Navaratna Cropscience Pvt. Ltd.

Integrated Solution for Sustainable Agriculture
An impactful solution for Soil Health Management

By

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Advisory Committee Member – BPD, NAIP Project
Member – ACABC, Ministry of Agriculture, Govt. of India
PREAMBLE
Challenges & Concerns

- Abuse of chemicals
- NPK Fertilizers
- Labour Unavailability
- Productivity is imp.

- Erosion of soil Rhizosphere bacteria
- Resulted in micro flora erosion
- Increased usage of herbicides
- Increased usage of Chemical fertilizer

How do we balance the health of soil?
Recolonize beneficial microbes into the soil & bring down soil toxicity
Over a period of time

NITROGEN: Important resource costs Rs.13/kg in Indian Factory
to import it costs Rs.26/kg, and
sold to farmers at Rs. 6/kg
1 lack crores subsidy 20 Billion US $.

PHOSPHORUS: 30 years from now not available,
30-40 % fixed in the soil, P2O5 management in soil is critical.

POTASSIUM: K20 availability is a bigger problem.

MICRONUTRIENTS imbalance is severe, we need challenge is to exploit all known
natural resource for increase of crop production.

How to make N:P:K & Micronutrients available?
PREAMBLE
Challenges & Concerns

- India has largest rain fed area of 80 million ha
- 141 million ha of net sown area has almost remained same for 35 years!!
- By 2020, Indian population will touch 1.33 Billion
- 1 MT of food grain feeds 5 people per year

Growing need for higher production in drought areas

Impact of rains in India

- 2.4% of global land area is in India
- 173 million ha of land is "Problem Area"
- 260 million has of land is drought prone area

Percentage of crops under Rain fed Agriculture

- High dependency of major crops on rains
- Urgent need to ramp up yields to meet growing population
  - Red fed area production has to increase from 1 MT/ha to 2 MT/ha
  - Irrigated area production has to increase from 2 MT/ha to 4 MT/ha

Rains MAKE or BREAK our farmers livelihood
MAKING A DIFFERENCE ...
Thru Soil Health & Plant Nutrition Management

NCS is The Agri - Biotech Company
is successful and creates value
uses Science based, innovative solutions to help secure competitive advantage and shape a successful future;
thinks and acts in the long term, is reliable and trustworthy, and takes
its responsibility for future generations seriously;
acts in a spirit of partnership with all its direct and indirect stakeholders – employees, customers, members of society and the people in our local communities

Our goal is to deliver the best and most sustainable Agri-inputs to serve critical applications with high societal benefit.
NCS DIRECTOR’S PROFILE

V.M. Basha, CEO
“A leader is one who knows the way, goes the way, and shows the way.”
Experienced for more than 2 decades, has rich expertise about agro-climatic zones, cropping patterns, Package of practices of many field, cash and commercial Crops. He is a key promoter of Navaratna Cropscience Pvt. Ltd.

M Sarita Reddy, MD
“A woman with a voice is by definition a strong woman. But the search to find that voice can be remarkably difficult.”
A graduate in Agricultural Sciences, decade of exp. In agriculture field, with an keen zeal to provide best of the quality products & Extension services leveraging biotechnologies immensely useful to agriculture, health and environment has made her to become an entrepreneur.
CUSTOMER PAINPOINTS

NCS SOLUTION

- Technical Service
  - Team of Field staff

- Accessibility
  - Dealers KVKs, FPOs

- Price
  - Cost Effective
    - Back up by R&D

- Lack of Quality
  - Awareness Campaigns

- Lack of Technical Know-How
21 PRODUCTS APPROVED
TO USE IN ORGANIC FARMERING

SUSTAINABLE & PROFITABLE GROWTH IN AGRICULTURE

PRIVATE & CONFIDENTIAL
DIVISIONS OF NAVARATNA

- Nitrogen Fixing Bact. (Azospirillum, Azotobacter, Rhizobium, Acetobacter spp)
- Phosphorous Solubilizing Bacteria
- Potash Mobilizing Bacteria
- VAM (Mycorrhiza)
- Microbial Inoculants for Biomass decomposition

BALANCED NUTRITION

- BIOFERTILIZERS
  - Humic and Fulvic Acids
  - Fermentation based Seaweed Extract, Protein Hydrolysates of Veg. origin

- NAVARATNA CROPSCIENCE PVT. LTD.

- PLANT PROBIOTICS
  - Associated with fermentation technology
  - unique strain of Silica
  - Solibilising Bacteria

- MICRONUTRIENTS
  - Soil Applications,
  - Foliar Sprays in Powder,
  - Liquid formulations of different states

- BIOSTIMULA NTS
SOIL HEALTH MANAGEMENT

BIOFERTILIZERS
NITROGEN FIXING BACTERIA
Azotobacter, Acetobacter, Azospirillum, Rhizobium

Cost of chemical nitrogenous fertilizers is increasing progressively
• Actively fixes atmospheric nitrogen in soil by conversion to ammonia
• Biological nitrogen Fixation (BNF) is proven concept for over a century
• It is formulated as carrier based powder with CFU count of 5 X 10^7 / g.
• 1*10^8 CFU/ml in Liquid form
• Registered under the Fertilizer Control Order- Govt of India.

Recommended Crops:
Cereals, Millets, Pulses, Oilseeds, Fiber Crops, Sugar Crops, Forage Crops,
Plantation crops, Vegetables, Fruits, Spices, Flowers, Medicinal crops, Aromatic
Crops, Orchards and Ornamentals

Seed treatment: 10 gm+10gm crude sugar in slurry form per kg seed
Soil application: 3-5 Kg/ acre with compost
Drip irrigation: 3 kg/3 L in drip stream
Shelf life: 12 months from dt. Of Mfg.
PHOSPHORUS SOLUBILISING BACTERIA

*Bacillus megatherium*

- Phosphorus is an important macronutrient
- Highly immobilized in soil and becomes unavailable to plants
- P Sol B contains endospores of Bacillus megatherium
- Carrier based powder with CFU count of $5 \times 10^7$ / g.
- $1 \times 10^8$ CFU/ml in Liquid form
- Registered under the Fertilizer Control Order- Govt of India.

**Recommended Crops:**
Cereals, Millets, Pulses, Oilseeds, Fibre Crops, Sugar Crops, Forage Crops, Plantation crops, Vegetables, Fruits, Spices, Flowers, Medicinal crops, Aromatic Crops, Orchards and Ornamentals

**Seed treatment:** 10 gm+10gm crude sugar in slurry form per kg seed

**Soil application:** 3-5 Kg/ acre with compost

**Drip irrigation:** 3 kg/3 L in drip stream

**Shelf life:** 12 months from dt. Of Mfg.
POTASSIUM SOLUBILISING BACTERIA

*Frateuria aurantia*

- Helps in Potassium Mobilisation
- Carrier based powder with CFU count of $5 \times 10^7$ / g.
- $1 \times 10^8$ CFU/ml in Liquid form
- Registered under the Fertilizer Control Order- Govt of India.
- K Sol B is approved for use in Organic Agriculture

**Recommended Crops:**

**Seed treatment:** 10 gm+10gm crude sugar in slurry form per kg seed

**Soil application:** 3-5 Kg/ acre with compost

**Drip irrigation:** 3 kg/3 L in drip stream

**Shelf life:** 12 months from dt. Of Mfg.
Vesicular Arbuscular Mycorrhizae

- Profuse root development, More tillering
- Better soil texture, Increased nutrient uptake
- Increased water uptake, Better seedling establishment
- Alleviation of stress tolerance, Higher yield and better quality produce
- Use@ 4 to 8 kgs/acre – granules
- Registered under the Fertilizer Control Order- Govt of India.
- VAM is approved for use in Organic Agriculture

**Recommended Crops:**
**Shelf life:** 12 months from dt. Of Mfg.
Earth EMpower™
BENEFICIAL & EFFECTIVE MICROORGANISMS FOR A SUSTAINABLE AGRICULTURE & ENVIRONMENT

Earth EMpower™ is a mixed culture of fermentative, soil-based, beneficial microorganisms with an amazing ability to revive, restore, and preserve (Effective microorganisms).

Earth EMpower™ helps in

- Degrading & decomposing green & organic manure
- Improves soil organic matter
- Detoxifies chemical residues
- Builds beneficial pathogens at the rhizosphere
- Induces phyto tonic effect and makes the soil healthy

**Soil application:** Apply Earth EMpower™ @ 8 kg on one acre crop land when there is moisture in soil.

**Decomposition:** Sprinkle 1 kg of Earth EMpower™ per 1 MT of organic waste.
PLANT NUTRITION MANAGEMENT

MICRONUTRIENTS

Photosynthesis: $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{carbohydrates (CHO)} + \text{O}_2$

Nutrients are taken up primarily by the roots in the form of an aqueous solution in the soil.

Private & Confidential
Micronutrients reinforce and supplement the strong plant growth and structures provided by major and secondary nutrients.

- NCS offers range of micronutrients for crop nutrition purpose
  - Nuplex™ Zn 33%
  - Nuplex™ Formula – 7
  - Nuplex™ Formula – 1
  - Nuplex™ Formula – 4 (Parex Power)
  - Nuplex™ Boran
  - Nuplex Megnesium
Bhooratna™
“Bhoo” – The Mother Earth; “Ratna” – Precious Diamond

Sea Water is characterised by Salinity, high pH, less dissolved oxygen, defused sunlight, no NPK, in such hostile situation certain sea weeds grow and complete their entire life cycle. **Sargassam wightii** a tropical sea coast weed of South India has high bio-stimulant contents like **Cytokins, Auxins, Betanes, Gibberilins**

**Bhooratna™** has main ingredients of “fermentation derivatives of sea-weed, fortified with Vermi compost extracts”

**BENEFITS**
- Easy to apply in granulated form
- Better root proliferation
- Imparts drought/Stress tolerance

**USAGE & DOSAGE**
Apply Granules @ 20 kg/acre; Concentrated form 0.5 liter/acre culture
UNIQUE PLANT PROBIOTIC PRODUCT
FOR BIOPRIMING
Associated with Fermentation Technology: BHOOJEEVAN

BENEFITS:
2. Enhances Nutrient & Water Uptake.
3. Enables uptake of Phosphorus & Micronutrients.
4. Enables Silica Solubilization.
5. Imparts Fungistatic Effect.
6. Imparts Insect Pest & Disease Tolerance.
8. Improved Quality & Quantity of Produce.

DOSAGE: 0.5g per liter water
UNIQUE PLANT PROBIOTIC PRODUCT FOR BIOPRIMING

Associated with Fermentation Technology: BHOOJEEVAN
AWARDS & ACCOLADES IN NCS’s CAP

International honor as best Technopreneur out of competition held in between 14 countries

Honored with Dr.I.V.Subbarao Rytunestham award by Rythunestham

Award for best women entrepreneur from Ministry of Agriculture, Govt. of India

Award for Best Business Plan at Indian School of Business (ISB) -Year 2014
RECOGNITIONS FOR NCS

- Member- Project Advisory Committee for "Business Planning Development unit for Agri-Entrepreneurship and Technology Management" funded by World Bank-ICAR, Implemented by NAARM- Rajendranagar.
- Resource person for training the “Budding Woman entrepreneurs on Entrepreneurship and Business Management.”
- Resource Person to MANAGE AND NIMSME for training of Extension and Agriculture dept. from other countries and states.
- Trained Many Farmer Groups on Organic farming to promote sustainable agriculture.
- Many students of Agriculture and Biotechnology have been trained as a part of their Industrial Internship program.
- Participated in many Govt. workshops as a successful entrepreneur to talk on various Govt. schemes useful for farmers.
- Developed first of its kind Plant Probiotic product “Bhoojeevan™” for vegetables, floriculture & Horticulture crops.
- Developed a product “Nu-Bhooshakthi” for SOIL HEALTH MANAGEMENT.
- Development of formulation for probiotics for aqua-culture and poultry.
BUSINESS OPERANDI OF NCS

1. Bulk Formulations/Customized Packing
2. Provision of Form “O” for Micronutrient Marketing Companies
3. Corporate Farmers
4. Dealers/Distributors network
“SEEING IS BELIEVING” & “DOING BY LEARNING”

THANK YOU