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

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Objectives:

To make agriculture livelihoods profitable and sustainable

- To reduce costs of cultivation, reduce risks, enhance yields, enhance soil fertility, and protect from uncertaininties 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**

Concept – 1: NPM - No chemical pesticide usage even as last resort

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

Nadep Compost

16

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

Crop wise income in 2014	Income
1. Custard Apple	1600
2. Guava	200
3. Papaya	2000
4. Mango	4000
5. Beans	6000
6. Cow pea	3000
7. Redgram	2000
8. Groundnut	21000
9. Vegetables	800
Total Income	40600
Expenditure	11000
Net Income	**29600**

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

SRI - Component	Amount
Seed Cost 3 Kgs (3*75)	225
Land Preparation	5000
Transplanting : 4 labour - women	600
Weeding : 4 labour - men	800
Plant extract cost (other cost)	700 (NPM Methods)
Harvesting cost : 4 labour women	900
Yield per Acre	45 quintals (60bags)
Others	500
Total	8725

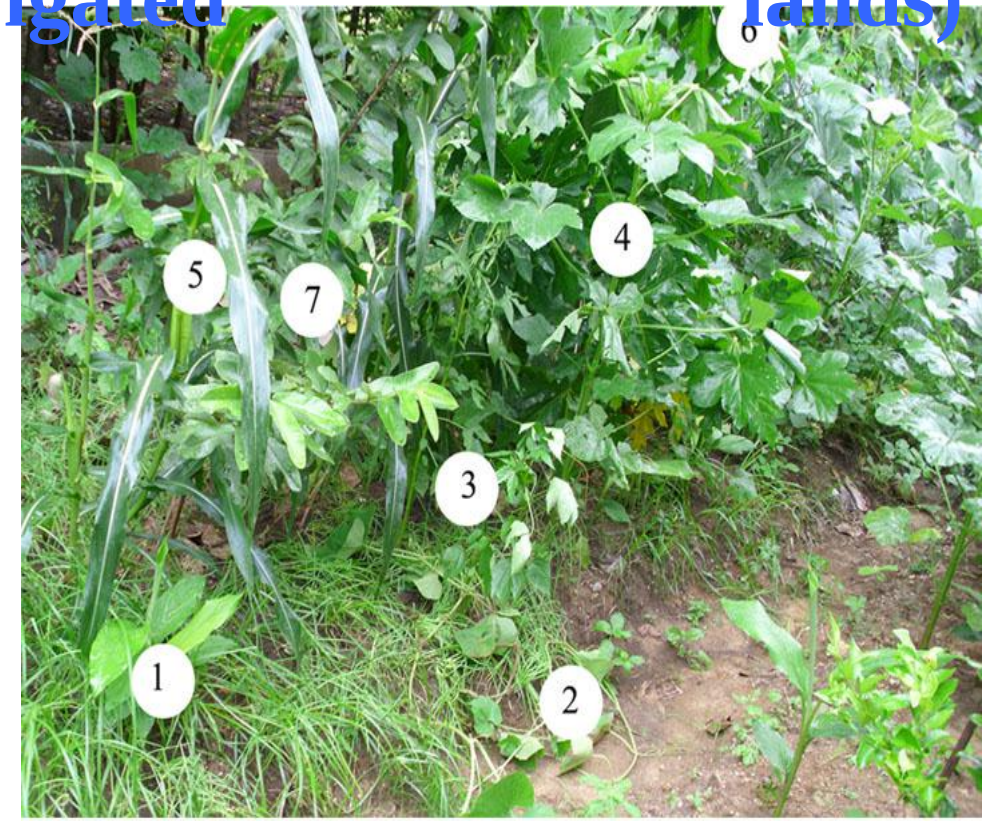
Income : 1800*45=81000

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.,



1 Bulbous root plants : Onion & Turmeric
2 Creepers : Cucumber
3 Leafy vegetables : Kenalf
4 Vegetables : Lady's finger
5 Trap and Border crops : Maize, Castor
6 Short branches plants : Papaya
7 Fruit plants : Guava 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

Month Wise POP farmer Income Breakup

S. No	Crop/Month	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	Total Income (Rs)
1	Cucumber										1000	3000		4000
2	Bitter Gourd					500	2000							2500
3	Beans						1800	2400						4200
4	Ridge/BottleGourd						660	1900						2560
5	All Leafy vegetables	500	1000	500	1000	300	400	500	400	1000	500	2100	2300	10500
6	Brinjal					900	1400					2950		5250
7	Lady's finger				600	300					2140			3040
8	Tomato					4100							4300	8400
9	Paddy						15400						13300	28700
	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

1. 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.

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

3. 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

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)

VO Corpus fund Distribution					
Particulars	Fund allocation				Remarks
	1st Year	2nd Year	3rd Year	4th Year	
Corpus Fund to Village Organizations	Rs.50,000	Rs.1,00,000	Rs.1,50,000	Rs.2,00,000	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.

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- 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)

Benefits at Village Level

- **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