A.P – a plan for sustained wellbeing and prosperity of all farmers in the state

T.VijayKumar,
Spl.ChiefSecretary,AgriGovt of A.P
Objectives:

To make agriculture livelihoods profitable and sustainable

- To reduce costs of cultivation, reduce risks, enhance yields, enhance soil fertility, and protect from uncertainties of climate change – through adoption of Agro ecology framework (‘Zero budget Natural farming’)

- Farmer led extension, and women farmer centred extension. Farmer to farmer learning

- Extension supported by I.C.T, satellite imaging
Objectives: Farmers welfare

• To reach out to all farmers in the state and stay engaged with them – 50 to 55 lakh farm households (including tenants)

• Special focus on poorest farmers (bottom 30% - around 15 lakh families) – nutrition and livelihoods security

• To support each farmer family for at least 5 years till they attain sustainable and viable livelihoods
Objectives: strong farmers institutions

• To build strong **grassroots institutions of farmers** to implement the above transformation programme and to sustain it (3 tier structure – farmer SHGs, village federation of farmers and Farmers’ producer organization)

• Credit and risk management through farmers institutions - aggregation, mediation and facilitation

• Enhance farmers’ share of consumer rupee
Key strategies: each farm household will be enabled to:

I. **Minimize costs of cultivation:**
   
   1. Eliminate usage of chemical pesticides – practising NPM
   2. Reduce, minimize usage of chemical fertilizers - Natural means of soil fertility management and enhancement
   3. Village seed banks – to reduce costs of seed

II. **Reduce risks in rainfed farming**

   4. treating each holding as a watershed
   5. Participatory groundwater management
   6. Diversified crop models in each holding
III. To conserve water and improve water efficiency – ‘more crop per drop’

7. SRI – for paddy, ragi, sugarcane, pulses, oilseeds and vegetables
8. Micro irrigation

IV. To get incomes on a monthly basis rather than only once or twice a year:

9. Vertical harvesting of sunlight – 7 layers model
10. Incorporating trees, forest produce, animals, birds and fish – Integrated farming systems

V. Special thrust on the poorest of the poor – landless labourers and sub-marginal farmers

11. Half – acre model – Rs.50,000 per annum net income with ½ acre irrigated land on lease, and also on drylands
VI. To reduce drudgery, reduce costs of cultivation and in dryland farming to maximize the small window offered by the infrequent rainy days.

12. Farm mechanization and custom hiring centres for timely agriculture operations, cost reduction and drudgery reduction.

All agriculture practices should be climate change resilient.
All agriculture practices should be climate change resilient

• 3 initiatives in COP 21:
  ✓ 4/1000 initiative – for enhancing soil carbon
  ✓ Agro ecology
  ✓ Small farmers livelihoods

• FAO document 2016 – Save and grow – ecological pathways for cereal production (wheat, maize and rice)

• UNCTAD – ‘Change or perish’ – call for Agro ecology
1. Summer Ploughing
   – Deep summer ploughing to expose the pupae of cut worm and pod-borer for natural enemies and scorching sunlight.

2. Community Bonfire
   – Bonfires in the fields attract adults of Red hairy caterpillars and other adults

3. Seed Treatment/Seedling treatment
   – To control seed borne diseases (Beejamruth, *Trichoderma viride*, etc.,)
4. White and Yellow sticky Plates
   - Yellow sticky traps coated with grease and sticky oils attract white flies
   - Help in monitor the crop in determining whether the pest population attained ETLs.

5. Clipping of Tips (paddy)
   - clipping the seedlings before transplanting reduces the carry-over of eggs (stem borer and Hispa) from seed bed to the transplanted field.

6. Alleys in paddy
   - Planting by leaving alleys (pathways) of 20cms width for every 2mts in sun-rise and sun-set direction helps in better transmission of sunlight and air movement in rice field, minimize insect pests like BPH
7. Bird Perches
   – Erect bird perches to encourage predation by insectivorous Birds.

8. Pheromone traps
   – Helps in pest intensity identification as well as to trap the male moths.
9. Trap crops

- Plant between main crop rows
- To protect the main cash crop from a certain pest or several pests
- Preserves the indigenous natural enemies
- Helps conserve the soil and the environment
- Improves the crop's quality

10. Border Crops

- To protect migration of pests and diseases.
- To develop beneficial insects
- To protect the main cash crop from a certain pest or several pests
11. Botanical Extracts

1. NEEMASTHRAM
2. BRAHMASTHRAM
3. AGNIASTHRAM
4. IPOMEA SOLUTION
5. COW DUNG + URINE+ ASAFOETIDA formulation
6. DRY CHILLI - GARLIC SOLUTION
7. 5% NEEM SEED KERNEL EXTRACTION
8. PANCHAGAVYA
12. NPM Shop

- Providing livelihoods to the landless poor through NPM shops
- NPM shops for timely supply botanical extracts and other “green” inputs.
- Farmers given orientation in preparation and use of various bio-pesticides and fertilizers in the NPM shops
Concept – 2: Soil fertility management through natural means

• Soil to be treated as **living media**

• Returning crop residues to soil – directly and through animal route

• Dung to be viewed as source of microbial inoculum

• Enabling environment for returning of deep burrowing earthworms
Concept – 2: Soil health – Key for plant health

Soil Fertility Management – Gradual reduction of chemical fertilizers

- **Green Manure**
- **Azolla**
- **Tank Silt Application**
- **Mulching**
- **Natural Earth Worm Castings**
- **Cattle Shed Lining**
- **Neem Cake**
- **Nadeep Compost**
Cowdung based formulations

- Ghanajeevamrutham
- Panchagavya
- Dravajeevamrutham
- Amrutha Jalam
Concept – 3: Seed banks for seed sovereignty

- Identifying high yield genome with the farmers – local and improved
- Organizing seed production plots with 2 – 3 farmers initially
- Soon after harvest and drying needy farmers lift their own seed, preserve
- Seeds to meet production to biodiversity ensured
- Graduation from monetary transaction to payment in kind with premium (i.e., 50% more seeds at harvesting time)
- Access to Foundation Seed Chain periodically by communities
Concept 4 - treating each holding as a watershed - rainfed Sustainable Agriculture

1. Conservation or deep furrows for every four meters.

2. Trench around the field.

3. Farm ponds.

4. Increasing organic matter addition to soils / soil carbon to enable more infiltration and better retention of soil moisture
Concept 5 - Water management and groundwater governance

1. Water Security for all rainfed farmers for protective irrigation against drought-spells (Every holding to be Water Secure)

2. Farmers’ Water Schools – water literacy & crop water budgeting

3. Groundwater collectivisation and regulation by communities

4. Re-working on AP WALTA to enable communities to manage groundwater
Concept 6 – Diversified crop models

- **Diversified crop models** – at least 4 to 5 crops in each farm holding, Pulses, Millets and Oilseeds

- For building sustainability - integration of trees, vegetables and livestock requirements into crop systems
Anantapuram dist – Madaksira mandal

- Name: H Narayanappa
- Village: Melavai
- Age: 55
- Land holding: 0.80 acre
- Farming experience: 30 years
- Major Crops Grown: Groundnut
• Adopted RFSA in the year 2010 with the help of NREGS

• Adopted
  – Conservation furrows for every 4 meters and cultivated Groundnut, Redgram, Cowpea, pigeon pea between furrows and
  – Trenches: Custard apple and Papaya on bunds
  – Farm Pond

• After adoption he observed gradual increase in soil health and income

• In the year 2014 he earned an income of Rs. 29,600 net income
<table>
<thead>
<tr>
<th>Crop wise income in 2014</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Custard Apple</td>
<td>1600</td>
</tr>
<tr>
<td>2. Guava</td>
<td>200</td>
</tr>
<tr>
<td>3. Papaya</td>
<td>2000</td>
</tr>
<tr>
<td>4. Mango</td>
<td>4000</td>
</tr>
<tr>
<td>5. Beans</td>
<td>6000</td>
</tr>
<tr>
<td>6. Cow pea</td>
<td>3000</td>
</tr>
<tr>
<td>7. Redgram</td>
<td>2000</td>
</tr>
<tr>
<td>8. Groundnut</td>
<td>21000</td>
</tr>
<tr>
<td>9. Vegetables</td>
<td>800</td>
</tr>
<tr>
<td>Total Income</td>
<td>40600</td>
</tr>
<tr>
<td>Expenditure</td>
<td>11000</td>
</tr>
<tr>
<td><strong>Net Income</strong></td>
<td><strong>29600</strong></td>
</tr>
</tbody>
</table>
Concept – 7: Water conservation – SRI

• System of Rice Intensification is a cost effective and resource efficient method of cultivation

• SRI Principles
  1. Wide Planting
  2. Less Seed
  3. Transplanting Younger seedlings
  4. Less water
  5. Turning back weed into soil
  6. Use of organic manure
SRI – yields and incomes – case study from Anantapuram

• Farmer: Sarojamma (SC)
• Village: Gudipalli
• Mandal: Somandepalli
• District: Ananthapuramu
• Extent: 1.0 acre
• Survey No: 561
<table>
<thead>
<tr>
<th>SRI - Component</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Cost 3 Kgs (3*75)</td>
<td>225</td>
</tr>
<tr>
<td>Land Preparation</td>
<td>5000</td>
</tr>
<tr>
<td>Transplanting : 4 labour - women</td>
<td>600</td>
</tr>
<tr>
<td>Weeding : 4 labour - men</td>
<td>800</td>
</tr>
<tr>
<td>Plant extract cost (other cost )</td>
<td>700 (NPM Methods)</td>
</tr>
<tr>
<td>Harvesting cost : 4 labour women</td>
<td>900</td>
</tr>
<tr>
<td>Yield per Acre</td>
<td>45 quintals (60bags)</td>
</tr>
<tr>
<td>Others</td>
<td>500</td>
</tr>
<tr>
<td>Total</td>
<td>8725</td>
</tr>
</tbody>
</table>

**Income :** $1800 \times 45 = 81000$

**Total Expenditure :** 8725

**Net Income :** Rs. 72275
Concept 9: Multi – tier (7 tiers) farming to optimally harvest sunlight (irrigated lands)

1. Tier 1 – Bulbous root plants
   – Onion, Garlic, Sweet Potato, Ginger, Turmeric, Carrot, Bear root

2. Tier 2 – Creepers
   – Ridge gourd, Bitter gourd, Bottle gourd, snake gourd etc.,

3. Tier 3 – Leafy Vegetables
   – Spinach, Sorrel, Amaranths etc.,

4. Tier 4 – Vegetables
   – Bhendi, Tomato, Chillies, Cluster Beans, Brinjal etc.,

5. Tier 5 – Trap and Border Crops
   – Perennial Red gram, castor and Marigold

6. Tier 6 – Short Canopy plants
   – Papaya, Curry Leaf and drumstick etc.,

7. Tier 7 – Fruit Plants
   – Kala Jamun, Guava, Mango, Amla, Custard Apple etc.,
Cont. multi tier Model

- It is based on the following principles:
  1. Different plants require different Photo candle light
  2. Multi storied structure to harvest maximum sun light
  3. Monocot – Dicot crop combination to maintain equilibrium for soil fertility
  4. Companion crops
  5. Crop diversity to manage pests.

Achievements:
- So far 80,000 models established across state
- The incomes from this model range from Rs.4,000-Rs.12,000 per 1100 sft (2.5 cents)
- The highest income so far is Rs.19,056.
Concept - 10: Integrated Farming Systems

• With primacy to dung-based inoculants livestock/dairy/poultry/small ruminants, get integrated with crop husbandry. It is a win-win situation

• Fishes making appearance in paddy fields following the withdrawal of pesticides and weedicides
  – Pisciculture can be practised in farm ponds

• With Biodiversity
  – horticulture and silvi pasture getting integrated
  – With year round flowering, convergence with APIARY
  – With castor/mulberry part of the system, ericulture and sericulture
Guinea fowls

Goat and Sheep
**Concept 11 - Poorest of the Poor Strategy (POP)**

**Objective:** convert “Net wage seekers” to “Food producers”

- Converting “wage seekers into “net food producers”
- Providing regular income – **Annual income Rs.50,000/-**
- ½ Acre irrigated land on lease
- ¼ th Acre SRI and ¼ th Acre of Poly crops
- Apart from selling the produce, their household nutrition requirements are met

- **To reach out to 15.0 lakh poorest households.**
  As on date 40000 households are covered
<table>
<thead>
<tr>
<th>S. No</th>
<th>Crop/Month</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>Total Income (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cucumber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4000</td>
</tr>
<tr>
<td>2</td>
<td>Bitter Gourd</td>
<td>500</td>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2500</td>
</tr>
<tr>
<td>3</td>
<td>Beans</td>
<td>1800</td>
<td>2400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4200</td>
</tr>
<tr>
<td>4</td>
<td>Ridge/Bottle Gourd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2560</td>
</tr>
<tr>
<td>5</td>
<td>All Leafy vegetables</td>
<td>500</td>
<td>1000</td>
<td>500</td>
<td>1000</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>400</td>
<td>1000</td>
<td>500</td>
<td>2100</td>
<td>2300</td>
<td>10500</td>
</tr>
<tr>
<td>6</td>
<td>Brinjal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2950</td>
</tr>
<tr>
<td>7</td>
<td>Lady's finger</td>
<td>900</td>
<td>1400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3040</td>
</tr>
<tr>
<td>8</td>
<td>Tomato</td>
<td>600</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8400</td>
</tr>
<tr>
<td>9</td>
<td>Paddy</td>
<td>4100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28700</td>
</tr>
</tbody>
</table>

**Total Gross Income (Rs)**

69,150
**Name:** Smt. Merciamma  
Landless agriculture laborer, SC  
Ponnur village of Prakasam district

**Introduction to ½ acre model:** by the sustainable agriculture sub-committee of her SHG federation, visited demonstration of practice by Village activist.

Taken a Loan of Rs 10,000 from SHG for Leasing of ½ acre irrigated land

**Crop planning:** ¼ acre: Paddy (SRI), ¼ acre Poly crops (vegetables) for two seasons  
**Major crops:** Cucumber, Brinjal, Lady’s finger, Ridge gourd, Bitter gourd, Tomato, Beans and Leafy vegetables

Total investment: **Rs. 20,260** (including interest payment for land leasing)  
Gross income from Paddy cultivation (two seasons): **Rs 28,700**, Gross income from poly crops: **Rs 40,450**  
**Net returns from ½ acre:** **Rs 48,890**

**Other impacts:**  
Regular consumption of vegetables- improved nutrition levels  
Improved social status as a “farmer”  
Regular cash flows for the household
Vizianagaram – dryland PoP model in tribal areas – ½ acre polycrops model
Concept 12: Custom Hiring Centers

- Custom hiring centers

- Machines are hired to the farmers at low rate who cannot afford to purchase machinery

- Introducing High technology to ordinary farmers
A.P vision – to reach out to all farmers and all villages

- A.P has laid a strong foundation over 12 years through investments in building a state wide women SHG network through the State Govt.’s women empowerment programme.
- The women of A.P have taken the lead in managing this unique programme called C.M.S.A (and also NPM).
- Work of N.G.Os – C.S.A, WASSAN, RDT, etc
- Subhash Palekar’s concept of ‘Zero budget natural farming’ – growing number of farmers adopting these practices
Plan for covering all villages and all farmers – key features

Key features

1. This programme will be taken up in all the districts.

2. Each farmer and each village will be supported for 5 years from Govt resources. This is the time required to ensure that all components are internalized by each farmer and a financially self-sustaining grassroots farmers’ organizations are set up.

3. After that long term and continuous support to each farmer family will be provided by their own institutions.

4. Farmers’ empowerment corporation (Rythu sadhikara samstha) will organize all farmers into - rythu mitra groups, village farmers associations, and a farmer producer organization (for a group of villages). This is the key for successful implementation of the plan.
Plan for covering all villages and all farmers – key features

5. These groups will work in close harmony with the women S.H.G s promoted by S.E.R.P.

5. The Rythu Sadhikara Samastha will adopt national best practices in organizing the farmers groups and federations.

7. Implementation has commenced in 2015-16 with 10 clusters in every district, covering 725 villages and around 1.5 lakh farmers.

8. To cover all villages by 2019-20 and all farmers by 2022
Key interventions in each village

I. Building strong institutions of farmers:
   a. Organizing farmers into Rythu mitra groups - more than 80% of the farmers (all small and marginal farmers) will be covered this way
   b. Separate strategy for the balance farmers - medium and big farmers who would not be in the groups

II. Knowledge dissemination - about each of the key climate change resilient ‘natural farming’ interventions and ensuring its adoption
   • Best practising farmers (both women and men) will lead knowledge dissemination (this has been acclaimed as a global best practice for sustained behaviour change)
Use of Community Video Films by the C.R.P s – collaboration with Digital Green Foundation

• Using Technology and social organization to exchange livelihood and Non pesticide Management Practices in agriculture with communities
• Currently working in 7 Districts
• Videos produced 52
• Video dissemination – 39367 and Practice adoption - 128816
### VO Corpus fund Distribution

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Fund allocation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st Year</td>
<td>2nd Year</td>
</tr>
<tr>
<td>Corpus Fund to Village Organizations</td>
<td>Rs.50,00</td>
<td>Rs.1,00,000</td>
</tr>
</tbody>
</table>

To receive 1st year corpus fund, all those Farmers who are practicing CMSA methods need to save regularly – Rs.100 a month. Govt corpus will be limited to the above ceilings.

### III. Resource mobilization at farmers level – farmers savings (start with Rs. 50 - 100 per month) and matching grant from Govt. This will be managed by the Federation at village level – will be used only for Farmers groups (assuming 100 farmers per federation)
... contd

- Corpus of the fund would continuously increase - through Farmers’ savings
- Will be used for a variety of purposes as decided by the farmers’ groups:
  - Financing of tenants
  - Loans for farm operations – wages, hiring of farm equipment, hiring
  - Retiring high cost loans
- Only interest earnings of the fund will be utilized for payment to para professionals for farming and dairy, running costs of the farmers’ organizations, etc. and making project self sustainable.
• **Marketing** through Farmers producers organizations

• Vision: 3000 – 3500 village level aggregation and procurement centres to handle all major commodities. Managed by women SHG federations and farmers’ organizations (happening for a few commodities for the last 15 years)

• Link them with warehousing, and e-auctions through NCDEX/NEML

• Seamless financing farmers through warehouse receipts

• Testing in this season for redgram, blackgram, bengalgram, maize and jowar
• This is already happening for paddy under MSP operations
Benefits at household level

- Consumption of pesticide free food
- In situ Food and nutritional security
- Increased and stable income and broadened livelihoods basket (agriculture, livestock & NTFP)
- Improved skills in agroecology
- Improved Health marked by reduced expenditure on health related issues.
- Reduction in Risk (animal mortality, crop failure, income loss)
• Pesticide free food available (foodgrains and vegetables)
• Increase in animal population, bio diversity
• Door-step extension service available
• Synergy among agriculture, livestock and non timber forest produce
• Movement towards self sufficiency in food, agriculture inputs and extension services
• Improved bio diversity and eco system
• Greater demand for livestock as animals are valued for dung and urine apart from milk – better appreciation of livestock including senile ones
Benefits at State Level

• Food and nutritional security in every village
• All citizens – urban and rural will consume more nutritious food – pesticide free and less fertilizers
• Reduced usage of chemical fertilizer, pesticide thus huge reduction in fertilizer subsidy
• Large quantities of crops- free from chemical residue- less expenditure on health & lost man-days.
• Improved export of crops with low chemical residues adhering to international quality standards – all major firms have sustainability standards and State will have a huge advantage
• Sustainable increase in agricultural GDP
Thank You