Coromandel: Promoting Sustainable Agriculture

By Sameer Goel, Managing Director, Coromandel International Ltd

R&D centre: IIT B-Monash Academy
Precision agriculture thru Drones
Farm advisory thru Webinars
Kakinada plant: 350 acres green belt
Farm mechanization – JV with Yanmar

About Coromandel

India’s largest private sector Phosphatic Fertiliser company- 3 plants
5th largest Ag Chem Indian company – 7 plants
India’s largest Single Super Phosphate (SSP) company – 8 plants
No. 1 Organic Manure player in India
Largest Rural Retail Chain across India – 800 centers

Coromandel’s Manufacturing Presence

Pioneers & market leaders in Specialty Nutrients

Part of USD 5.4 bil Murugappa Group
Coromandel Plant Nutrients

**NPKs & SSP**
- Started as a JV between IMC, Chevron, EID Parry in 1961
- Largest NPK & SSP fertiliser marketer in India
- Manufacturing 13 grades – 39% unique (with secondary & MNs)

**Speciality Nutrients**
- 1st Bentonite Sulphur/ Sulphozinc plant in India
- Largest manufacturers of WSFs (Foliar & Fertigation) - JV with WSF major SQM

**Organic Manure**
- Pioneers in Organic Fertilisers: Markets ~1.5 lakh tons pa
- Soil amendment – City Compost, pressmud
- Soil enrichment- Molasses, Oil cake

Coromandel Crop Protection & Bio Pesticide

**Significant Manufacturing presence**
- Technical exports to 80 countries; Bio exports to US, Canada & Europe
- Largest neem based Azadirachtin manufacturers globally

**Ably supported by R&D Team**
- 2 modern R&D facility – New products, delivery mechanisms, microbial research
- Technology partnerships with Japanese & Chinese players

**Wide range of products**
- Wide product portfolio ~60 brands
- Rich pipeline with greener chemistries
- Injection based application for forestry
Coromandel Retail

**Farming Solutions**

- Products:
  - Ag Nutrients
  - Crop Chem
  - Seeds
  - Vet Feed
  - Farm Implements

- Services:
  - Farm Mechanization
  - Agri Insurance
  - Credit
  - Soil/Petiole Testing
  - Extension Activities

**Customer Reach**

Convergence of Products & Services: One Stop Shop for Agriculture needs

- 3 million farmers annually

- India’s largest Agriculture Retail Chain with 800 stores

- Farmer outreach – thru Scientist connect, Agronomists
- ‘Retailer of the Year’ award by CMO Asia

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Coromandel adding value to the farmers

1. Holistic agri-inputs provider with play across agri value chain
2. Farmer education on variety of agri-inputs and new improved farmer tech
3. Agri-services - Farm equipments

**Drone Project**

- Drone pilot on Paddy & Cotton
- Soil pH

<table>
<thead>
<tr>
<th></th>
<th>Yield Improvement</th>
<th>Additional Income/ Acre (Rs)</th>
<th>Avg Net Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paddy</td>
<td>18%</td>
<td>5848</td>
<td>34%</td>
</tr>
<tr>
<td>Cotton</td>
<td>23%</td>
<td>8547</td>
<td>55%</td>
</tr>
</tbody>
</table>

**Stress Map - Paddy**
Technology driven Farming Interventions

Uberizations of Farm: Custom Hiring Centers

Webinar with agri scientists

Soil tests kits to the farms

Kiosks for last mile delivery

Drone based crop diagnostics services

Gromor Nutrient Manager: ~0.3 million RoI based recommendations annually

Doing it Responsibly: Birds’ Paradise

- Bio-Diversity at Coromandel’s Kakinada Plant home to ~100 bird species
- Home to 4000+ birds:
  - Breeding species: 13
  - Long distance migratory species: 24
- Recognized by UNDP ‘Turning a Factory into a Bird Sanctuary’
- Extensive coverage by Discovery
Indian Agriculture: Promoting Balanced Nutrition

Indian Agriculture: Achieving Self Sufficiency

Driven by Green Revolution
- High Yielding Variety
- Seed Replacement Rate
- Crop Chemicals usage
- Improved irrigation coverage
- Mechanization

& improved nutrient usage

...Achieved Self sufficiency in Cereals

<table>
<thead>
<tr>
<th>Crop</th>
<th>India Ranking</th>
<th>% Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulses</td>
<td>1st</td>
<td>23%</td>
</tr>
<tr>
<td>Oilseeds</td>
<td>1st</td>
<td>11%</td>
</tr>
<tr>
<td>Cotton</td>
<td>1st</td>
<td>29%</td>
</tr>
<tr>
<td>F &amp; V</td>
<td>2nd</td>
<td>11%</td>
</tr>
<tr>
<td>Sugarcane</td>
<td>2nd</td>
<td>20%</td>
</tr>
<tr>
<td>Cereals</td>
<td>3rd</td>
<td>11%</td>
</tr>
</tbody>
</table>

Since Green Revolution, food production has multiplied 3.7 times while population increased by 2.5 times

Source: FAO

- 3rd largest Agriculture producer globally
- 7th largest Agri exporter
However, Productivity Gaps…

Falling per capita land holding

<table>
<thead>
<tr>
<th>Year</th>
<th>Avg landholding size (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970-71</td>
<td>2.28</td>
</tr>
<tr>
<td>1980-81</td>
<td>2</td>
</tr>
<tr>
<td>1990-91</td>
<td>1.5</td>
</tr>
<tr>
<td>2000-01</td>
<td>1.08</td>
</tr>
<tr>
<td>2010-11</td>
<td>1</td>
</tr>
<tr>
<td>2015-16</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Source: Ministry of Agri

Low Mechanization

<table>
<thead>
<tr>
<th>Country</th>
<th>Level of farm Mechanization</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>40%</td>
</tr>
<tr>
<td>Brazil</td>
<td>75%</td>
</tr>
<tr>
<td>USA</td>
<td>95%</td>
</tr>
<tr>
<td>West Eur</td>
<td>95%</td>
</tr>
<tr>
<td>Russia</td>
<td>80%</td>
</tr>
<tr>
<td>China</td>
<td>48%</td>
</tr>
</tbody>
</table>

Source: World Bank, FAO

Low Nutrient Usage

<table>
<thead>
<tr>
<th>Country</th>
<th>Kg/ha (N+P2O5+K2O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>131</td>
</tr>
<tr>
<td>USA</td>
<td>134</td>
</tr>
<tr>
<td>Brazil</td>
<td>172</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>268</td>
</tr>
<tr>
<td>China</td>
<td>354</td>
</tr>
</tbody>
</table>

Source: FAI

Low Crop Protection consumption

<table>
<thead>
<tr>
<th>Country</th>
<th>Pesticide Consumption (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.6</td>
</tr>
<tr>
<td>UK</td>
<td>5</td>
</tr>
<tr>
<td>USA</td>
<td>7</td>
</tr>
<tr>
<td>Japan</td>
<td>12</td>
</tr>
<tr>
<td>China</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: FICCI

& imbalanced nutrient application impacted soil health

Nutrient Deficient India Soils

- More than 50% of the districts deficient in essential plant nutrients
- Relatively untapped Secondary & Micro Nutrients segment
- Organic products for soil rejuvenation

Opportunity for Balanced Nutrition
Policy reforms to drive Balanced Nutrition

- Scheme started in 2015 by Govt of India
- Soil health cards issued every two years - 140 mil farmers covered

Under Direct Benefit Transfer in Fertiliser, SHCs being integrated to farmer purchases: Pilot study
To promote soil test based nutrient management - enhancing nutrient use efficiency

DBT 3.0: Leveraging JAM Trinity for Direct Transfers
- Rural India high on ‘JAM’ coverage—Jan Dhan (Bank account coverage), Aadhaar (Biometric system), Mobile (88% coverage)
- Direct Subsidy Transfers to the Beneficiaries based on Soil Health

Balancing Nutrient consumption

Fertiliser Price variability

In 2010, Urea kept out of the NBS scope – Led to sharp increase in P&K prices

Led to Imbalanced Nutrient Usage

Steps to moderate ‘N’ consumption

- Neem coating Urea – For enabling slow release & preventing diversion
- Bag size reduction: From 50 kg to 45kg
- DBT 3.0: Contemplating Urea under NBS (Nutrient based subsidy) – reducing price distortion
Use of Technology & Smart Fertiliser

Agri-tech as enabler for “smarter” farming

- **Data generation (Sense):**
  - In-field sensing
  - Remote sensing
  - Proprietary data
  - Public data

- **Algorithms (Infer):**
  - Monitoring
  - Analysis
  - Predictions

- **Smart equipment (Act):**
  - Drones and Robotics
  - Implement Variable rate applicators.

Alternate delivery mechanisms for nutrient application

**Nutrient Uptake Efficiency**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Application</th>
<th>Soil Application</th>
<th>Fertigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>30-50%</td>
<td>65%</td>
<td>95%</td>
</tr>
<tr>
<td>P2O5</td>
<td>20%</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td>K2O</td>
<td>60%</td>
<td>60%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Source: Fertiliser Marketing News

**Fertigation**

- Increase in Water Use Efficiency: 50 – 90%
- Productivity Increase: 40-50%

**Slow & Control Release fertiliser**

- 20-30% reduced application
- Reduced toxicity & Labour savings

Indian Agriculture is fast evolving …..2020 & Beyond

Agriculture
### Emerging trends in Agri sector in India

<table>
<thead>
<tr>
<th>Themes</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising pressure on natural resources</td>
<td><strong>Micro-irrigation to gain prominence; delivery models for agri-inputs will change</strong></td>
</tr>
<tr>
<td>Changing dietary patterns</td>
<td><strong>Growth in F&amp;V, Pulses will increase demand for agri inputs and for cold chain solutions</strong></td>
</tr>
<tr>
<td>Evolution of farm holdings</td>
<td><strong>Agri cos. can partner with output marketers, contract farmers to secure input credit</strong></td>
</tr>
<tr>
<td>Farm labour shortages</td>
<td><strong>Shared service models for farm equipment will gain prominence</strong></td>
</tr>
<tr>
<td>Financial sector involvement</td>
<td><strong>Rising financial liquidity could enable greater spend on specialty agri inputs</strong></td>
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<td>Rise of digital farmers</td>
<td><strong>Digital presents a great opportunity to drive personalization and farmer connect</strong></td>
</tr>
<tr>
<td>Farm Technology advancements</td>
<td><strong>Completely new platforms to deliver agri inputs and agri services to farmers</strong></td>
</tr>
<tr>
<td>Evolution of logistics</td>
<td><strong>Better distribution and storage efficiencies will increase earnings &amp; purchasing power of farmers</strong></td>
</tr>
<tr>
<td>Government interventions</td>
<td><strong>Growth in farmer incomes and purchasing power …but incentivization of land division</strong></td>
</tr>
</tbody>
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1st Green Revolution was driven by **Farm Inputs**....

2nd Green Revolution to be driven by **Technology Inputs**
- Superior products
- Delivery Mechanisms
- Data Analytics
Coromandel...bringing smiles to millions of farmers by promoting sustainable agriculture