

## Santra Kit for Farmers

- 1) Sagarika 300 gm/plant Soil Application
- 2) Bentonite sulphur 125 gm/plant Soil Application
- 3) NPK Consortia 10ml in 3 lit water per plant (soil drenching)
- 4) PSB bio fertilizer 20 ml in 3 lit water per plant Soil drenching
- 5) Urea Phosphate (17:44:00) 2 % Spray + 0.5 % Magnesium Sulphate foliar application
- 6) Magnesium Sulphate 100 gm/plant Soil application
- 7) Zinc Sulphate 50 gm/plant



Photo 1 & 2 : Sale point Personnel Training (SPPT) Programme at Satara & Koregaon TKVS, Maharashtra

# Snapshots of IFFCO's Promotional Programmes



Application of Granular Sagarika & Liquid Sagarika leads to Happy Farmers SUGARCANE  
Farmer name : Balappa Shivappa Jalihal  
Village & State : Bankneri, Karnataka



Application of Granular Sagarika & Liquid Sagarika leads to Happy Farmers : CAULIFLOWER  
Farmer name : Patel Kalpeshbhai Jayantibhai  
Village & State : Prantij (Sabarkantha), Gujarat



# Snapshots of IFFCO's Promotional Efforts



REDMI NOTE 6 PRO  
MI DUAL CAMERA



# Way Forward

- Quality control aspects for seaweed based products would be addressed to a large extent once the product is legitimized and brought under fair legislation.
- Seaweed Extract based products/ Biostimulant are becoming integral part of integrated nutrient management (INM). It should be part of state wise crop recommendations too as part of package & practices of crops.
- Awareness needs to be created about mode of action and appropriate concentration levels for seaweed application for seed, soil, foliar, drip, hydroponics etc.
- Cultivation or availability of quality seed material is key issue that will determine the profitability of the sector in real terms and real benefit to the growers.




**1967**  
**से भारतीय किसान**  
**के सच्चे साथी**

**मिट्टी की जान. किसान की शान.**

**जल उत्पाद**  
**पानी में घुलनशील व**  
**विशेष उर्वरक**  
**उत्तम खाद, उचित दाम**



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THANK YOU

*“ We acknowledge Field Officers of IFFCO who have helped implement, innovate and market the concept of specialty fertilizers leading to **TRANSFER AND ADOPTION OF IMPROVED FARM TECHNOLOGIES** across India”*