



Food and Agriculture  
Organization of the  
United Nations

**NATIONAL  
DIALOGUE**  
**INDIAN AGRICULTURE TOWARDS 2030**

**Pathways for Enhancing Farmers' Income, Nutritional Security and  
Sustainable Food Systems**

**19 - 22 January 2021**



**Andhra Pradesh: Climate Resilient, Community-Managed Natural Farming  
A Systemwide Transformation**

**Vision 2027 - 50 million people | 6 million farmers | 8 million ha**

**T. Vijay Kumar  
Executive Vice Chairman, APRySS  
Govt of A.P**

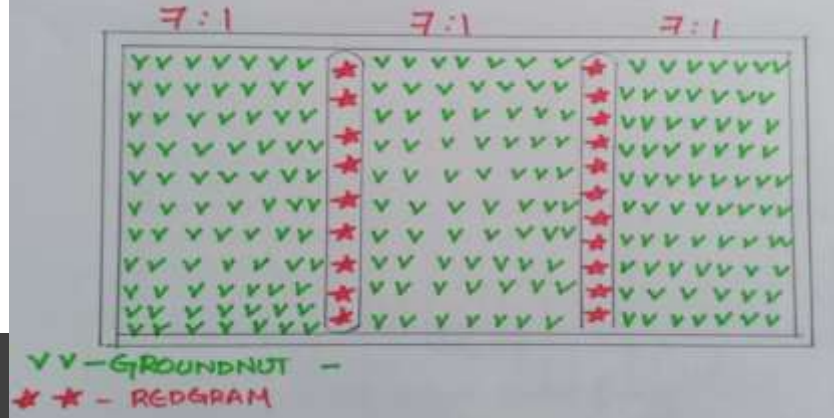
# IMPACT OF PRE MONSOON DRY SOWING + A.P.C.N.F Anantapuramu – Conventional scenario – GROUNDNUT 1 acre

MAR	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB
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Land kept fallow

**0 income**



Land kept fallow

**0 income**

Crop	Yields (In quintals)	Income (Rs.)
Groundnut	9	54000
Redgram	1	4500
Fodder	2 loads	4000

**Gross income**      **Rs 62,500**  
**Cost of cultivation**   **Rs 19,200**  
**Net income**              **Rs 43,300**

Average rainfall – 550 mm.  
 17 out of 20 years have been drought years

Droughts results into migration

Keeping lands fallow further aggravates loss of soil fertility

Income ranges from – negative to 20,000 a year during drought

A good year income can be around Rs. 40,000 – 50,000

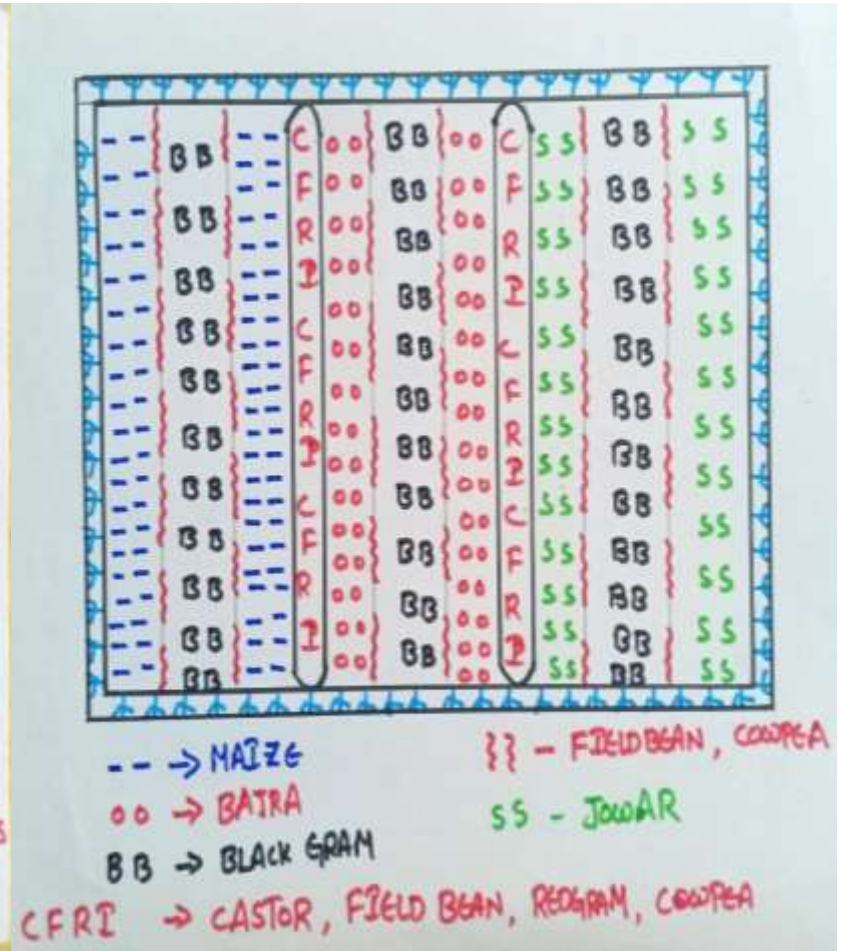
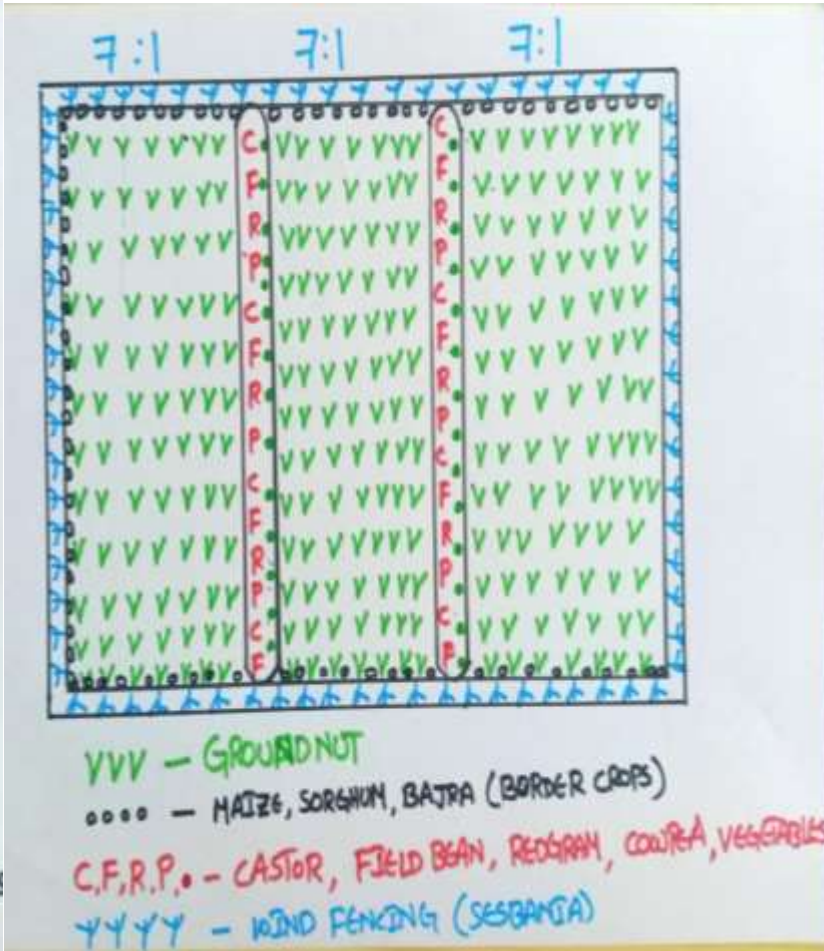
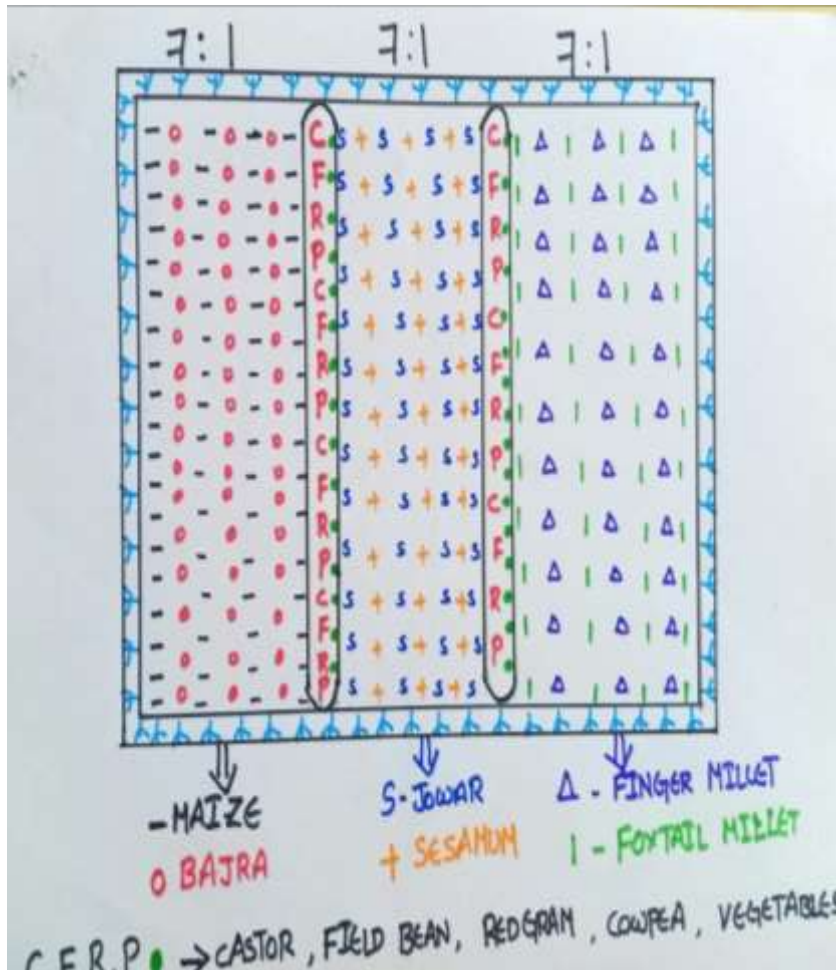
# 365 Day Green Cover – Mallikarjuna, Anantapuramu – 1 acre

Pre-monsoon Dry Sowing (15- 21 varieties of seeds sown)

Kharif – Groundnut integrated with PMDS

Rabi Dry Sowing (12-15 varieties of seeds sown)

MAR    APRIL    MAY    JUNE    JULY    AUG    SEPT    OCT    NOV    DEC    JAN    FEB



# Impact of 365 days green cover through P.M.D.S + A.P.C.N.F Mallikarjuna, farmer, Basampalli, Anantapuramu

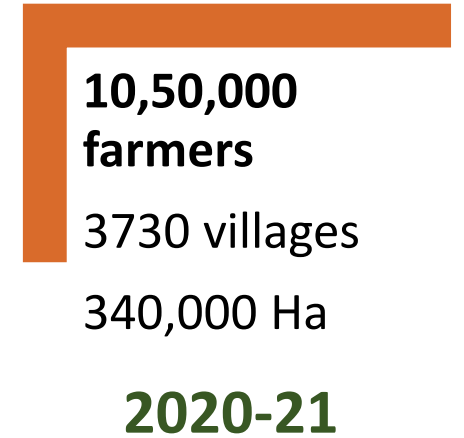
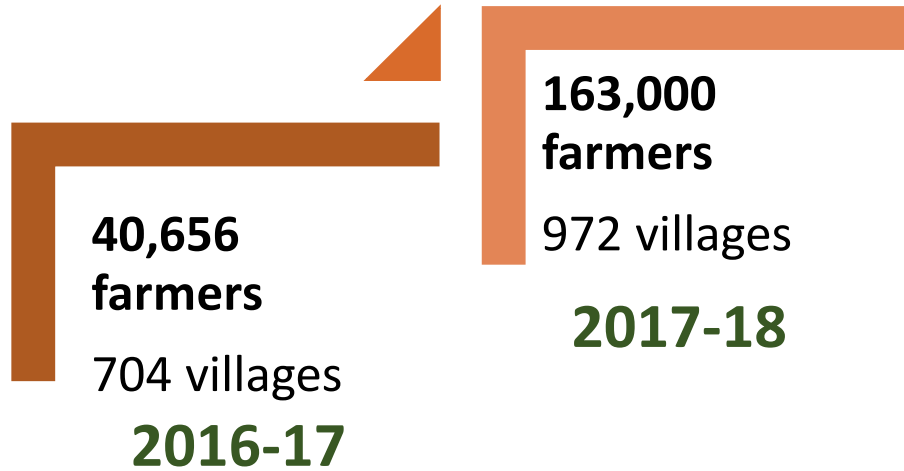






**Mallikarjuna's plot – Birds view ( aerial view  
shot through a drone – 14<sup>th</sup> December )**

# APCNF Programme at a glance



	2019-20	2020-21
Farmers	442,000	700,000
Farm workers	253,000	350,000
Villages	3011	3730
Acreage (Ha)	190,000	340,000

Source of Funds: Mo Ag (P.K.V.Y, B.P.K.P ), Philanthropy, KfW bank

Lower cost

Higher Yields

Improved soil and human health



# A.P.C.N.F IMPACTS

1. Cost of cultivation - significant reduction - NF costs are much lower than non-NF, across all crops

1. Yield differences are not significant between NF and Non-NF farms

1. Significant increase in net income for NF farmers

Independent Assessment  
by Center for Economics and Social Studies (CESS)  
- 3 seasons till now - 2018-19 (2 seasons) and Kharif 2019



1. NF farms reported better soil health, crop health, resilience, biodiversity, less water required, better health of farmers .

# A.P Govt - overcoming critical obstacles to scaling

## Challenges



Mindset - CHEMICAL ADDICTION of the last 60 years



VESTED INTERESTS



Taking it to every farmer



Handholding until full adoption

knowledge

Weak extension system



Self sustaining, long-lasting

## Critical Innovations in AP model

1. **Govt** support and advocacy – resources and implementation
2. **Knowledge** – POPs, videos, etc
3. **Women SHG s** and federations
4. **Farmer to farmer** – extension system
5. **Facilitating organizations** – Govt., NGOs and C.B.Os for long term handholding
6. **Innovations** and continuous learning
7. **Collaborations** with Global and National institutions for Science support
8. **Convergence** with Govt departments

# A profound and a simple solution: Farming in harmony with nature



**A.P.C.N.F is Regenerative Agriculture.** A holistic land management practice that leverages the power of photosynthesis in plants to close the carbon cycle, and build soil health, crop resilience and nutrient density.

# Universal Principles of Natural Farming

Soil to be covered with crops 365 days  
(Living root)

Diverse crops, trees  
15 – 20 crops

Minimal disturbance of soils

Integrate animals into farming

Bio stimulants as necessary catalysts

Increase organic residues on the soil

Use indigenous seed

Pest management through botanical extracts

No synthetic fertilizers, pesticides, herbicides, weedicides



## Microbial Seed Coating

**Beejamrutham** - cow urine, cow dung, and lime – fermented



## Microbial Soil enhancement

**Jeevamrutham** (bio-stimulant) - cow dung, cow urine, soil, jaggery, pulses flour – mixed and fermented

Bio-stimulants

**Bio stimulants - unique strength in Indian Agriculture**

**N.F + Pre monsoon dry sowing – a unique breakthrough in A.P**



## **365 days green cover with crop diversity**

**maximises photosynthesis rate – and thereby root exudates  
being pumped into the soil**



# Microbial seed coating - Beejamrutham



Cow dung – 2 kg

Cow urine – 2 liters

Lime – 40 grams

Handful of chemical free soil

Water – 20 liters

## Ingredients



**Step 1**

Wrap the cow dung in a cloth and submerge in water and let it soak for 12 hours

Squeeze the cloth after 12 hours, add lime, chemical free soil. Mix well in clock wise direction



**Step 2**

Spray the concoction on all seeds and ensuring each seed is coated by it before sowing



**Step 3**

# Soil Microbial enhancement – Bio stimulant - Ghanajeevamrutham



Ingredients

Cow dung - 100 kg

Jaggery - 1Kg

Pulse flour- 1 kg

Cow urine - 10 liters

Hand full uncontaminated soil



Step 1

Mix all the ingredients properly



Step 2

Make cakes and shadow dry for 5 days for fermentation



Step 3

Apply these cakes in the field

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# Soil microbial enhancement – Liquid biostimulant - Dravajeevamrutham



Ingredients

Cow dung-  
100kg

Cow urine- 3-6  
ltrs

Pulse flour- 2  
kgs

Jaggery – 2 kgs

Water- 200 ltrs

Hand full of  
uncontaminated  
soil



Step 1

Add all the ingredients and mix them  
in clock wise direction



Step 2

Keep it fermented for 5 days. The colour and smell changes. Keep  
mixing it in between



Step 3



Spraying of Dravajeevarutham in the field



# Women in Natural Farming: Our biggest Strength



Programme Management, transparency

Collective Action

**131,672 women SHGs and their 5491 Federations are in charge**

Peer Learning



Farming Plans, and, consumption plans

Inclusive of the poorest

# Farmer 'heroes' central to the programme

## A Knowledge intensive and not input intensive programme

• Most effective dissemination is "farmer to farmer"

Best practicing farmers, Community resource persons (CRPs) engaged to take NF to other farmers.

APCNF identifies such champions in the community and capacitate them



Inspiration

Knowledge Transfer

Handholding

Video Dissemination

Farmer Field Schools

5,899 Community Resource Persons @ 1/100 farmers

150 Young Agriculture Graduates as Natural Farming Fellows

# Changing a farmer means changing entire village

All Villages

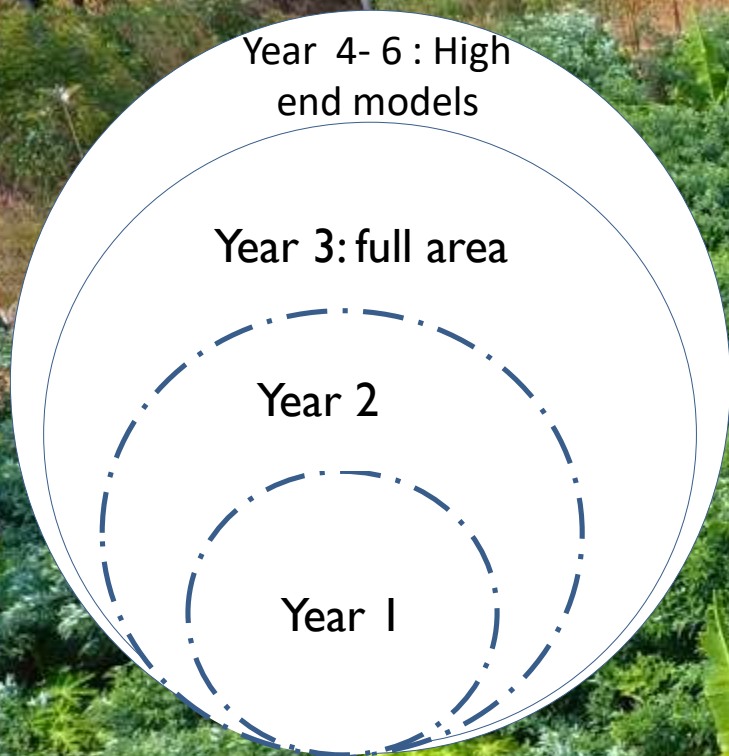
All Farmers

All Farms

All Practices

Farmer Transformation

Village Transformation



Each farmer takes 3-6 years to cover the entire holding.

15%  
farmers

Year 1

50%  
farmers

Year 2

>80%  
farmers

Year 3

100%

In 5 years,  
a village  
becomes a  
'BIO-  
VILLAGE'

Year 5

# Costs of transformation vs savings from subsidy avoidance

Year	Transformation Cost Rs. Cr	Land Lakh Ha.	Electricity savings, Rs. Cr	Fertilizer subsidy Savings, Rs. Cr
21-22	219	2.64	94	188
22-23	640	7.92	302	604
23-24	1,317	15.18	619	1,239
24-25	1,652	23.43	1,023	2,045
25-26	1,721	30.36	1,418	2,836
26-27	1,407	38.94	1,946	3,892
27-28	1,229	44.88	2,400	4,800
28-29	771	50.82	2,908	5,815
29-30	458	55.11	3,374	6,748
30-31	458	60.06	3,934	7,869
<b>Total</b>	<b>9,873</b>	<b>60.06</b>	<b>18,018</b>	<b>36,035</b>

**Other direct benefits to farmers: higher yields, better prices, lower financial costs, etc.**

## Ecosystem benefits

**Food, Nutrition  
and Health  
Security**

**Employment**

**Soil Health &  
water security**

**Coastal eco-  
system  
regeneration**

**Bio-Diversity**

**Climate  
Resilience**

# Vast areas of arable lands are fallow (2017 – 18)

## The A.P.C.N.F + P.M.D.S Promise

District	Fallow	sown	Fallow + sown	Fallow as % of total	Ratio
Y.S.R Kadapa	3.51	3.71	7.22	49%	0.94:1
Nellore	3.26	3.6	6.86	48%	0.90:1
Chittoor	3.79	4.21	8	47%	0.90:1
Prakasam	4.11	5.55	9.66	43%	0.74:1
Anantapuramu	5.46	8.42	13.88	39%	0.64:1
Visakhapatnam	1.63	3.4	5.03	32%	0.47:1
Kurnool	3.15	9.53	12.68	25%	0.33:1
Vizianagaram	1.14	3.72	4.86	23%	0.30:1
Guntur	1.81	7.69	9.5	19%	0.23:1
East Godavari	1.49	6.66	8.15	18%	0.22:1
Krishna	1.3	6.49	7.79	17%	0.20:1
Srikakulam	0.71	4.5	5.21	14%	0.15:1
West Godavari	0.82	6.97	7.79	11%	0.11:1
<b>State</b>	<b>32.18</b>	<b>74.45</b>	<b>106.63</b>	<b>30%</b>	<b>0.43:1</b>

APCNF offers a pathway for reversing this

Dryland crops can become assured crops, and even 3 crops can be taken

Cropping intensity to increase to 2+

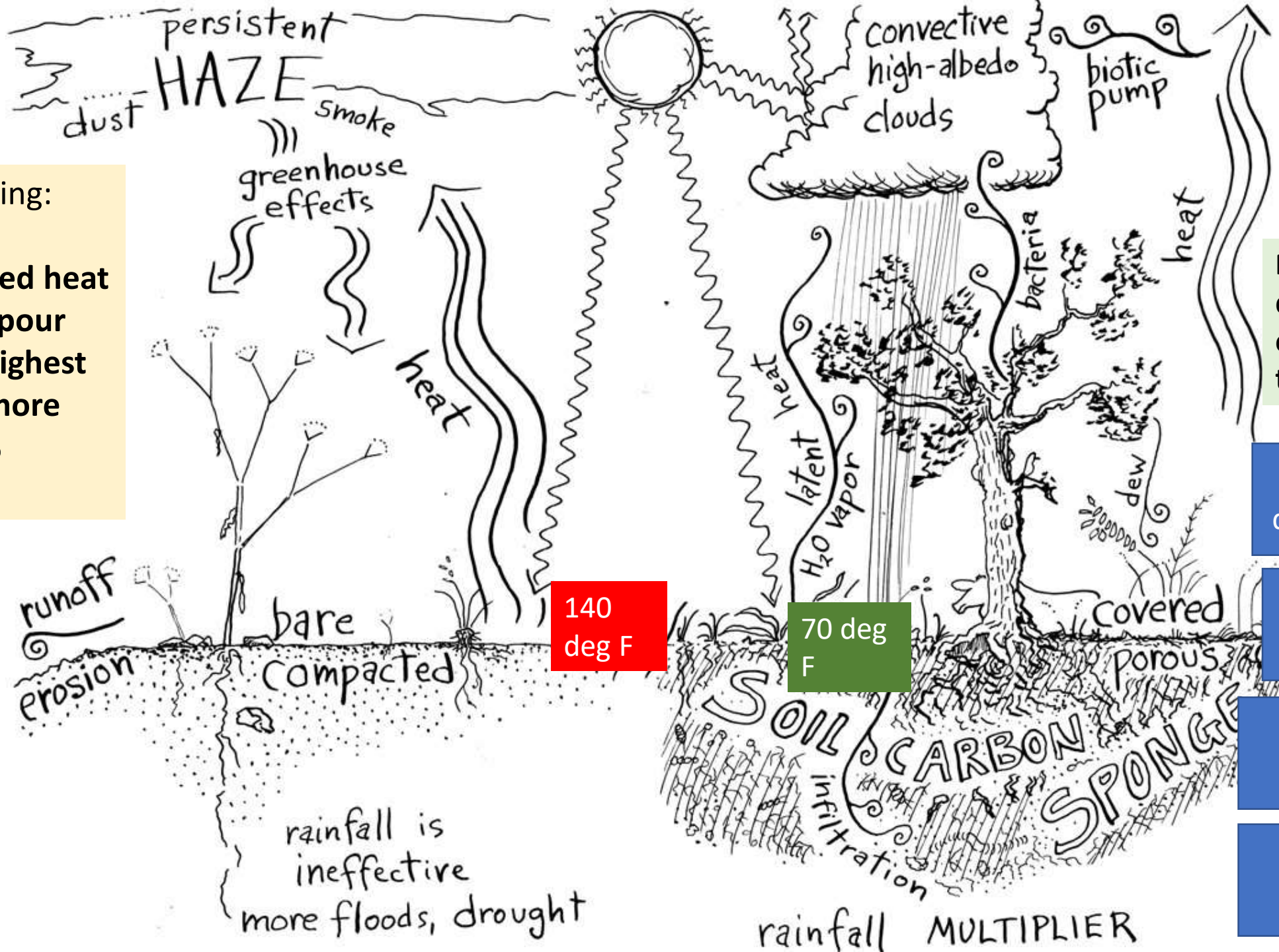
Barren and Fallows can be minimized

Vision: To double the Cropped Area



Global warming:

- 1. Re-radiated heat
- 2. Water vapour has the highest impact, more than 80%



NF and 365 days green cover can cool the planet

Reversal of desertification

Soil / Water conservation

Food and nutrition security

Income generation