



## **ICAR - Krishi Vigyan Kendra, Hirehalli, Tumakuru II**

**Dr.N. Loganandhan**

*Principal Scientist & Head*

**Zonal Annual Review 2021-22  
& Annual Action Plan 2022-23  
Workshop**

May 4-6, 2022  
UAS, GKVK, Bengaluru





# ICAR – Indian Institute

Hesaraghatta Lake Post, Bengaluru – 560 089  
ISO 9001: 2015 INSTITUTE  
Research

## General Information

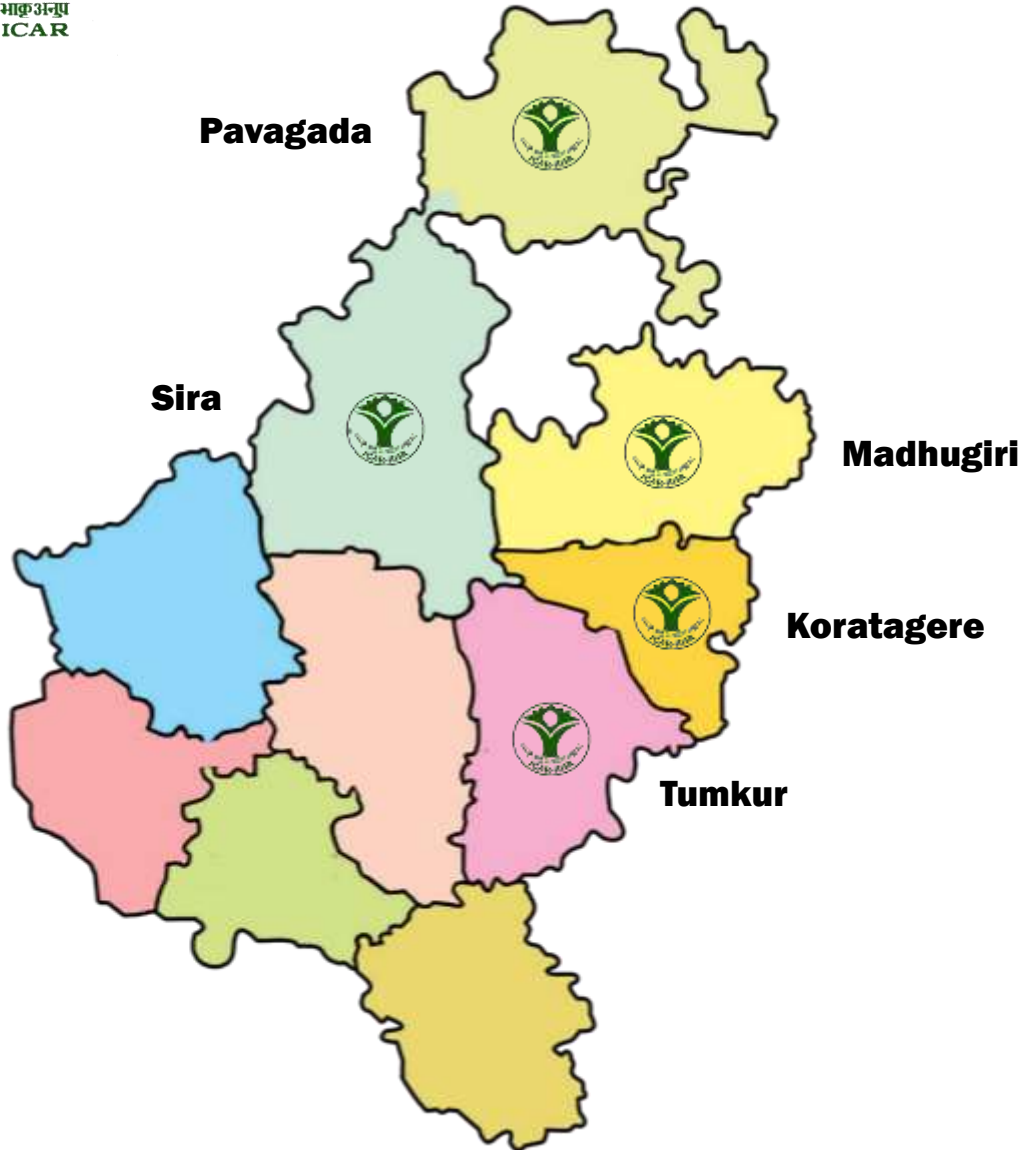
Year of Sanction	2009-10
Address	NH-48, Hirehalli, Tumakuru, Karnataka - 572168
Host Institute	ICAR-Indian Institute of Horticultural Research, Bengaluru
Contact details	0816-2243175/ 2243177, kvk.tumakuru2@icar.gov.in <a href="http://www.ihrkvk.org">www.ihrkvk.org</a>
Total no. of staff	12 out of 16

Particulars	Head	SMS	P.A.s	Admn.	Drivers	Supporting	Total
Sanctioned	01	06	03	02	02	02	16
Filled	01	06	03	01	01	0	12





# Jurisdiction of KVK, Hirehalli - 5 Taluks



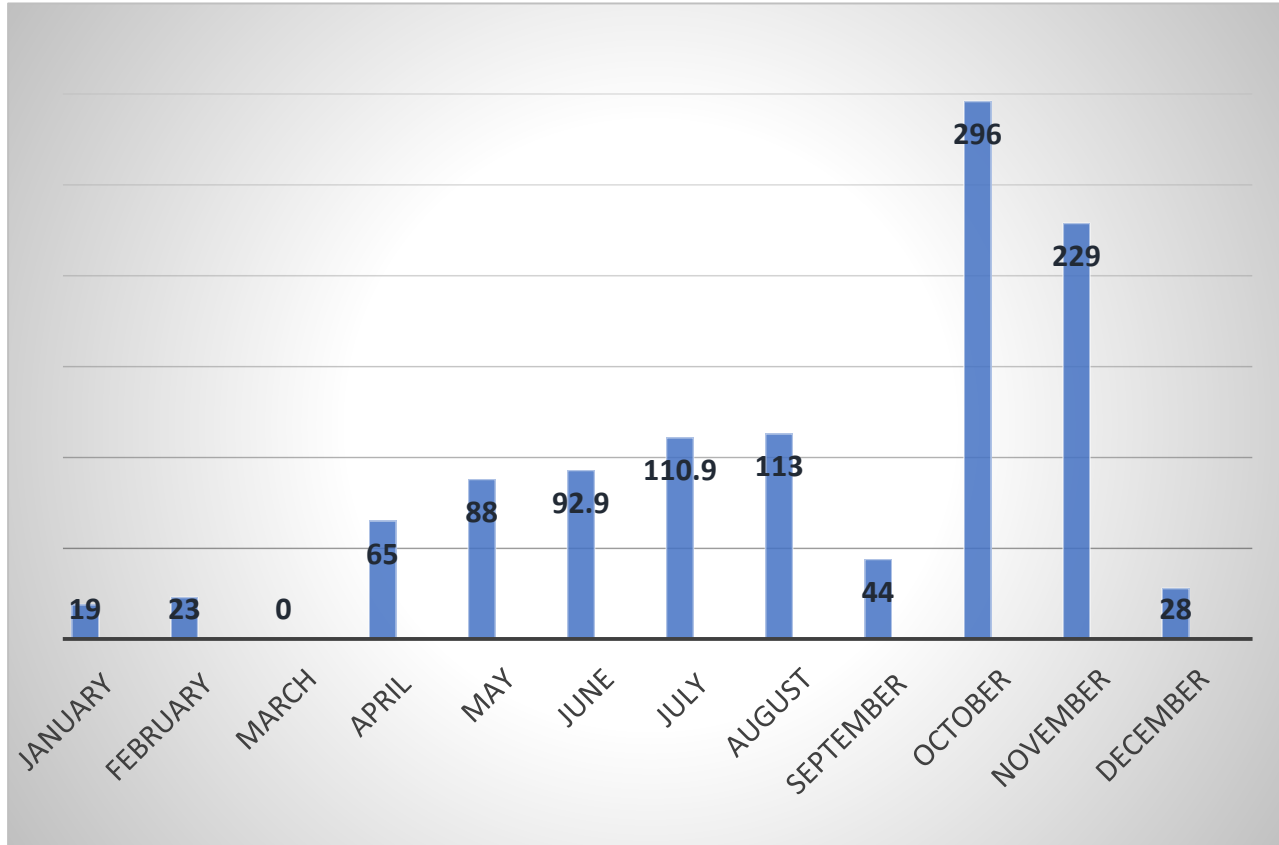
<b>AE Zone - 4 (Central dry)</b>
Koratagere
Madhugiri
Pavagada
Sira
<b>AE Zone - 5 (Eastern dry)</b>
Tumakuru

- Population: 26,78,980 (2011)
- Rural Population: 77.64%
- SC - 12.84 %, ST - 7.82 %
- Total Geog. Area: 10, 64, 755 ha
- Forest Area - 45,177 ha
- Net Area Cultivated: 4,66,678 ha - 43.8%
- Net Area Irrigated: 1,52,032 ha - 32.5% (Tube Well - 96%)
- 67.5 % Area - Rainfed
- 739 mm (1951-2000 Average), 665 mm (2007-2017 Average)
- Major Crops: Finger Millet, Maize, Red gram, Ground nut, Coconut, Areca nut, Fruits & Vegetables





# Tumakuru - Rainfall Data



Normal: 669 mm, Actual: 1109 mm, DEP: 66%

Source: KSNDMC, Bengaluru

Month	Rainfall (mm)
January	19
February	23
March	0
April	65
May	88
June	92.9
July	110.9
August	113
September	44
October	296
November	229
December	28





## Number of Rainy days and Dry spells during 2021



Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	0	3	2	2	8	5	0	9	10	0

Dry spell ( no. of days)	Duration (from --- to---)
12 days	05.06.2021-16.06.2021
17 days	17.06.2021-04.07.2021
12 days	27.07.2021-07.08.2021
37 days	30.08.2021-05.10.2021
12 days	25.10.2021-05.11.2021



## Farming Systems in Tumakuru



Farming Systems	Area (Ha)	Net Cultivated Area (%)
<b>Agriculture (Cereal-Pulses-Oilseeds based)</b>	<b>1,70,210</b>	<b>36.5 (35)</b>
Cereals	62,769	
Pulses	51,799	
Oilseeds	55,642	
<b>Horticulture (Fruits-Vegetables -Plantation crops based)</b>	<b>1,95,569</b>	<b>41.9 (40)</b>
Fruits	14,406	
Vegetables	3,162	
Plantation crops	1,78,001	
<b>Commercial Crops (Cotton-Sugarcane based)</b>	<b>1,25,872</b>	<b>26.9 (25)</b>
Cotton	1,703	
Sugarcane	1,24,169	
<b>Others</b>	<b>5,349</b>	<b>1.0</b>
Mulberry (Sericulture)	4,349	
Animal Husb (Fodder), Pepper, Cashew nut	1,000	



## Major Crops of the District



No .	Crops	Area (ha)	Production (tonnes)	Productivity (kg/ha)
1	Finger Millet	1,44,547	2,19,246	1,496
2	Maize	20,122	56,200	2,323
3	Paddy	4,858	37,064	2,993
4	Minor Millets	2,929	3,14,003	1,698
5	Red gram	10,963	3,740	359
6	Horse gram	16,254	8,266	481
7	Field bean	6,251	3,456	599
8	Ground nut	55,299	31,016	454
9	Coconut	1,45,660	1253.48 (Lakh nuts)	9000 (Nos.)
10	Areca nut (Processed)	32,341	2,81,840	9,705
11	Mango	15,152	1,76,500	10,000
12	Banana	5,291	1,18,559	21,500
13	Pomegranate	1,865	25,305	8,000
14	Tomato	1,427	50,097	56,000



## Demo Blocks & Production Units at KVK Farm



1	Modern Water Storage Tank
2	Bore Well recharge Unit
3	Minor Fruits Collection Block
4	Areca nut Plantation Unit
5	Flowering & Foliage Tree Demonstration Plot
6	Farm pond with plastic lining
7	Fruit Crops Varietal Demonstration Cum Mother Block
8	Multipurpose Tree Collection Block
9	Areca nut Nursery Unit
10	Medicinal Plant Demonstration Plot
11	Fruit Crop Nursery Unit
12	Fish Pond Unit



13	Bee keeping Block
14	Graviola Block
15	Banana Block
16	Vegetable Seeds Production Block
17	Centralized Irrigation System
18	Coconut Varietal Collection Unit
19	Bio-digester Unit
21	Sheep - Bannur breed Unit
22	Cattle Shed - Hallikar breed
23	Vermi Compost Production Unit
24	Compost Production Unit





Laboratory Details	
1.	Soil and Water Testing Lab
2.	Plant Health Clinic
Production Units	
1.	Micronutrient Production Unit
2.	AMC Production Unit
3.	Food processing & Value addition Unit
4.	Neem & Pongamia soap and ABC production unit
5.	Vegetable Seed Processing Unit
8.	Mushroom Spawn Production Unit
9.	Fruit fly Pheromone traps Production Unit





## Details of Target & Achievements of Mandatory Activities of KVK: 2021 - 22



Particulars	Target	Achievement
OFT- Numbers	04	04
OFT- No. of farmers	12	12
FLD- Numbers	14	13
FLD- No. of farmers	125	120
Trainings - Numbers	58	29
Trainings - Number of farmers	1835	750
Extension Programmes: Numbers	267	298
Extension Programmes: Number of farmers	10,980	23,723



## Abstract of OFTs during 2021-22



Sl. N o.	Title	SMS
1	Assessment of bio formulations for improving productivity, quality and management of diseases in Pomegranate	SMS (SS)
2	Assessment of disease resistant Chilli hybrids for Higher productivity and quality	SMS (HO)
3	Assessment of Drought tolerant and High yielding varieties in Groundnut	SMS (PP)
4	Assessment of fodder crops as inter crops in coconut garden for In situ moisture conservation and yield	SMS (Extn)



# 1. Assessment of bio formulations for improving productivity, quality and management of diseases in Pomegranate

## Problem

- Low nutrient use efficiency & soil fertility,
- Severe incidence of blight and wilt
- High cost of cultivation, poor yield and quality



Particulars	Details
SMS	Soil Science
No. of trials	3
Area	0.4 ha
Farming Situation	Irrigated
Soil Type	Red Sandy Loam
Season	Kharif, 2021



# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	Dr Soil -Soil Fertility Booster. (2016)	—	Helps in fixing of N, solubilize and mobilize P and K respectively thereby increasing crop yield and soil fertility. But, high cost is an issue.
TO2 RP	Application of Aspergillus niger @5 gm /plant + pseudomonas @ 20 gm + with VAM @25 gm /plant	NRCP, Solapur (2014)	Helps in Mobilizing the P and Z. Plant growth Promoting Rhizosphere bacteria. Controls growth of harmful fungi. Helps to reduce disease occurrence.
TO3 AP	Actino bacterial consortium: Actino plus @ 50 gm /plant + AMC @60ml/plant	IIHR Bengaluru (2016)	It is a carrier based microbial product containing N, P, K & Zn solubilizing, phytohormone producing, cellulase and chitinase excreting actinobacterial strains. Controls growth of harmful fungi. Helps to reduce disease occurrence.
TO 4 AP	Liquid Bio fertilizer Consortium	IFFCO- NBRC Gujarat (2018)	Helps in fixing of N, solubilize and mobilize P and K respectively, thereby increasing crop yield and soil fertility.



ACT + AMC

Aspergillus  
niger +

Pseudomonas and  
VAM

IFFCO  
Biofertilizer

## Farmer's feedback





# Results

Particulars	Blight incidence on leaf (%)	Wilt incidence (%)	Avg. Yield (t/ha)	Gross Cost (Rs./ha)	Gross Returns (Rs./ha)	Net Returns (Rs./ha)	B:C ratio
TO1 FP	43.6	8.1	7.4	1,32,450	5,14,300	3,81,850	3.88
TO2 RP	15.1	2.4	8.7	1,05,680	6,04,650	4,98,970	5.72
TO3 AP	14.2	1.3	8.9	1,00,250	6,18,550	5,18,300	6.17
TO4 AP	32.17	7.6	7.8	1,00,950	5,42,100	4,41,150	5.37

Price: AMC treated fruits:

Rs. 70/kg

Date of harvest: 11-01-22,

23-01-22



## Feedback

The application of AMC + ACT and drenching with *Aspiriligus niger* + *Pseudomonas* + VAM reduced the disease incidence and improved the fruit quality and yield compared to that of farmer practice and IFFCO biofertilizer treatment.

## 2. Assessment of Chilli hybrids for disease resistant and Higher productivity

### Problem

- Private hybrids are susceptible to leaf curl (35%), Wilt & Powdery Mildew diseases (12%).



Particulars	Details
SMS	Horticulture
No. of trials	3
Area	0.4 ha
Farming Situation	Irrigated
Soil Type	Red Sandy Loam
Season	<i>Kharif</i>



# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	Private hybrid (Demon)	Farmer's practice	Incidence of powdery mildew, anthracnose, Leaf curl diseases
TO2	Arka Tanvi	IIHR, Bengaluru ( 2020)	Tolerant to ChLCV, suitable for green and red chilli market, high yielding
TO3	Arka Gagan	IIHR, Bengaluru (2020)	Highly pungent, green and tolerant to bacterial wilt, RKN (root knot nematodes) and resistant to ChLCV





Demon (F.P)



Arka Tanvi



Arka  
Gagan



## Results

Particulars	T1 Demon	T2 Arka Tanvi	T3 Arka Gagan
Fruit length (cm)	6.52	9.22	7.82
Fruit Diameter (cm)	0.88	1.01	1.06
Fruits weight/plant(gm)	740.15	1032.22	1121.42
No. of fruits/plant	132	176	191
Leaf curl virus incidence (%)	12.85	8.10	6.12
Wilt Incidence (%)	9.12	4.55	2.80
Yield ( t/ha)	16.42	18.92	19.32
Gross cost (Rs/ha)	1,12,160	1,07,150	1,05,650
Gross Return ( Rs/ha)	2,46,300	2,83,800	2,89,800
Net return (Rs/ha)	1,34,140	1,76,650	1,84,150
B:C ratio	2.20	2.65	2.74



## Feedback

Arka Gagan and Arka Tanvi chilli hybrids recorded less percent of ChlcV disease incidence

Arka Gagan recorded highest yield.

Arka Gagan hybrid pungency is high, compared to Demon and Arka Tanvi

Price:

Rs. 15/kg

Date of Planting: 12-

08-21

Date of Harvest: 10-

11-21

### 3. Assessment of Drought tolerant and High yielding varieties in Groundnut

#### Problem

- Non adoption of drought tolerant, short duration HY varieties in Groundnut



Particulars	Details
SMS	Plant Protection
No. of trials	3
Area	1.8 ha
Farming Situation	Irrigated
Soil Type	Red Sandy Loam
Season	<i>Kharif</i>



# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	K-6	Farmer's practice 2006	110 days duration, Uniform maturity, Suitable for low to medium rainfall areas, tolerant to drought, high frequency of mature kernels (95%)
TO2	DGRMB-24	DOGR ,2018	105-110 days, Suitable for low to medium rainfall areas, tolerant to drought
TO3	DGRMB-32	DOGR ,2018	105-110 days, Suitable for low to medium rainfall areas, tolerant to drought
TO 4	K-Lepakshi (K-1812)	ARS, Kadri, 2020	107-113 days, Erect-Spanish bunch type, higher yield and oil content





## Results

Technology options	Germination (%)	Days to Flowering	Number of Pegs/plant	Stem rot (%)	No.of Days taken for harvest
T- 1: K-6	88.80	78 DAS	28.36	4.66	115 days
T-2: DGRMB-24	91.40	82 DAS	34.64	8.98	105 days
T-3: DGRMB-32	92.40	83 DAS	31.64	12.66	105 days
T4-Kadri Lepakshi	92.64	78 DAS	28.64	18.66	100 days

Technological options	Yield in Qtl/ha	% increase in yield	Straw yield Qtl/ha	Cost of cultivation (Rs./ha)	Gross Returns (Rs./ha)	Net returns (Rs./ha)	B C ratio
T- 1: K-6	7.90	-	41.54	24921	40211	15290	1.62
T-2: DGRMB-24	10.33	31.00	43.66	24875	52563	27688	2.12
T-3: DGRMB-32	9.85	25.00	40.14	26091	50153	24062	1.92
T4-Kadri Lepakshi	11.79						

Date of Sowing: 23-

Date of Harvest: 15-



## Feedback

Kadri Lepakshi yield is highest compared any other existing varieties. But expected yield was not obtained due to heavy rainfall

DGMRB-24 ground nut variety is tolerant to drought situation up to 45 to 55 days of dry spell.

## 4. Assessment of fodder crops as inter crops in coconut garden for In situ moisture conservation and yield

### Problem

- Non-utilization of interspace in Coconut garden
- Non adoption of shade-loving fodder varieties



Particulars	Details
SMS	Agri. Extn.
No. of trials	3
Area	0.4 ha
Farming Situation	Irrigated
Soil Type	Red Sandy Loam
Season	<i>Rabi</i>



# Technological Options



Options	Technological Options	Source	Justification
T O1 FP	Fodder Maize (Ganga)	Farmer's practice	Low yield, Single cut and exhaustive crop
TO2 RP	COFS 31	TANUVAS (2014)	A high yielding green fodder and multicut variety. 6-7 cuts/year
TO3 AP	DGG-1	IGFRI Dharwad/ Bengaluru (2018) NIANP	Tall perennial grass, extremely tolerant to shading by trees and other pasture species, 6-7 cuts/year





CoFS-31

DGG-1



## Results

Particulars	FP- Fodder Maize	COFS 31	DGG-1
Plant height (cm)	162.5	274.3	123.6
Stem girth (cm)	5.7	3.5	3.1
Leaf length (cm)	106.3	108.3	56.5
Leaf width (cm)	7.2	3.94	4.2
No. of leaves/stem	11.0	5.7	6.7
No. of tillers /hill	1.0	12.6	39.4
Av. fodder yld / culm (kg)	0.86	1.62	1.4
Yield (t/ha/yr)	34.4	39.3	41.3



## Feedback

- Both CoFs 31 and DGG1 are good
- Availability of green fodder round the year
- Succulent, shade tolerant & highly palatable leaves



## Abstract of FLDs during 2021 - 22



Sl.No	Title	SMS
1	Enhancement of Productivity of Finger millet by short duration variety KMR 630 (Continued)	SMS (SS)
2	Demonstration of water saving Aerobic Paddy Paustic-9 (Concluded)	
3	Integrated Crop Management in French Bean - Arka Arjun (Concluded)	SMS (Hort)
4	Integrated Crop Management in Chilli - Arka Harita (Concluded)	
5	Demonstration of Tube rose variety Arka Prajwal (Concluded)	
6	Integrated crop Management in Tomato (Concluded)	SMS (PP)
7	Castor Hybrid ICH-66 as an intercrop in ground nut cropping system for additional returns *	SMS (PP)
8	Mucuna ( <i>Mucuna pruriens L.</i> ) for the Improvement of Soil Properties in Coconut (Continued)	SMS (PB)
9	Demonstration of Arka Prasan Ridge gourd variety for higher productivity (Continued)	SMS (PB)
10	Integrated Crop Management in Onion (Concluded)	

\* Withdrawn and merged to CFLD under NMOOP with proper permission from ATARI



## Abstract of FLDs during 2021 - 22



Sl.No	Title	SMS
11	Demonstration of Fodder sorghum CoFS 29 (Continued)	SMS (Ext)
12	Demonstration of Marvel Grass -Perennial Fodder <i>Dicanthium annulatum</i> *	
13	Demonstration of Foxtail millet Variety DHFt 109-3 for Value Addition (Concluded)	SMS (HS)
14	Demonstration of Brown Top Millet for Value Addition and Market linkage (Concluded)	
1	EDP: Drumstick leaves: Value Addition, Branding and Market linkage (Concluded)	
2	EDP: Coconut Coir- Value Addition, Branding and Market linkage (Concluded)	
	Demonstration on Nutri gardens for Nutrition security to the farm families	

\* Vitiated due to heavy rainfall



# 1. Enhancement of Productivity by Short duration Finger millet: KMR-630



### Problem

- Finger millet blast
- Erratic rainfall & delayed monsoon
- Low productivity & income



Dist. Avg. Yield  
16.5 qlt/ha

Potential Yield  
25 qlt/ha

SMS	SS
Season	Kharif
Demos	10 (4 ha)
Villages	Tanganahalli (K) D.Nagenahalli (K) Rangapura (M) Kodigenahalli (T)

### Technology: UAS (B), 2018

- 95-100 days duration
- KMR-630 Seeds 12.5 kg/ha.
- Bio-fertilizer (AMC)-1Kg
- FYM- 10 t/ha.
- RDF - 50:37:40 NPK kg/ha
- Zinc Sulphate - 12.5 kg /ha.
- Borax -10kg / ha.
- Check: GPU-28 var.

### Critical inputs provided

Ragi KMR-630 seeds



# Field Visits



Finger millet KMR-630 FLD plot



Finger millet (GPU 28)

## Results

Particulars	Avg. Plant height (cm)	Blast incidence (%)	Avg. Yield (q/ha)	% Increase	Gross Cost (Rs./ha)	Gross Returns (Rs./ha)	Net Returns (Rs./ha)	B:C ratio
Demonstration	122	0	21.7	24.71	25,640	54,250	28,610	2.11
Check	106	23.5	17.4		26,710	43,500	16,790	1.63

Price: Rs.25/kg

Date of Sowing: 17-

08-21

Date Harvest: 24-11-

21



### Feedback

- The new variety is tolerant to finger millet blast.
- The variety can be harvested 20 days early compared to Check



## 2. Demonstration of Aerobic Paddy Paustic-9



### Problem

Excess use of borewell water for paddy cultivation



Dist. Avg.  
Yield  
30 qlt/ ha

SMS	SS
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Tanganahalli (K) D.Nagenahalli (K) Rangapura (M)

### Technology: UAS (B)

- Paustic var seeds - 10 kg
- FYM - 10 ton/ha,
- Biofertilizer - 0.5 kg/ha
- RDF - 100:50:50 NPK kg/ha
- Borax - 8 kg/ha
- Zinc sulphate - 20 kg/ha

### Critical inputs provided

Paustic-9 var seeds



# Field Visits



Check - Hamsa variety



Demo - Paustic 9





## Results

Particulars	Avg. Plant height (cm)	Tillering (Nos.)	Avg. Yield (q/ha)	% Increase	Gross Cost (Rs./ha)	Gross Returns (Rs./ha)	Net Returns (Rs./ha)	B:C ratio
Demonstration	103.7	24	31.3	26.21	21,750	46,950	25,200	2.16
Check	85.4	9	24.8		20,250	37,200	16,950	1.84
Price: Rs.15/kg		Date Sowing: 28-07-		Date Harvest: 07-12-				
		21		21				



### Feedback

- Aerobic Paddy yields are more than 20%, compared to local variety
- Withstood heavy rainfall before harvest
- This variety required 40% less water compared to check



### 3. Integrated Crop Management in French Bean - Arka Arjun



#### Problem

Non adoption of disease (YMV) resistance varieties, Improper Nutrient Management



Dist. Avg. Yield  
6 t/ ha

#### Technology: IIHR (B)

- Arka Arjun (YMV resistant, bush type, pods round and stringless)
- AMC : Drenching @ 20g /lit (10 DAS)
- Vegetable Special- 2gm /lit
- Neem soap : @ 7 g/lit

#### Critical inputs provided

- Arka Arjun seeds -40 kg
- AMC- 5 kg

SMS	Horti
Season	<i>Rabi / Summer</i>
Demos	10 (4 ha)
Villages	Chikkadoddawadi Rangapura Badavanahalli

# Field Visits



# Results

Particulars	No of pods /plant	Length of pods (cm)	YMV incidence (%)	Yield (t/ha)	% Increase	Gross Cost (Rs)	Gross Return (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
Demo	34.80	14.32	4.67	7.80	24.40	36776	1,56,080	1,19,304	4.24
Check	287.40	13.29	22.28	6.27		37882	1,25,400	87,518	3.31
Price: Rs.20/kg		Date Sowing: 20-12-			Date Harvest: 26-02-				

21

22



## Feedback

- French Bean Arka Arjun was found to be more profitable with an additional income of about Rs. 30,000 per ha during summer
- Incidence of YMV is less compared to local





## 4. Integrated Crop Management in Chilli-Arka Harita



### Problem

- Imbalanced nutrition
- Disease incidence (Mosaic virus)



Dist. Avg. Yield  
12.5 t/ ha

SMS	Horti
Season	Late Kharif
Demos	5 (1 ha)
Villages	Bydanuru Vaddrahatti Rangapura Belladamodagu Karemadenahalli

### Technology: IIHR (B)

- Arka Harita -F1 hybrid- Green turn red on maturity, tolerant to powdery mildew & CMV
- Duration 180 days.
- AMC: Drenching
- Spraying Vegetable Special- 3gm /lit and Neem Soap @7 gm /lit

### Critical inputs provided

- Seeds-30 gm, Bio fertilizer AMC- 1 l
- Vegetable special -2 kg
- Neem Soap-2 kg

# Field Visits



# Results

Particulars	No of fruits /plant	Fruit weight (g)	Disease Incidence (%)	Avg Yield (t/ha)	% increase d yield	Gross cost (Rs/ha)	Gross Income (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
Demo	187.50	4.48	19.42	23.85	22.81	98990	298125	1,99,135	3.01
Control	164.20	3.94	38.24	19.42		104250	242750	1,38,500	2.33

Price:

Rs. 12.5/kg

Date Sowing: 22-07-

21

Date Harvest: 12-10-

21



## Feedback

- Additional yield of 4.43t/ha, i.e. Rs. 60,000/- income (Green chilli)
- Has higher pungency
- Less CMV incidence
- Good price in the market compared to local



## 5. Integrated Crop Management in Tube Rose – Arka Prajwal



### Problem

- Small sized flowers
- Less shelf life (1-2 days)
- Low yield



Dist. Avg.  
Yield  
6.5 t/ ha

SMS	Horti
Season	Late Kharif
Demos	3 (0.4 ha)
Villages	Badavanahalli Rangapura Tippenahalli Belladamodagu Doddenahalli

### Technology: IHR (B)

- Arka Prajwal bears single type flowers on tall, sturdy spikes.
- The flower buds are slightly pinkish in colour while the flowers are white.
- 8 days vase life.
- Each plant produces about 40 flowers. RDF : 100:50:50 NPK kg/ha
- AMC : Drenching @ 20gm /l (60 DAP),  
Neem soap : @ 7 g/lit

### Critical inputs provided

- Seeds bulbs -300 kg /0.4 ha
- Bio fertilizers- AMC -10 kg



# Field Visits



# Results

Particulars	No. of florets/spike	Spike length (cm)	Flowers yield /plant (gm)	Yield (t/ha)	% Increase	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
Demo	30.22	98.24	86.62	7.36	25.81	90750	294400	203650	3.24
Local	26.45	86.45	45.35	5.85		94550	234000	139450	2.47

Price: Rs.40/kg

Date Sowing: 08-08-

Date Harvest: 15-10-

21

21



## Feedback

- Early flowering (65 days),
- Medium sized with light pinkish and more numbers (30) of florets per plant
- Suited for loose flowers & garland.
- Medium shelf life (3 days)

## 6. Integrated Crop Management in Tomato

### Problem

- Tomato Leaf Curl, Bacterial wilt, Early blight and Late blight diseases affect the crop growth and yield



1,427  
ha

Dist. Avg.  
Yield  
56 t/ ha

SMS	PP
Season	Summer
Demos	5 (2 ha)
Villages	Veerammanahalli (P)

### Technology: IIHR (B)

- Demonstration of Arka Abedh : F1 Hybrid resistant to Tomato Leaf Curl, Bacterial wilt, Early blight and Late blight
- Bio-fertilizer -AMC application 10ml/ltr and Neem cake application(250 Kg/Ha),FYM 25 t/ha and RDF
- Sowing of Trap crop (Marigold in the ratio 16:1,
- Installation of Yellow stick traps
- Neem Soap application, NPV,
- **Critical inputs provided**
- Seeds -120 g/ha
- Bio fertilizers- AMC -10 kg
- Neem Soap, Sticky traps

## Field Visits



## Results - Ongoing

Technology options	Plant height (cm)	Number of branches/plant	No. of fruits per plant	Early Blight (%)	Leaf curl (%)
Demo	86.34	11.56	28.10	1.20	4.66
Check	78.44	8.66	20.10	16.60	14.66

Date Sowing: 21-03-



## 8. Mucuna (*Mucuna pruriens* L.) for the Improvement of Soil Properties in Coconut

### Problem

- Poor soil condition and low soil fertility in Coconut orchards coupled with Weed problem is the main cause for the lower Productivity in District.
- Interspace in Coconut is vacant and unutilized for longer period again leading to lower Productivity in Coconut.



Dist. Avg. Yield  
5800 No.s/ha

SMS	PB
Season	<i>Kharif</i>
Demos	20 (8 ha)
Villages	Hosahalli (S)

### Technology: IIHR (B)

- Mucuna was found to leave behind > 25tons/ha of biomass at the end of the cropping season, to improve the soil health
- Improves OC and N
- A.Dhanwantri: Seed yield- 4.2 t/ha,
- Long duration: 185-190 days
- Shiny black seed coat / medium sized seeds.

### Critical inputs provided

- Mucuna seeds (Arka Dhanwantri)

## Field Visits



Issue of Soil health card



Mucuna at early  
stage



Mucuna at maturity  
stage

## Results

Particulars	% organic Carbon (Avg of 20 No's)	% Increase in OC	Nitrogen content kg/ha	% Increase N Content
Before	0.51	0.08	198.48	28.36
After	0.59		254.78	
Preferred Range	0.7 to 1.0		280-560	

Date Sowing: 12-06-

21

Date of incorporation: 15-

11-21



### Feedback

- As a mulching crop, resulted in 92% less weeds, compared to check plot.
- Soil Moisture level is significantly higher than the Check
- Approximately 20 tons/ha of Biomass is added to the soil





## 9. Demonstration of Arka Prasan Ridge Gourd variety for higher productivity

### Problem

- Lack of availability of suitable HY-OP varieties
- Shorter duration of prevailing hybrids/varieties leading to less number of harvest and lower yield.



Dist. Avg.  
Yield  
7 t/ ha

SMS	PB
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Kumbarhalli (S), Rangapura (M)

### Technology: IIHR (B)

- Open pollinated variety
- Early variety (42-45 days for first picking).
- Green, long, tender fruits, excellent cooking quality.
- Nutritionally rich, antioxidant activity and minerals like phosphorus, Calcium and zinc .
- Yields 26.0 t/ha in 120-135 days.

### Critical inputs provided

Ridge gourd seeds of Arka Prasan

# Field Visits



## Results

Particulars	Days taken for first picking	Weight of fruit (g)	Number of fruits per plant	Yield (q/ha)	% Increase in yield	Gross Cost (Rs./ha)	Gross Returns (Rs./ha)	Net Returns (Rs./ha)	B:C ratio
Demon	43	302	7.90	120	42.85	50,000	1,80,000	1,30,000	3.6
Check	51	241	6.12	84		60,000	1,26,000	66,000	2.1
Date Sowing: 19-06-		Date Harvest: 12-08-			Price: Rs.15/kg				



### Feedback

- Use of Fruit fly traps contributed reduction in fruit fly damage to the tune of 75% compared to check plot.
- Fruits are attractive, long, straight, tender green hence very much preferred in market



## 10. Integrated Crop Management in Onion



### Problem

- Non adoption of HYV
- Disease and Pest Problems like Purple blotch (*Alternaria porri*) & Thrips (*Thrips tabaci*)



Dist. Avg.  
Yield  
15 t/ ha

SMS	PB
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Kumbarhalli (S) Rangapura (M)

### Technology: IIHR (B)

- Demonstration of Arka Bheem : Red to pinkish red elongated globe shaped bulbs. Average bulb weight is 120 g .
- Yield 47t/ha in 130 days.
- Bio-fertilizer -AMC application 10ml/ltr and Neem cake application(250 Kg/Ha).
- Seed Treatment with Thiram + Carbendazim (2:1)@3g/kg.
- Installation of Yellow stick traps to manage sucking pests.

### Critical inputs provided

- Arka Bheem seeds
- AMC, Yellow Sticky traps



# Field Visits



## Results

Particulars	Plant height (cm)	Purple blotch incidence (%)	Bulb weight (g)	Yield (t/ha)	% Increase in yield	Gross Cost (Rs./ha)	Gross Returns (Rs./ha)	Net Returns (Rs./ha)	B:C ratio
Demonstration	54	24	97	18.2	30.0	60000	182000	122000	3.03
Check	51	43	71	14.0		75000	14000	65000	1.86

Date Sowing: 02-07-

21

Date Harvest: 17-11-

21

Price: Rs.10/kg



### Feedback

- Purple blotch incidence was less compared to check.
- It is having good quality, attractive color, medium sized bulbs
- Withstood the continues rainfall.



## 11. Demonstration of Fodder Sorghum CoFS 31



### Problem

- Non adoption of multicut suitable fodder crop of higher yield



Dist. Avg.  
Yield  
12 t/ ha

SMS	Agri. Extn.
Season	<i>Kharif</i>
Demos	10 (0.4 ha)
Villages	Chikkadoddawadi Tanganahalli Kodegehalli Badavanahalli

### Technology: TANUVAS

- Fodder Sorghum CoFS 31
- 6-7 cuts/year (50 days interval)
- Succulent leaves and stem
- High protein (8.41%)
- Green fodder yield - 170 t/ha

### Critical inputs provided

- COFS seeds -10 kg
- AMC- 20 kg



# Field Visits





# Results

Variety	No. of Farmers	Area (ha.)	Ave. Yield (t/ha.)	% Increase in yield	Gross Cost (Rs)	Gross Return (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
CoFS-31	10	0.4	38.1	20.2	66175	84000	17825	1.26
Fodder Maize			31.7		63800	71000	7200	1.11

Price :

Rs.2200/t



## Feedback

- It is free from itching problem.
- Animals prefer to eat because of tender shoots.
- Milk yield has increased by 2 litres.
- Interested in seed production activity.



## 13. Demonstration of Foxtail millet Variety DHFt 109-3 for Value Addition



### Problem

Reduction in area under minor millets due to lack of knowledge on nutritional value & non availability of processing units

SMS	HS
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Karemadenahalli (sira) Rangapura (Madugiri)

### Technology: UAS (D)

- DHFt 109-3: Foxtail millet variety
- Value addition: Foxtail rice, Laddu, cookies & Diabetic mix.

### Critical inputs provided

- DHFt 109-3 foxtail variety seeds-5kg.
- Packing materials - 5kg
- Labels-400 nos. / demo.

# Field Visits & Products



## Results

Particulars	Yield (q/ha)	% Increase	Gross cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	BC Ratio
Demo	15.20	20.63	61,800	27,500	34,300	2.24
Check	12.6		37,520	24,600	12,920	1.52
Date Sowing: 05-08-		Date Harvest: 09-11-				

Product Name	Production cost (Rs/kg)	Selling cost (Rs/kg)	Net profit (Rs/kg)	Sales/month (kg/month)	Net profit / month	B:C ratio
Foxtail rice	30	70	40	180	7200	2.33
Foxtail Rava	35	80	45	120	5400	2.28
Diabetic mix	150	250	100	60	6000	1.66
Foxtail millet flour	35	75	40	80	3200	2.14



### Feedback

- Yield of DHFt109-3 variety was better compared to local variety
- Value added products prepared from foxtail millet fetched more value compared to without value addition.





## 14. Demonstration of Brown top millet for Value Addition



### Problem

Reduction in area under minor millets due to lack of knowledge on nutritional value and value addition

SMS	HS
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Karemadenahalli (Sira) Badavanahalli (Madugiri)

### Technology: UAS (B)

- Brown top millet
- Value addition: Rice, Rava and flour

### Critical inputs provided

- Brown top millet seeds-5kg
- Packing materials- 5kg
- Labels-400 nos. per demo

# Field Visits



# Results

Particulars	Plant Height (cm)	Ear heads / plant (Nos)	Straw Yield (t/ha)	Yield (q/ha)
Demo	67.62	6.0	2.0	10.5
Date Sowing: 07-08-21		Date Harvest: 14-11-21		

Particulars	Gross cost (Rs/q)	Gross Return (Rs/q)	Net Return (Rs/q)	BC Ratio
Check	2000	3000	1,300	1.66
Demo	4500	10,000	5,500	2.22



## Feedback

- Value added products prepared from brown top millet fetched more value compared to selling as it is.

# EDP 1: Drum stick leaves: Value Addition, Branding & Market linkage

## Problem

- Lack of knowledge on processing and value addition in drumstick leaves
- Lack of knowledge on Nutritional importance of drumstick leaves



SMS	HS
Demos	SHGs - 2
Villages	Thovinakere (Koratagere) Ganjalagunte (Madugiri)

## Technology: IIHR (B)

- Demonstration on preparation of value added products (Drumstick leaf powder, Drumstick Tea powder and Drumstick leaf powder incorporated products (mango pickle, sambar powder)
- Market linkage

## Critical inputs provided

Sealing machine, Weighing scale, packing covers and labels



## Activities



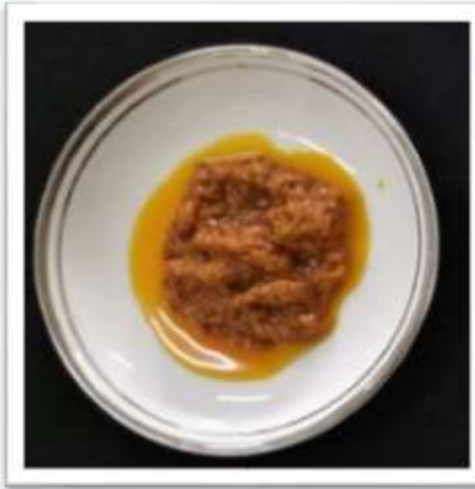
Awareness cum Training programme on medicinal plants (23rd Feb 2021)



Hands on training on preparation of value added products- 10th march 2022

## Results

Sl No	Products from Drumstick leaves	Total quantity (kg)	Rate (Rs./kg or piece)	Production cost (Rs.)	Total Income (Rs.)	Net income (Rs.)	BC Ratio	Employment Generation	Man days/100 kg production
1	Powder	100	300	12,000	30,000	28,000	3.33	4	45
2	Chutney powder	100	350	21,450	50,000	28,550	2.33	4	60
3	Pickle	100	300	10,850	30,000	19,100	2.76	3	45



Drumstick Powder products

Participation & selling of products in exhibitions

## EDP 2. Coconut Coir - Value Addition, Branding & Market linkage

### Problem

- Lack of knowledge on value addition in coconut coir



SMS	HS
Demos	SHG - 1
Villages	Chikkahalli (T)

### Technology: Coir Board, Kochi

- Demonstration on preparation of Bath Scrubs and Mats from Coir
- Market linkage

### Critical inputs provided

Sealing machine, Weighing scale, packing covers and labels



## Results & Activities



Sl No	Products	Total quantity (Nos/100 kg)	Rate (Rs./piece)	Production cost (Rs/100 kg)	Total Income (Rs.)	Net income (Rs.)	BC Ratio	Employment Generation	Man days/100 kg Coir processing
1	Coconut scrub	3100	50	58,500	1,55,000	96,500	2.64	15	26





# Demonstration on Nutri gardens for Nutrition security to the farm families



## Problem

- Lack of knowledge on establishment of nutrition garden
- Lack of awareness about nutritious food
- Non-utilization of resources- Water, Space & organic waste.

SMS	HS
Season	<i>Kharif &amp; Rabi</i>
Demos	30
Villages	Karemadenahalli (Sira) Chikkadoddawadi (Koratagere)

## Technology: UAS (B)

Demonstration on Establishment of scientific Nutrition Garden

## Critical inputs provided

- Vegetable seed kit and other vegetable seeds - 1 no
- Vegetable special - 0.5kg
- AMC liquid - 1l
- Saplings (*Drumstick, Papaya, Guava, Lime, Chakramuni, Curry leaf,*



# Results - Impact of Nutri-Garden intervention on food consumption pattern of farm women



Food Groups	RDA (g)	Before		After		% change
		Mean	% Adequacy	Mean	% Adequacy	
Cereals and millets	330	300	90.90	325	98.5	8.36
Pulses	75	40	53.33	55	73.33	37.50
Meat, egg & fish	150	90	60.00	110	73.33	22.21
Milk & Milk products	500	200	40.00	250	50.00	25.00
Roots and tubers	200	65	32.50	110	55.00	69.23
Green leafy vegetables	100	45	40.00	85	85.00	88.88
Other vegetables	200	90	45.00	145	72.5	61.11
Fruits	100	40	40.00	70	70.00	75.00
Sugar	30	30	100	30	93.54	--
Fat	25	25	100	25	100	--

Source: National Institute of Nutrition (NIN), Dietary guidelines for Indians (2010)

## Results - Nutri-Garden: Vegetables production details

Quantity of leafy vegetables produced (N=30) in kg

Palak	Methi	Amaranthus	Coriander	Shepu	Total
122.4	125.6	148.6	178.5	144.6	720

Quantity of other vegetables produced (N=30) in kg

Radish	Tomato	Chilli	Brinjal	French bean	Okra	Onion	Beet root	Total
210	270.4	253.5	205.1	166.2	190.3	172.7	194	1662

Quantity of leafy vegetable produced (kg)	Rate/kg (Rs.)	Quantity of other vegetables produced (kg)	Rate/kg (Rs.)	Total (Rs.)	Gross Cost (Rs.)	Gross Return (Rs.)	Net Return (Rs.)	B:C Ratio
720	40	1662	30	49,860	29,700	78,660	52,960	2.64



## Results - Average consumption of nutrients & percent adequacy

Nutrients	RDA (g)	Before Intervention		After Intervention	
		Avg. Nutrient	% Adequacy	Avg. Nutrient	% Adequacy
Energy (Kcal)	2230	1950	87.44	1965	88.11
Protein (g)	55	42.40	77.09	49.60	90.18
Iron (mg)	21	13.84	65.90	19.20	91.42
Calcium (mg)	600	485.40	80.90	586.40	97.73
Carotene (µg)	4800	1920.40	40.00	4650.10	96.87
Vitamin C (mg)	40	24	60.00	36.00	90.00



### Feedback

- Cost incurred towards purchase of vegetables has reduced from Rs.200/- to Rs.50/week
- Consumption of leafy vegetables has increased from twice a week to 4-5 times / week

Additional parameters	Quantity/Percentage
Production of vegetables (Kg/ month/ Family)	19.85
Vegetables Availability (gms/Person/day)	165
Vegetable Adequacy (%)	55.00



# Capacity Development Programmes



# Training Programmes

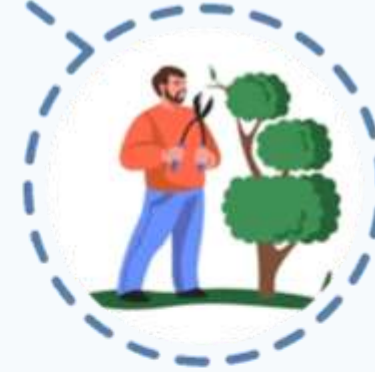


Farmers/  
Farm Women  
22  
No. of  
Participants  
750



Sponsored  
1  
No. of  
Participants  
33

Rural Youth  
5  
No. of  
Participants  
123



Vocational  
DAESI  
1



Extension Personnel  
1  
No. of Participants  
22

## Training Activities (2021-22)



Climate Smart  
Agriculture  
27th August 2021



Oyster Mushroom Cultivation  
2nd November 2021



BAKAHU Preparation &  
Value Addition  
20th November 2021



Nursery technologies for  
Horticultural Officers  
20th December 2021



Nutrition management,  
Anganwadi, Hirehalli  
25th Mar, 2021



Ragi KMR-630 & Groundnut  
K-6  
varieties  
2nd August 2021



# Training Activities (2021-22)



Nutri Garden at  
Karemadenahalli



IPDM in Groundnut  
4th September 2021



Zoonotic Diseases at  
Chukkadoddawadi  
7th July 2021



Organic Farming in Horticultural  
Crops  
15th September 2021



Control of Rugose Whitefly in  
Coconut, Ramagondanahalli  
30th Jan, 2021



Composting of farm residue using  
Arka Decomposer at Chikkadoddavadi  
27th November 2021





## Extension Activities (2021-22)



Extension Activity	Program me	Farmer			SC ST Farmers			Extension Personnel		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Advisory Over Phone	26	1801	300	2101	113	46	159	122	42	164
Bimonthly Meeting	2	0	0	0	0	0	0	58	35	93
Celebration of Important Days	9	166	59	225	62	54	116	28	7	35
Diagnostic Visit	20	68	5	73	2	0	2	9	0	9
Exhibition	1	400	350	750	0	0	0	0	0	0
Exposure Visit	1	25	0	25	11	0	11	0	0	0
Farmer/Extension Personnel visit to KVK	165	5200	1204	6404	120	30	150	24	8	32
Farmers Seminar/Workshop	1	0	0	0	0	0	0	35	15	50



## Extension Activities (2021-22)



Extension Activity	Program me	Farmer			SC ST Farmers			Extension Personnel		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Field Day	6	233	18	251	56	0	56	0	0	0
Group Meeting	7	61	12	73	0	0	0	87	14	101
Kisan Mela	5	7972	3603	11575	150	134	284	0	0	0
Lect. Delivered as Resource Person	19	344	292	636	25	0	25	108	24	132
Method Demonstration	1	22	0	22	0	0	0	2	0	2
Scientist visit to farmers field	35	123	41	164	0	2	2	1	0	1
<b>Total</b>	<b>298</b>	<b>16415</b>	<b>5884</b>	<b>22299</b>	<b>539</b>	<b>266</b>	<b>805</b>	<b>474</b>	<b>145</b>	<b>619</b>

## Extension Activities (2021-22)



International year of Millets 2023 -  
Campaign of Nutri Garden and Tree  
Plantation | 17th September 2021



Diagnostic Visit, Karamadinahalli. Problems in  
Aster and Pomegranate | 23rd Dec 2021



Field Day on Aerobic Paddy variety Paustic 9  
7th December 2021



Field Day on Ridge gourd variety Arka  
Prasan



## Extension Activities (2021-22)



World Soil Day at Chikkadoddawadi | 5th  
June 2021



Exposure visit to National Horticulture Fair |  
8th Feb 2021



Field day on Arka Abedh Tomato, Pavagada  
12th May 2021



Tree plantation & Nutri-garden Programme in  
Tumakuru 17th Sep 2021





## Other Extension Activities (2021-22)



Item	No.
Extension literature	02
Press Media coverage	05
Popular articles	04
Technical reports	08
Radio programmes	02
TV programmes	04
KVK Portal Information	140
KMAS messages	18



## Publications during the year 2021 - 22



- Ramesh.P.R, Loganandhan.N, Srinivasa Reddy.D.V and Praveen Kumara. 2021. Performance of water saving Aerobic Paddy MAS-26 to combat climate vulnerability in Tumakuru district. 5th International Agronomy Congress; Agri Innovations to Combat Food and Nutrition Challenges held at Professor Jayashankar Telangana State Agricultural University (PJTSAU), Hyderabad, India.
- D. V. Srinivasa Reddy, P. R. Ramesh, R. Manjunath, N. H. Bhandi, M. N. Malawadi and M. S. Savitha.2022. Rainwater harvesting technologies in arid and semi-arid region of Karnataka to mitigate climate change impacts. Mysore J. Agric. Sci., 56 (1): 341-348
- Singh.V.K, Prasad.J.V.N.S, et. al. 2021. Promising climate resilient technologies for Karnataka. ICAR - Central Research Institute for Dryland Agriculture, Hyderabad. Pp 87.
- Video documentation of water harvesting structures and climate resilient technologies by Ministry of Jal Shakti team on 05.02.2022 at D.Nagenahalli, Koratagere Taluk, Tumakuru.



## Media Coverage (2021-22)



Awareness on KVK activities, Amogha TV | 23rd July 2021



Successful Banana Farmer, Digvijay TV | 3rd Nov 2021



Successful Pepper Farmer, Digvijay TV | 3rd Nov 2021



Awareness on KVK activities, Siddartha Radio 8th Jan 2021



# Newspaper Articles during the year 2021 - 22

### ತೆಂಗು ಇಳುವರಿ ಹೆಚ್ಚಳಕ್ಕೆ ನಸುಗುನ್ನಿ ಹೊದಿಕೆ



ತೆಂಗು ಇಳುವರಿ ಹೆಚ್ಚಳಕ್ಕೆ ನಸುಗುನ್ನಿ ಹೊದಿಕೆ. ತೆಂಗು ಇಳುವರಿ ಹೆಚ್ಚಳಕ್ಕೆ ನಸುಗುನ್ನಿ ಹೊದಿಕೆ. ತೆಂಗು ಇಳುವರಿ ಹೆಚ್ಚಳಕ್ಕೆ ನಸುಗುನ್ನಿ ಹೊದಿಕೆ.

### ಕೃಷಿ ಕುರಿತ ಅರಿವು ಕಾರ್ಯಕ್ರಮ



ಕೃಷಿ ಕುರಿತ ಅರಿವು ಕಾರ್ಯಕ್ರಮ. ಕೃಷಿ ಕುರಿತ ಅರಿವು ಕಾರ್ಯಕ್ರಮ. ಕೃಷಿ ಕುರಿತ ಅರಿವು ಕಾರ್ಯಕ್ರಮ.

### ಪ್ಯಾಗಟಾರಿನಲ್ಲಿ ಕೃಷಿ ಉತ್ಸವಗಳ ವಿಜಯ ಭಟ



ಪ್ಯಾಗಟಾರಿನಲ್ಲಿ ಕೃಷಿ ಉತ್ಸವಗಳ ವಿಜಯ ಭಟ. ಪ್ಯಾಗಟಾರಿನಲ್ಲಿ ಕೃಷಿ ಉತ್ಸವಗಳ ವಿಜಯ ಭಟ. ಪ್ಯಾಗಟಾರಿನಲ್ಲಿ ಕೃಷಿ ಉತ್ಸವಗಳ ವಿಜಯ ಭಟ.

### ಬಾಕಾಹು ಸ್ವಾವಲಂಬನೆಗೆ ದಾರಿ




ಬಾಕಾಹು ಸ್ವಾವಲಂಬನೆಗೆ ದಾರಿ. ಬಾಕಾಹು ಸ್ವಾವಲಂಬನೆಗೆ ದಾರಿ. ಬಾಕಾಹು ಸ್ವಾವಲಂಬನೆಗೆ ದಾರಿ.

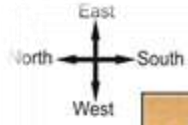
### ತೆಂಗಿನಲ್ಲಿ ಸಮಗ್ರ ರೋಗ ನಿರ್ವಹಣೆ

### ಕೃಷಿ ಪ್ರಗತಿ

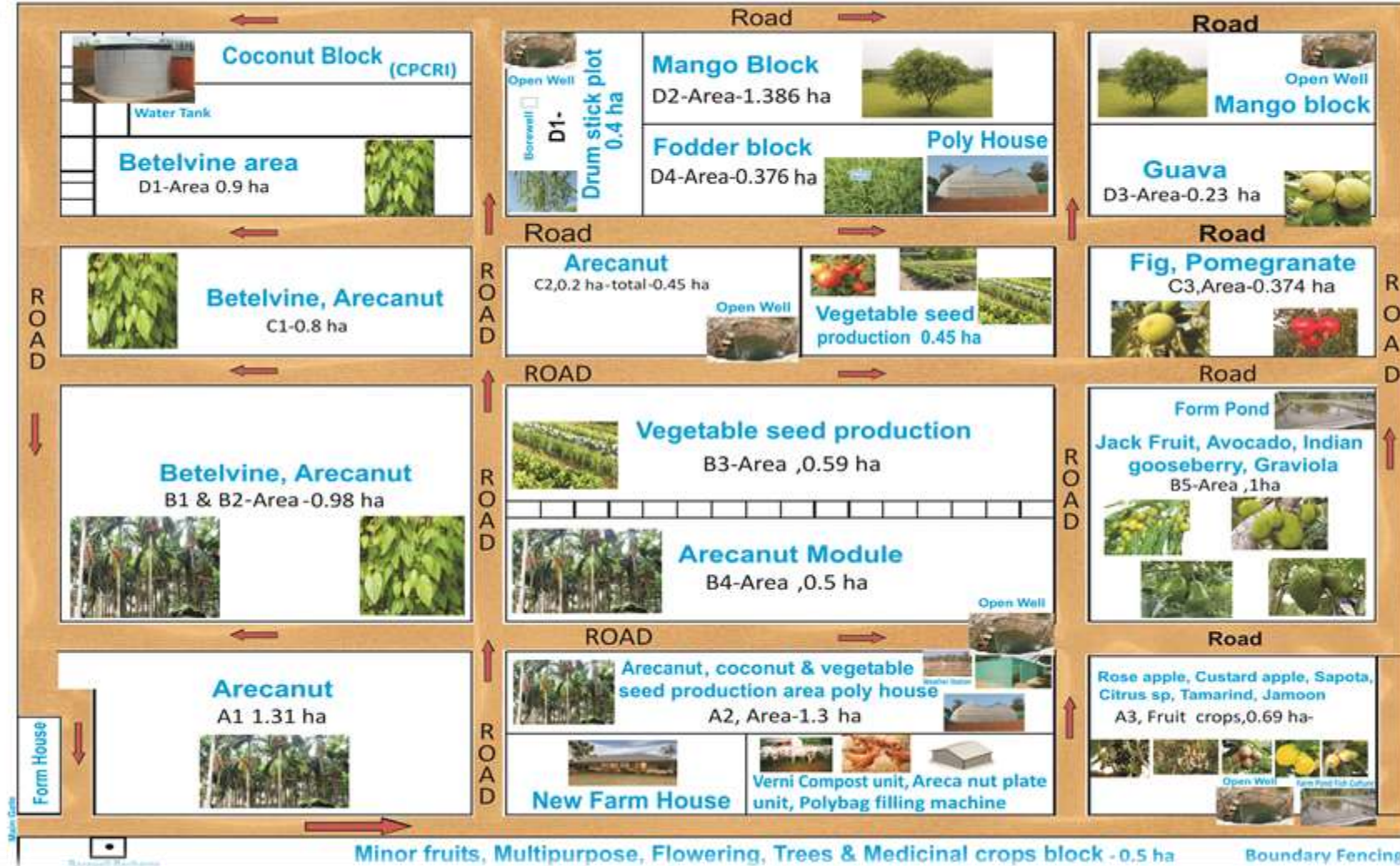



ತೆಂಗಿನಲ್ಲಿ ಸಮಗ್ರ ರೋಗ ನಿರ್ವಹಣೆ. ತೆಂಗಿನಲ್ಲಿ ಸಮಗ್ರ ರೋಗ ನಿರ್ವಹಣೆ. ತೆಂಗಿನಲ್ಲಿ ಸಮಗ್ರ ರೋಗ ನಿರ್ವಹಣೆ.

Production of Seeds,  
Planting materials and  
other Products



## ICAR-KVK, Hirehalli Route Mapping of Farm







Farm Area: 15.1 ha  
Cultivable Area:  
12.51 ha



No.	Details	Area (Ha)
1	Arecanut	3.75
2	Coconut	1
3	Mango	2
4	Custard Apple	0.1
5	Sapota	0.2
6	Citrus	0.3
7	Tamarind	0.2
8	Jamoon	0.1

No.	Details	Area (Ha)
10	Pomegranate	0.2
11	Guava	0.3
12	Vegetables (Seed Production)	2.0
13	Fodder	0.3
14	Minor fruits	0.2
15	Poly house, Shade net (Nursery)	0.2
16	Other Demo units, Buildings	2.75



# Integrated Farming System



# Seed Production Activities at KVK Farm 2021 - 22



Tomato - Arka meghali



Mucuna - in Coconut  
Arka Dhanvantri



Pumpkin - (Arka Suryamukhi)



Radish - (Arka Nishant)



Palak - Arka Anupama



Arka Vegetable Seeds





Production and sale of Seeds (2021-22)  
KVK Farm, SMS (Plant Breeding)



Name of the crop and variety	Qty. sold	Unit	Value (Rs.)	Farmers covered (No.)
Amaranthus Seeds ( Arka Suguna)	1.4	Kg	700	15
Bottleguard Seeds(Arka Bahar)	3.35	Kg	5850	24
Brinjol (Arka Sirish)	1.4	Kg	2520	18
Brown Top Millet (Korale)	60	Kg	3600	6
Coriander Seeds (Arka Isha)	2	Kg	800	37
Drumstick Seeds (PKM1)	8.45	Kg	25350	75
Foxtail Millet (Navane)	189	Kg	9720	29
French Bean (Arka Komal)	68.1	Kg	20430	12
Mucuna (Dhanwanthari)	495	Kg	59400	69
Mucuna (Shubra)	281	Kg	33720	31
Okra Seeds (Arka Anamika)	30.45	Kg	12180	86
Onion Seeds (Arka Kalyan)	3	Kg	6000	5
Palak Seeds(Arka Anupama)	13.8	Kg	5520	84
Pappaya Seeds (Arka Prabhath)	0.01	Kg	1000	1
Pumpkin Seeds (Arka Suryamuki)	2	Kg	2200	22



## Production and sale of Seeds (2021-22)



Name of the crop and variety	Qty. sold	Unit	Value (Rs.)	Farmers covered (No.)
Ragi KMR 630	693	Kg	29200	78
Ragi (ML 365)	360	Kg	18000	42
Ragi (indof-7)	630	Kg	29090	140
Ridgeguard Seeds (Arka Prasanna)	35.65	Kg	82045	89
Tomato Seeds (Arka Meghali)	2.55	Kg	7550	30
Pumpkin Seeds (Arka Suryamuki)	3	Kg	4200	14
Radish Seeds ( Arka Nishanth)	0.8	Kg	400	3
Vegetable cowpea (Arka Garima)	0.5	Kg	25	2
Little millet (Same)	2	Kg	160	1
Fodder Cowpea	2	Kg	500	1
Fodder Sorghum COFS 29	27.25	Kg	11100	21
Fodder Sorghum COFS 31	12	Kg	4800	8
Vegetable Seeds Kit	3723	No	664670	3700
Vegetable Seed sample pockets	1266	No	37890	760
Drumstic Seedlings	2320	No	34800	65
Pappaya Seedling	1975	No	23700	46
Cury Leaf Seedlings	1115	No	16725	890



# Farmer's Participatory Seed Production 2021 -22 (SMS - Plant Breeding)



Moringa PKM-1



Ridge Gourd - Arka Prasan



Pumpkin - Arka Suryamukhi



# Farmer's Participatory Seed Production 2021 -22



Sl no.	Crop	Variety	Area (ha)	Expected Seed Qty. (Qt1.)
<b>Agricultural Crops:</b>				
1	Ragi	ML-365/KMR-630	5.0	70.0
2	Fodder Sorghum	CO(FS)-31	4.0	20.00
3	Fodder maize	African tall	1.00	20.00
<b>Sub Total</b>			<b>10.00</b>	<b>110.0</b>
<b>Horticultural crops :</b>				
1	Onion	Arka kalyan	5.00	15.00
2	Ridge gourd	Arka prasan	4.00	3.40
3	Pumpkin	Arka suryamukhi	1.00	1.80
4	Bottle gourd	Arka bahar	1.00	2.20
5	Okra	Arka Anamika	2.00	8.50
6	Drumstick	PKM-1	2.00	1.50
7	Tomato	Arka Meghali	0.50	0.32
7	Mucuna	Arka Subhra	5.00	25.00
<b>Sub Total</b>			<b>20.50</b>	<b>56.00</b>



# Planting Materials Production





# Production and sale of planting materials (SMS-Horti)



Name of the crop	Variety	No.	Value (Rs.)	No. of farmers covered
<b>Fruits</b>				
Acid lime Seedlings	Kazi lime	2035	142450	125
Tamarind Grafts	PKM-1	1909	133630	48
Tamarind Seedlings	Gottigere	1000	40000	40
Amla Grafts	NA7,NA 5	1159	81130	62
Guava Grafts	Allahabad Safed, Arka Mridula & Arka Kiran	2922	204540	56
Jamun Seedlings	Dhupadal	282	19740	22
Mango Grafts	Alphanso, Mallika, Kedsar, Langra & Dashahari	4272	299040	66
Pomello Seedlings	Devanahalli Local	188	7520	38
Custard Apple Seedlings	Balnagar	414	28980	32
Lakshmana Phala Seedlings	Local	1106	44240	152
Rose Apple Seedlings	Local	150	6000	30
Cherry Seedlings	Singapore cherry	30	1200	15
<b>Total</b>			<b>10,08,470</b>	<b>686</b>





# Production and sale of planting materials (SMS-Horti)



Name of the crop	Variety	No.	Value (Rs.)	No. of farmers covered
<b>Plantation</b>				
Arecanut Seedlings	Hirehalli Tall	34295	1714750	52
Arecanut Sprouts	Hirehalli Tall	28000	196000	35
Arecanut Seed Nuts (Loose) - Nos.	Hirehalli Tall	61700 Nos	185100	56
<b>Total</b>			<b>20,95,850</b>	<b>143</b>
<b>Others</b>				
Arecanut Seed Nuts (Degraded)	Hirehalli Tall	13.0q	26000	1
Arecanut Seed Nuts (Auction)	Hirehalli Tall	-	1040000	1
Coconut Auction	Arsikere tall	-	164000	1
Tamarind Auction	PKM-1	-	3056	1
<b>Total</b>			<b>12,33,056</b>	<b>4</b>
<b>Grand Total</b>			<b>43,37,376</b>	<b>833</b>

# Technological Products from KVK





# Technological Products from KVK



## **I. Bio-fertilizer**

1. Arka Microbial Consortium (AMC) – Powder
2. AMC - Liquid

## **II. Micro-nutrient formulations**

3. Banana Special
4. Mango Special
5. Vegetable Special
6. Citrus SpecialIII.

## **III. Bio-pesticides/repellents/traps**

7. Neem Soap
8. Pongamia Soap
9. Arka Borer Control
10. Pheromone traps and Lures

## **IV. Home Science Products**

11. Amla Squash
12. Amla Candies
13. Ragi Malt
14. Mushroom Spawn



## SMS – Soil Science (2021-22)



Bio Products	Name of the bio-product	Qty. (Kg)	Value (Rs.)	No. of Farmers covered
Micro Nutrient Fertilizers	Banana Special	7,526	13,68,000	836
	Vegetable Special	2,259	4,75,380	452
	Mango Special	8,398	15,74,244	763
	Citrus Special	3,713	6,71,472	743
Bio-Fertilizers	Arka Microbial consortium- Powder	2,256	3,03,856	564
	Liquid (Lit)	3,238	8,43,647	405
Pheromone Traps/Lures (No.)	Fruit Fly Traps and lures (Nos.)	18,601	3,73,120	465
<b>Total</b>			<b>56,09,719</b>	<b>4,228</b>





## SMS - Plant Protection (2021-22)



Bio Products	Name of the bio-product	Qty. (Kg)	Value (Rs.)	No. of Farmers covered
Botanical Pesticides	Neem soap	3186	803452	854
	Pongamia soap	1345	272160	687
Others	Arka Borer controller	881	181440	77
<b>Total</b>			<b>12,57,057</b>	<b>1,618</b>



## SMS – Home Science (2021-22)



Name of the product	Qty. (Kg)	Value (Rs.)	No. of Farmers covered
Amla Squash (Lit)	220	28600	185
Amla Candy	0.43	12900	255
Mushroom Spawn	13.00	101922	68
Ragi Malt	0.95	18990	218
<b>Total</b>		<b>1,62,412</b>	<b>726</b>

## Sale of Animal components 2021 -22 (SMS-Soil Science)

Livestock details	Qty.	Amount (Rs.)
Bannur Sheep (Kg)	543	1,42,570
Hallikar/Jersey Cows Hallikar Bulls (No.)	5	1,24,500
<b>Total</b>	<b>10</b>	<b>2,67,070</b>



# Soil, Water & Plant sample Analysis SMS (Soil Science)

Particulars	No. of samples	No of farmers	Amount (Rs)
Soil	716	569	1,56,100
Water	493	428	1,06,300
Plant	2	2	800
<b>Total</b>	<b>1,211</b>	<b>999</b>	<b>2,63,200</b>





Activities as  
Resource  
&  
Knowledge Centre

NICRA – TDC Project  
Nodal Officer: SMS (Soil Science)





## Natural Resource Management



Sl. No.	Intervention	Area (ha) / (No. s)	No. of Stakeholders
1	Trench cum bunding	12	4
2	Tank silt application	4	22
3	Levelling	4	13
4	New farm pond	4 Nos.	4
5	Renovation of farm pond	1 No.	3
6	Renovation of community lake	1 No.	22
7	Melia dubia seedlings	3	26
8	Cashew seedlings	1.4	5



## Crop & Livestock Interventions



S1 · No ·	Seed Type	Variety	Area (ha)	No. of stakeholders
1	Finger millet	ML-365	48	117
2	Finger millet	KMR-630	4	9
3	Pigeon pea (Intercrop)	BRG-4/2	26	129
4	Aerobic paddy	MAS-946-1	18	41
5	Dolichos (Intercrop)	HA-4	6	74
6	Cowpea (Intercrop)	C-152	10	82
7	Fodder sorghum	CoFS-29/31	8	73
8	Mineral mixture (No)	-	136	45



## DAESI course for Input dealers



Inauguration of IV Batch of programme “Diploma in Agricultural Extension Services for Input dealers (DAESI)” on 18th Sep 2021

## Linkage with Departments, NABARD



Meeting with DDH on remedies for flood damage in horticulture crops on 23rd November 2021



Workshop on Branding FPO Products, NABARD office, Bengaluru on 13th Sep 2021



Bi-monthly Meeting, Department of Agriculture, DATC, Tumakuru on 8th Oct 2021



District level NABARD workshop on Climate change, Tumakuru, on 22nd Mar, 2021

## Supporting FPOs



Capacity Development of Hebbur Horticulture FPO, 24th Feb, 2021



Tamarind pounding unit, Suvarnamuki FPO, Badavanahalli, on 1st April 2021



Supporting with Ragi processing machine and Red gram mill, Grama chetana FPO, Koratagere



Supporting with Ragi harvesting machine, Swavalambi FPO, Sira



## Support to SC ST farmers (IIHR Projects)



Distribution of improved varieties of seedlings (05-06-21 & 23-09-21) and Training Programme on Bee Keeping (02-12-21) to SC and ST farmers under SCSP and TSP Projects of IIHR





Awards, Visitors,  
Success Stories

## Awards



National Water Award  
1st Prize in South Zone  
NICRA Project at Yelerampura GP  
29th Mar 2022



Sri.Satish, Progressive farmer, Kolihalli,  
Tumakuru Taluk, GKVK, Krishi Mela  
12th Nov 2021,

## Important Visitors (2021-22)



Staff from KVKs of AP - 15th Mar 2021



Visit of Dr AK Singh Honorable DDG (Horti) - 20th Mar 2021



Visit of farmers from Gujarat - 5th Mar 2021



Visit of Dr BNS Murthy, Honorable Director, IIHR & Dr Devakumar, Honorable DE (UAS-B) - 18th Sep 2021

## Mrs. Renuka Devi, Mushroom Entrepreneur



- Mrs.Renukadevi, 35 years old graduate woman, resides at Arakere village of Tumakuru taluk in Tumakuru district.
- Initially, she used to produce oyster mushroom in small scale by getting spawn from KVK.
- Later, she attended a 25 days skill training programme on Mushroom grower under ASCI programme during 2019-20 at KVK.
- Now, she is producing fresh mushroom - 130-140 kg per month and selling both locally and sending to Bengaluru with a brand name called “White pearl”.
- By selling mushroom, she is getting an income of Rs 18,000-20,000/- per month. She has also created employment opportunity to two members.



## Sri. Satynanarayana Reddy, Mango Grower



- Sri.Sathyanarayana Reddy, aged 57, is a progressive farmer from Ayyanahalli village, Madhugiri taluk, Tumakuru District. He is taking care of his 12 ha mango orchard, having Alphonso and Mallika varieties.
- Earlier, he used to have heavy crop loss due to poor management practices that led to attack of pests (mango hoppers, stem borer and fruit flies) and diseases (powdery mildew and dieback).
- During 2018-19, he came to know about KVK, Hirehalli and contacted Horticulture SMS and followed his advice as Integrated Crop Management (AMC, Mango Special, Fruit faly traps, Neem soap, Arka Borer Control etc)
- In the year 2019-20, from the first bearing, he got an yield of 12,000 kgs in Alphonso and 29,604 kgs in Mallika variety. He could obtain a net profit of Rs.4,96,080 for the whole orchard During 2020-21, same interventions were followed and he got an yield of 13,240 kgs in Alphonso and 33,032 kgs in Mallika. He could obtain a net income of Rs. 5,96,040.

Sri. Satynanarayana Reddy, Mango Grower





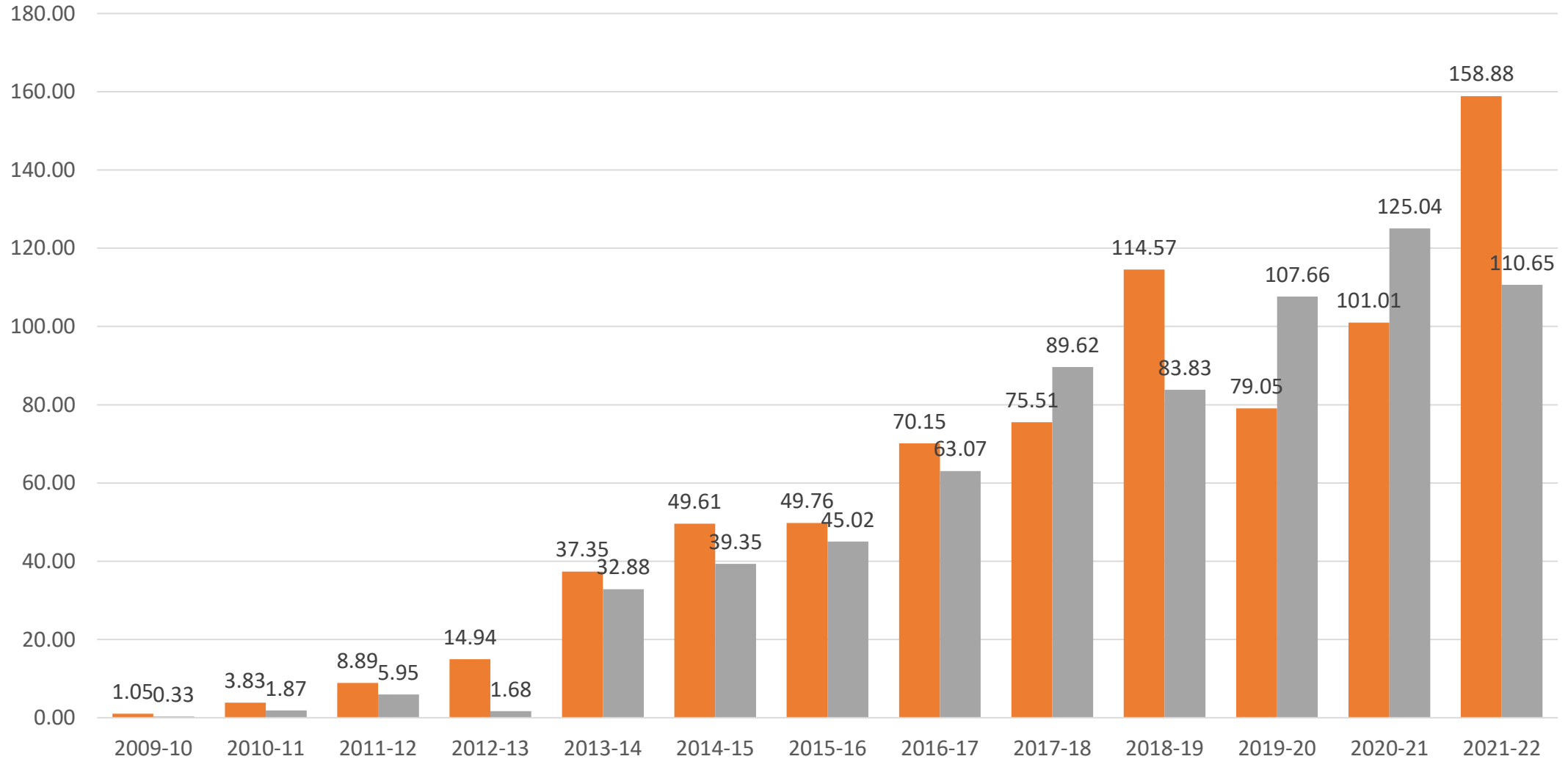
## Utilization of Budget



Budget Heads	Opening Balance (Rs. In lakhs)	BE/RE 2021-22 (Rs. In lakhs)	Fund received (Rs. In lakhs)	Expenditure (Rs. In lakhs)	Balance (Rs.)	Percentage of Utilization (%)
Grant in Aid - Capital	0	6.00	6.00	5.99	103	99.8
Grant in Aid - Salary	2.53	180.00	177.47	179.98	1,492	99.9
Grant in Aid - General	0.21	13.03	12.82	12.88	15,535	98.8
<b>Total</b>	<b>2.74</b>	<b>199.03</b>	<b>196.29</b>	<b>198.84</b>	<b>17,130</b>	<b>99.9</b>



# Status of Revolving Fund (in Rs. Lakhs)







## Status of Revolving Fund (*in Rs. Lakhs*)



Year	Opening balance as on 1st April	Income during the year	Expenditure during the year	Net balance in hand as on 31st March
April 2019 to March 2020	63.07	79.05	107.66	34.47
April 2020 to March 2021	34.47	101.01	125.04	10.44
April 2021 to March 2022	10.44	158.88	110.65	58.67



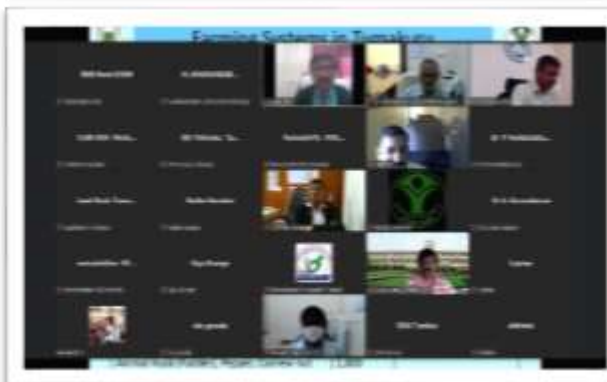
**Thanks a lot**



# Action Plan 2022- 23



# 11<sup>th</sup> SAC Meeting of KVK - 28<sup>th</sup> January, 2022







## SAC Recommendations



SMS	Recommendations
SMS (Soil Science)	<ul style="list-style-type: none"><li>• Intercropping in groundnut with suitable varieties of other crops may be explored.</li><li>• Soil and water conservation technologies (Watershed development) need to be given more importance.</li><li>• Soil test reports may be compiled and shared to DE Office. The compiled results of both the Tumakuru KVKs can be sent to state departments.</li><li>• Part of the KVK farm can be considered for practising natural farming methodologies.</li><li>• Seed availability of Aerobic paddy (Paustic - 9) can be arranged by developing seed bank at farmers level by KVK.</li><li>• In the NICRA project, maintenance of structure by the farmers need to be emphasized.</li><li>• Assessment of organic carbon through soil health card need to be followed.</li></ul>



## SAC Recommendations



SMS	Recommendations
SMS (Plant Protection)	<ul style="list-style-type: none"><li>• Introduction of Niger under NMOOP may be considered.</li><li>• Proper recommendation for cultivation of Groundnut variety (Kadri Lepakshi) may be considered.</li><li>• New varieties of GKVK UAS Bangalore may be evaluated through FLD (Castor, Niger etc).</li><li>• Establishment of Honey processing machine at KVK campus to support the FPO proposed in this regard may be explored.,</li><li>• E-Library/publication/web application with reference to control of pest and diseases (Plant Health Management) may be explored.</li><li>• Thrips/mites infestation in mulberry may be addressed.</li><li>• Action for control of Rugos whitefly may be taken.</li><li>• Action of control of tomato pin worm can be taken.</li><li>• A WhatsApp group of plant health clinic sort of intervention may be tried to address the pest and disease problems of the district in various crops.,</li><li>• Linking the successfully evaluated varieties to main stream chain as per the recommendation of the ecological zone need to be considered.</li></ul>



## SAC Recommendations



SMS	Recommendations
SMS(Home Science)	<ul style="list-style-type: none"><li>Promotion of coconut based products (as per ODOP concept, under entrepreneurship development programme) may be considered.</li><li>Ragi value addition and marketing support may be given.</li></ul>
SMS (Plant Breeding)	<ul style="list-style-type: none"><li>Mucuna demonstration need to be taken in large scale</li><li>Possibility of selling of seeds through NSP may be explored at KVK campus.</li></ul>
SMS (Extn)	<ul style="list-style-type: none"><li>Cultivation Amur Carp fish as demonstration may be taken up.</li><li>E-Library/publication/web application with reference to control of pest and diseases (Plant Health Management) may be explored.</li><li>Efforts may be taken to link the KVK Products through KVK Bazaar an initiative of KVK Pathanamthitta, Kerala.</li><li>The waste material of Areca plate units can be used for compost making with appropriate standard of practices developed by NIANP.</li><li>Sericulture intervention may be given importance.</li></ul>
SMS (Horti)	<ul style="list-style-type: none"><li>Appropriate varieties of tamarind (Grafts and Seedlings) may be considered in collaboration with forest department to support the farming community.</li><li>IFS model may be promoted in which supporting the farmers with proper forestry seedlings can be considered.</li><li>Laxmana variety of tamarind may be popularized taking the support from the Scientist In-charge, IIHR Farm Facility Hirehalli.</li></ul>



## Identification of Problems







## Operational Area



Name of Taluks	Cluster Villages	Convergence
Tumakuru	Kodigenahalli	Navya Disha NGO, Spriluna Foundation (CSR), Marikamba FPO, CFLD
Koratagere	Chikkadoddawadi	Grama Chetanan FPO, Marikamba FPO, NICRA Project
Sira	Bukkapattana	Kasturi Rangappa Nayaka FPO, Swavalambi FPO, ORDER NGO, CFLD
Madhugiri	Badavanahalli	Swarnamuki FPO, NABARD Watershed Project, CFLD, Avishkar NGO
Pavagada	Madavarayanapalya	Nidugal FPO, Pavagada FPO (DoH), DHAN NGO, CFLD

# Problems & Interventions in five taluks of Tumakuru



TUMAKURU



# Problems & Interventions in



Crop/Enterprise	Problems	Solution	Intervention
Ragi	Non adoption of variety suitable for dry spells, blast resistant	KMR-630	FLD
Groundnut	Non adoption of drought tolerant, HY varieties	DGRMB-24, 32 and K.Lepakshi	OFT
Groundnut/Red gram	Mono cropping, Drought, dry spells, erratic rain fall	Conservation furrow, Intercropping	FLD
Niger	Non adoption traditional, nutritive, drought tolerant oil seeds	KBN-2 or DNS-4 variety	FLD
Water melon	High seed cost, Sucking pests	Arka Shyama OPV	FLD
Bottle gourd	Multiple diseases result in low yield	Arka Shreyas variety	FLD
Chilli	Diseases susceptible private hybrids	Arka Tejaswi hybrid	FLD
Pomegranate	Poor fruit quality, wilt and bacterial blight	Bio-Fertilizers (AMC, ACT, Aspergillus, Pseudomonas)	OFT
Tuberose	Nematode susceptible, poor yield and less vase life	Arka Niranthara	FLD



# Problems & Interventions in



Crop/Enterprise	Problems	Solution	Intervention
Ragi	Non adoption of variety suitable for dry spells, blast resistant	KMR-630	FLD
Adolescent girls/Women	Iron deficiency	Bio-fortified Iron rich VPMH-14 for value addition	FLD
Maize	Low Nitrogen use efficiency	Application of nano fertilizers	FLD
Groundnut	Non adoption of drought tolerant, HY varieties	DGRMB-24, 32 and K.Lepakshi	OFT
Groundnut/Red gram	Mono cropping, Drought, dry spells, erratic rain fall	Conservation furrow, Intercropping	FLD
Niger	Non adoption traditional, nutritive, drought tolerant oil seeds	KBN-2 or DNS-4 variety	FLD
Water melon	High seed cost, Sucking pests	Arka Shyama OPV	FLD
Bottle gourd	Multiple diseases result in low yield	Arka Shreyas variety	FLD
Chilli	Diseases susceptible private hybrids	Arka Tejaswi hybrid	FLD
Pomegranate	Poor fruit quality, wilt and bacterial blight	Bio-Fertilizers (AMC, ACT, Aspergillus, Pseudomonas)	OFT
Tuberose	Nematode susceptible, poor yield and less vase life	Arka Niranthara	FLD
Coconut	Poor soil condition, soil fertility, weed menace	Mucuna - Arka Dhanwantri	FLD





# Problems & Interventions in



Crop/Enterprise	Problems	Solution	Intervention
Ragi	Non adoption of variety suitable for dry spells, blast resistant	KMR-630	FLD
Adolescent girls/Women	Iron deficiency	Bio-fortified Iron rich VPMH-14 for value addition	FLD
Maize	Low Nitrogen use efficiency	Application of nano fertilizers	FLD
Groundnut/Red gram	Mono cropping, Drought, dry spells, erratic rain fall	Conservation furrow, Intercropping	FLD
Niger	Non adoption traditional, nutritive, drought tolerant oil seeds	KBN-2 or DNS-4 variety	FLD
Sun flower	Lack of short duration, profitable alternate oilseed crops	Sunflower Hybrid KBSH-78	FLD
Water melon	High seed cost, Sucking pests	Arka Shyama OPV	FLD
Bottle gourd	Multiple diseases result in low yield	Arka Shreyas variety	FLD
Ridge gourd	Non adoption of short duration HY OPV	Arka Prasan OPV	FLD
Chilli	Diseases susceptible private hybrids	Arka Tejaswi hybrid	FLD
Tuberose	Nematode susceptible, poor yield and less vase life	Arka Niranthara	FLD



# Problems & Interventions



Crop/Enterprise	Problems	Solution	Intervention
Ragi	Non adoption of variety suitable for dry spells, blast resistant	KMR-630	FLD
Adolescent girls/Women	Iron deficiency	Bio-fortified Iron rich VPMH-14 for value addition	FLD
Maize	Low Nitrogen use efficiency	Application of nano fertilizers	FLD
Groundnut/Red gram	Mono cropping, Drought, dry spells, erratic rain fall	Conservation furrow, Intercropping	FLD
Niger	Non adoption traditional, nutritive, drought tolerant oil seeds	KBN-2 or DNS-4 variety	FLD
Water melon	High seed cost, Sucking pests	Arka Shyama OPV	FLD
Bottle gourd	Multiple diseases result in low yield	Arka Shreyas variety	FLD
Chilli	Diseases susceptible private hybrids	Arka Tejaswi hybrid	FLD
Fodder	Non adoption of multi cut, high yielding, year long fodder	CoFS-31 Fodder Sorghum	FLD
Fishery	Mono culture, improper utilization of space, low yield	High yielding varieties Catla, Rohu, and Amur/ Common carp (4:3:3)	FLD



# Problems & Intervention



Crop/Enterprise	Problems	Solution	Intervention
Bottle gourd	Multiple diseases result in low yield	Arka Shreyas variety	FLD
Chilli	Diseases susceptible private hybrids	Arka Tejaswi hybrid	FLD
Tuberose	Nematode susceptible, poor yield and less vase life	Arka Niranthara	FLD
Fodder	Non adoption of multi cut, high yielding, year long fodder	CoFS-31 Fodder Sorghum	FLD
Terrace garden	Drudgery, non adoption of low cost all nutrients solution	Arka Sasya poshak Ras: A Liquid Nutrient Formulation for Soil-less Vegetable Production	FLD
Coconut	Non practice of value added products	Value added products like Chips, Burfi	EDP
Millet	Non practice of value added products	Value added products like malt, savorys	EDP
Fishery	Mono culture, improper utilization of space, low yield	High yielding varieties Catla, Rohu, and Amur/ Common carp (4:3:3)	FLD



# Summary of Interventions



No .	Technical Interventions	No . s
1	Technology Assessment (OFTs)	3
2	Technology Dissemination (FLDs)	15
3	Entrepreneurship Development Programmes (EDPs) and Nutri garden	2+1
4	Capacity Development Programmes	58





# On Farm Testing



## Abstract of OFTs during 2022 - 23



Sl.No	Title	Area (ha)	No. of Trials	Budget (Rs.)
1	Assessment of bio formulations for improving productivity, quality and management of diseases in Pomegranate	1	3	28,950
2	Assessment of disease resistant Chilli hybrids for Higher productivity and quality	0.6	3	12,750
3	Assessment of Drought tolerant and High yielding varieties in Groundnut	0.6	3	28,050
			<b>Total</b>	<b>69,750</b>



# 1. Assessment of bio formulations for improving productivity, quality and management of diseases in Pomegranate



## Rationale

Pomegranate is an important fruit crop in Tumakuru district.

Farmers suffered crop loss due to severe incidence of blight (49%) and wilt (15%) affecting yield, quality of fruits and economic returns.

Three bio-formulations from **IIHR Bengaluru, NRCP, Solapur** and **IFFCO - NBRC Gujarat** were reported to reduce disease occurrence and improve soil fertility.

To assess their performance and to address the problem and profitability OFT is being taken.



Dist. Avg.  
Yield  
8 t/ha

Potential  
Yield  
13 t/ha

## Objectives

- To assess the effect of different bio-formulations in improving the productivity and quality of fruits
- To evaluate the effect of different bio-formulations in managing the predominant diseases in pomegranate.

## Hypothesis

The effect of bio-formulations derived from different sources vary in improving the productivity, quality and management of diseases in pomegranate.



# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	Dr Soil -Soil Fertility Booster. (2016)		Helps in fixing of N, solubilize and mobilize P and K respectively thereby increasing crop yield and soil fertility. But, high cost is an issue.
TO2 RP	Application of Aspergillus niger @5 gm /plant + pseudomonas @ 20 gm + with VAM @25 gm /plant	NRCP, Solapur (2014)	Helps in Mobilizing the P and Z. Plant growth Promoting Rhizosphere bacteria. Controls growth of harmful fungi. Helps to reduce disease occurrence.
TO3 AP	Actino bacterial consortium: Actino plus @ 50 gm /plant + AMC @60ml/plant	IIHR Bengaluru (2016)	It is a carrier based microbial product containing N, P, K & Zn solubilizing, phytohormone producing, cellulase and chitinase excreting actinobacterial strains. Controls growth of harmful fungi. Helps to reduce disease occurrence.
TO 4 AP	Liquid Bio fertilizer Consortium	IFFCO- NBRC Gujarat (2018)	Helps in fixing of N, solubilize and mobilize P and K respectively, thereby increasing crop yield and soil fertility.





ACT + AMC

Aspergillus  
niger +

Pseudomonas and  
VAM

IFFCO  
Biofertilizer

## Outcome

- Application of Arka action plus and AMC has reduced the blight incidence by 14.2% and wilt incidence by 1.3% with maximum yield of 8.9t/ha and average weight of fruit is 384gm.
- Drenching with *Aspergillus niger*, *Pseudomonas* and VAM reduced the blight incidence by 15.1% and wilt incidence by 2.4% with yield of 8.7t/ha and average weight of fruit is 367gm



## Feedback

The application of AMC + ACT and drenching with *Aspergillus niger* + *Pseudomonas* + VAM were reduced the disease incidence and improved the fruit quality and yield compare to that of farmer practice and IFFCO biofertilizer treatment.

Particulars	Details
Season	<i>Kharif</i>
Design	Randomized Block Design
Replications	03 (1ha)
Villages	Venkatapura (P), Kumbarahalli, Bukkapattana ( S)
Scientists	SS, PP and Horti
Other educational activities	Training, Method demonstrations, Farmers Scientists Interaction

Critical inputs (per trial)	Qty./ trial	Cost (Rs.)
Aspergillus niger	5 kg	1000
VAM	12.5 kg	750
Pseudomonas	10kg	1,400
Arka Actino Bacterial Consortia	25 kg	3,500
IFFCO Bio fertilizer	15 lit	3,000
Total		9,650
Cost for 3 trials		28,950

## Variables & Statistical Tools



- Blight incidence( %)
- Wilt incidence( %)
- No. of Fruits /plant
- Fruit weight ( gm)
- Yield (t/ha)
- B:C ratio
- Mean, T-test



## 2. Assessment of Chilli hybrids for disease resistant and Higher productivity



### Rationale

Private hybrids are susceptible to Leaf curl (40%), Wilt (7.4%) & Powdery Mildew diseases (20%), resulting in low quality fruits

Lack of awareness on High yielding and disease resistant public hybrids in chilli.



Dist. Avg.  
Yield  
12.6 t/ha

Potential  
Yield  
30 t/ha

### Objectives

- To assess the performance of different chilly hybrids in managing the Leaf curl, wilt and powdery mildew diseases
- To evaluate the different chilly hybrids for higher productivity

### Hypothesis

The performance among different chilli hybrids differ in improving the productivity and management of diseases





# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	Private hybrid (Demon)	Farmer's practice	Incidence of powdery mildew, anthracnose, Leaf curl diseases
TO2	Arka Tanvi	IIHR, Bengaluru ( 2020)	Tolerant to ChLCV, suitable for green and red chilli market, high yielding
TO3	Arka Gagan	IIHR, Bengaluru (2020)	Highly pungent, green and tolerant to bacterial wilt, RKN (root knot nematodes) and resistant to ChLCV
TO 4	Hy-80	UHS Bagalkot (2018)	F1 hybrid suitable for both green and dry Chilli production for rainfed and irrigated situation, resistant to murda complex disease

## Outcome

Arka Gagan and Arka Tanvi chilli hybrids recorded less percent of Chlcv disease incidence of 6.12 & 8.10 % as compared to check (12.85%).

Arka Gagan recorded highest yield of 19.32 t/ha and Arka Tanvi with 18.92 t/ha as compared to Demon FP (16.42 t/ha), 17.66 % higher yield than the Farmers practice.



Arka  
Gagan

Hy 80

Arka Tanvi

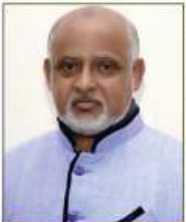
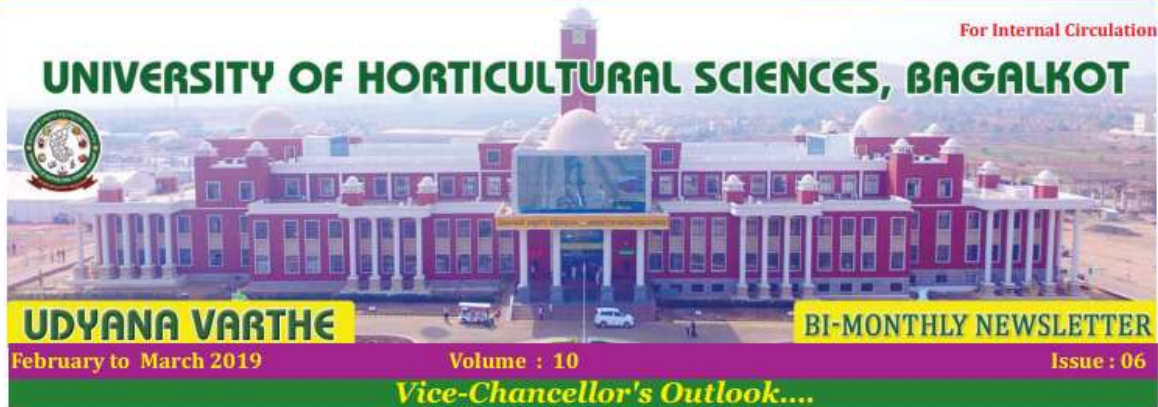


## Feedback

Arka Gagan hybrid pungency is High as compared to Demon FP and Arka Tanvi



# Hybrid-80 from UHS, Bagalkot



Dr. K. M. Indresh

University of Horticultural Sciences, Bagalkot organized the eighth convocation during February. Sri M. C. Managuli, Hon'ble Minister for Horticulture, Government of Karnataka and Pro-Chancellor of the University conferred the degrees to graduating students, while Dr. K. V. Prabhu, Chairperson, PPFVRA, New Delhi delivered the convocation address.

Lot of technical events were conducted during the period viz. Board of studies UG and PG, Academic council, Annual Technical meetings, Zonal Research, Extension and Advisory Committee meetings. As an outcome of the Research, many new technologies were developed, seven varieties were approved for release and another seven were identified for adoption. The college day celebrations, training programmes, PG research interactive seminar were also held during the period under report. Some of our colleagues had been abroad to participate in the international events and few got the awards, thus increasing reputation of the University.

## Varieties approved for release by UHS, Bagalkot for the year 2017-18



**1) SRS-2 (Sankeshwar selection)** : SRS-2 is an open pollinated variety suitable for green chilli production under rainfed as well as irrigated situation throughout the state. Fruits are parrot green in colour, 16 to 17.50 cm long and moderately resistant to chilli murda complex. Yield potential is about 15-18 t/ha.



**2) GPM-120-S-1** : GPM-120-S-1 is an open pollinated variety suitable for dry chilli production. When the fruits are dry they appear dark red colour. Oleoresin recovery is almost equal to traditional Byadgi Dabbi cultivar. It is high yielding dry chilli variety yields about 2-3 t/ha.



**3) Hybrid-80** : Hy-80 is a F1 hybrid suitable for both green as well as dry chilli production for rainfed and irrigated situation. This hybrid is resistant to murda complex of chilli and yields about 27 to 30 t/ha of green chilli.

Particulars	Details
Season	<i>Kharif</i>
Design	Randomized Block Design
Replications	03 (0.6 ha)
Villages	Veerammanahalli, Rangapura, Karemadenahalli, Mudugere
Scientists	PP and Horti
Other educational activities	Training, Method demonstrations, Farmers Scientists Interaction

Critical inputs (per trial)	Qty./ trial	Cost (Rs.)
Arka Tanvi	50g	1500
Arka Gagan	50g	1500
Hy-80	50 g	1250
Total cost / trial		4,250
Grand Total for 3 trials		12,750

## Variables & Statistical Tools



- Fruit length (cm)
- No. of fruits /plant
- Fruits Weight/plant(gm) ,
- Incidence of disease (%) -  
Leaf curl virus, PM, Wilt
- Yield (t/ha)
- B:C ratio
- Two way, T-test





### 3. Assessment of Drought tolerant and High yielding varieties in Groundnut



#### Rationale

- Groundnut is a major oil seed crop of the district.
- Erratic rainfall and prolonged dry spell results in failure of crop.
- Recent drought tolerant and HY varieties are playing a pivotal role in solving this problem.



Dist. Avg.  
Yield  
8 qtl/ha

Potential  
Yield  
15 qtl/ha

#### Objectives

- To assess the drought tolerant levels different varieties of groundnut
- To evaluate the productivity level of different varieties of groundnut

#### Hypothesis

The performance among different groundnut varieties vary in drought tolerance and productivity levels



# Technological Options



Options	Technological Options	Source	Justification
TO1 ( FP)	K-6	Farmer's practice 2006	110 days duration, Uniform maturity, suitable for low to medium rainfall areas, tolerant to drought, high frequency of mature kernels (95%)
TO2	DGRMB-24	DOGR ,2018	105-110 days, suitable for low to medium rainfall areas, tolerant to drought
TO3	DGRMB-32	DOGR ,2018	105-110 days, suitable for low to medium rainfall areas, tolerant to drought
TO 4	K-Lepakshi (K-1812)	ARS,Kadri, 2020	107-113 days, Erect-Spanish bunch type, higher yield and oil content

## Outcome

DGMRB-24 ground nut variety is very much tolerant to drought situation up to 45 to 55 days.



## Feedback

Kadri Lepakshi yields were highest among other existing varieties.



Particulars	Details
Season	<i>Kharif</i>
Design	Randomized Block Design
Replications	03 (0.6 ha)
Villages	Veerammanahalli, Bommanathanalli
Scientists	PP and PB
Other educational activities	Training, Farmers Scientists Interaction

Critical inputs (per trial)	Qty./ trial	Cost (Rs.)
DGRMB-24	20 Kgs	1500.00
DGRMB-32	20 Kgs	1500.00
Kadri Lepakshi (K-1812)	20 kgs	3000.00
Gypsum	300 Kg	2100.00
Neem Soap	5 kg	1250
Total cost / trial		9350.00
Grand Total for 3 trials		28050.00

## Variables & Statistical Tools



- Germination Percentage
- Days to flowering
- Withstand capacity for dry spells (days)
- Days to Harvesting
- Stem rot (%)
- Leaf miner incidence (%)
- Grain Yield
- Straw yield
- B:C ratio
- Mean, T-test



Front Line  
Demonstrations



## Abstract of FLDs (New) during 2021 - 22



Sl.No	Title	Area (ha)	No. of Demos	Budget (Rs.)
1	Demonstration of Nano fertilizer for higher productivity in Maize	4	10	14,100
2	Conservation Furrow in Groundnut + Pigeon pea (8:2) intercropping for minimizing the impact of drought	4	10	20,300
3	Niger Intercropping with Groundnut for additional returns	2	10	20,000
4	Demonstration of Sunflower hybrid KBSH-78 for higher Income	4	10	25,000
5	Integrated Crop Management in Watermelon - Arka Shyama	1	5	22,150
6	Integrated Crop Management in Chilli - Arka Tejasvi	1	5	20,400
7	Demonstration of Multiple Disease tolerant variety in Bottle gourd-Arka Shreyas	2	5	45,500
8	High yielding Tube rose variety Arka Nirantara	0.4	5	49,200
9	Demonstration of Composite Fish Culture	2	5	12,500
10	Demonstration of Bio fortified Pearl millet Hybrid VPMH-14 for Value Addition	2	10	25,000
11	Demonstration on Arka Sasya Poshak Ras: A Liquid Nutrient Formulation for Soilless Vegetable Production	-	10	6,000



## Abstract of FLDs (Continued) during 2021 - 22



Sl.No	Title	Area (ha)	No. of Demos	Budget (Rs.)
12	Enhancement of Productivity by Short duration Finger millet: KMR-630	4	10	17,750
13	<i>Mucuna (Mucuna pruriens L.)</i> for the Improvement of Soil Properties in Coconut	8	20	32,000
14	Demonstration of Arka Prasan Ridge gourd variety for higher productivity	4	10	22,000
15	Demonstration of Multi cut Fodder Sorghum: CoFS 31	0.4	10	8,800
	<b>Total</b>			<b>3,40,700</b>

Sl.No	Title	Area (ha)	No. of Demos	Budget (Rs.)
1	EDP: Coconut : Value Addition, Branding and Market Linkage (New)	-	2 SHGs	30,000
2	EDP: Millets: Value addition, Branding and Market Linkage (New)	-	2 SHGs	30,000
1	Demonstration on Nutri gardens for Nutrition security to the farm families	-	30	30,000



# Front Line Demonstrations (New)



# 1. Demonstration of Nano fertilizer for higher productivity in Maize

## Rationale

Maize is an important crop in Tumakuru district.

Low nitrogen use efficiency (35%) leads to low productivity and income.

It is essential to demonstrate Nano-fertilizer to increase the nitrogen use efficiency and yield.



Dist. Avg.  
Yield  
33.0 qtl/  
ha

Potential Yield  
64 qtl/ha



## Technology: UAS (R) – 2021

- Maize seeds MAH 14-5 - 15kg/ha
- Nano N (4ml/l) - 5litre/ha,
- IFFCO Sea weed extract: 2ml/l ( Growth promoter)- 2.5 litre/ha
- FYM - 10 ton/ha,
- RDF - 50:50:25 NPK kg/ha ( 50%N, 100%PK, 0%Zinc)
- Check: Direct soil application of RDF: 100:50:25 NPK kg/ha Zinc Sulphate 10 kg/ha.





# Description, Inputs & Statistics



Particulars	Details
Season	Kharif
Demos	10 (4 ha)
Villages	Chikkadoddavadi (K), D,Nagenahalli (K), Rangapura (M), Karimadenahalli (S)
Scientists	SS & PP
Other educational activities	Training, Method demonstrations, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Maize seeds MAH 14-5	6 kg	660
IFFCO Nano N	2 lit	500
IFFCO Sea weed extract	1 lit	250
Cost per Demo		1,410
Total cost for Demonstration		14,100

## Variables & Statistical Tools



- Plant height (cm)
- Cob weight(gm)
- Yield (q/ha)
- Fodder Yield (q/ha)
- B:C ratio
- Mean, T-test

## 2. Demonstration of Conservation Furrow in Groundnut + Pigeon pea (8:2) intercropping for minimizing the impact of drought

### Rationale

Ground nut is an important oilseed crop in Tumakuru district.

Drought, dry spells and erratic rainfall leads to reduction in the yield.

Predominant practice of monocropping of Ground nut (89 % area) is reducing the soil fertility.

It is essential to demonstrate Conservation Furrow and intercropping of Pigeon pea in Ground nut.



Dist. Avg.  
Yield  
8 qtl/ha

Potential  
Yield  
15 qtl/ha



### Technology: UAS(B) – 2011

- Pigeon pea (BRG 4/5) - 5kg/ha,
- Conservation furrow
- Groundnut - 30 cm W x 20 cm D
- Red gram - 60 cm W x 20 cm D
- FYM - 10 ton/ha,
- Biofertilizer - 0.5 kg/ha,
- RDF - 25:50:25 NPK kg/ha,
- Zinc sulphate - 10 kg/ha,
- Borax - 10 kg/ha
- Gypsum - 500 kg/ha
- Check : Monocropping & Without Conservation furrow



Particulars	Details
Season	Kharif
Demos	10 (4 ha)
Villages	Chikkadoddavadi (K), D,Nagenahalli (K), Rangapura (M), Karimadenahalli (S), Veerammanahalli (P)
Scientists	SS, PP and PB
Other educational activities	Training, Method demonstrations, Farmers Scientists Interaction

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Pigeon pea Seeds (BRG 4/5)	3 kg	240
Conservation furrow per acre	1 no.	1000
Biofertilizer	1 kg	140
Zinc sulphate	4 kg	240
Gypsum	200 kg	410
Cost per Demo		2,030
Total cost for Demonstration		20,300

## Variables & Statistical Tools



- Plant height (cm)
- No. of pods/plant
- Intercrop yield (q/ha)
- Moisture content ( %)
- Yield (q/ha)
- B:C ratio
- Mean, T-test



### 3. Niger Intercropping with Groundnut for additional returns

#### Rationale

Non-adoption of improved, highly nutritive and drought tolerant Niger crop in dry land areas of Tumakuru District.



Dist. Avg.  
Yield  
4.50 q/t/  
ha

Potential Yield  
20 q/t/ha



#### Technology: UAS B or D-2014

KBN-2 from UAS-B or  
DNS-4 variety from UAS D  
RDF- 20:40:20 NPK Kg/ha.  
Check: Local variety





# Description, Inputs & Statistics



Particulars	Details
Season	<i>Khariif</i>
Demos	10 (2 ha)
Villages	Kariyammanahalli (P), Sivanagere(M), Girigowdanadoddi(M),K umbarahalli (S), Chikkadoddavadi(K)
Scientists	PP, PS & PB
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds	5 Kg	2,000
Cost per Demo		2,000
Total cost for Demonstration		20,000

## Variables & Statistical Tools



- Plant Height (Cm)
- No. of branches
- Yield (q/ha)
- B:C ratio
- Mean, T-test

## 4. Demonstration of Sunflower hybrid KBSH-78 for higher Income

### Rationale

Sunflower is upcoming and Potential crop which will have the highest profit margin with a short span of cropping period (85 Days).

For farmers with large area under Rainfed and Protective Irrigation, this crop is a good bet to increase Income level.



Dist. Avg.  
Yield  
8 q/ha

Potential Yield  
15 q/ha



### Technology: UAS (B), 2018

- Sunflower Hybrid KBSH-78
- Released for Zone 5 of Karnataka. It has a yield potential of 25 q/ ha, and oil content- 41%,
- The variety has medium height and sturdy stem with good plant type, Duration- 85 days.

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Bukkapattana (S) Badavanahalli (M)
Scientists	PB & PP
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds	2 Kg	2000
Oil estimation		500
Cost per Demo		2,500
Total cost for Demonstration		25,000

### Variables & Statistical Tools



- Plant Height in cm.
- Days to Maturity.
- Oil content in %.
- Incidence of Foliar Diseases.
- Yield (q/ha).
- B:C ratio





## 5. Integrated Crop Management in Watermelon – Arka Shyama



### Rationale

Private hybrids and having high seed costs Approx. Rs 45,000 /kg seeds.

Poor shelf life and crop suffer loss due to sucking pests Thrips (2.04%) and diseases WBNV (48.2).

OP variety Arka shayam released by IIHR in 2020 as Ice box segment with good keeping quality is proposed to demonstrate under ICM.



535 ha

Dist. Avg.

Yield

43.0 t/ ha

Potential Yield

60 t/ha



### Technology: IIHR (B) – 2018

- Arka Shyama- An icebox segment watermelon variety, early (65-70 days to harvest) possessing dark red coloured, crispy, sweet (TSS-12%) flesh
- RDF : 100:88:100 NPK kg/ha
- Vegetable special spray @ 0.3 % at 20 days interval
- Fruit fly traps @ 15 Nos /ha
- Application of Arka microbial consortium @20 gm /lit (20 DAS, 45 DAS)
- Pinching technique - 20 DAS
- Spraying of Neem & Pongamia soap @ 7 gm /lit of water as need based
- Installation of Blue and Yellow sticky traps @ 25 Nos /ha.
- Check: Private hybrids

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Rabi</i>
Demos	5 (1 ha)
Villages	Veeramanahalli (P), Karemadanahalli (S), Rangapura(M), Chikkadoddawadi (K), Mudugere(T)
Scientists	Horti, PB & PP
Other educational activities	Training, Method demonstrations, Field Day & Video documentation through Media

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds	150 gms	1800
Bio fertilizer AMC	10 kg	1400
Sticky traps	05 Nos.	350
Vegetable special	2 Kg	360
Neem Soap	2 Kg	520
Cost per Demo		4,430
Total cost for Demonstration		22,150

### Variables & Statistical Tools



- Growth parameters
- No. of fruits /plant
- Fruit weight (kg)
- Disease Incidence(%)- Bud necrosis
- Yield (t/ha)
- B:C ratio
- Two way , T-test

### Rationale

Private hybrids suffer due to leaf curl (40%), and Powdery mildew (20%) affecting economic returns.

Arka Tejasvi chilli hybrid released by IIHR in 2020 is reported as high yielding and disease resistant.



Dist. Avg.  
Yield  
12.5 t/ ha

Potential Yield  
30 t/ha



### Technology: IIHR (B) - 2020

- Arka Tejasvi- High yielding chilli F1 hybrid, plants medium tall & spreading, fruits pendent, firm, highly pungent, green and turn deep red on maturity, resistance to chilli leaf curl virus and Powdery mildew.
- FYM - 20 tons /ha,
- RDF : 150:75:75 NPK kg/ha
- AMC: Drenching @10ml /lit (After transplanting with interval of 15 days)
- Vegetable Special- 3 gm /lit at starts at flower initiation stage and regular 20 days interval
- Yellow/Blue sticky traps @ 100 sheets /ha
- Neem Soap @7 gm /lit
- Check: Ulka hybrid

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	5 (1 ha)
Villages	Karemadanahalli (S), Chikkadoddawadi (K), Mudugere (T)
Scientists	Horti, SS & PP
Other educational activities	Training, Method demonstrations, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds	30 gms	900
Bio fertilizer AMC	2 lit	500
Yellow Sticky traps	20 Nos.	1400
Vegetable special	4 Kg	720
Neem Soap	2Kg	560
Cost per Demo		4,080
Total cost for Demonstration		20,400

### Variables & Statistical Tools



- Plant height (cm)
- No. of fruits /plant
- Fruits weight /plant (gm)
- Disease Incidence (%)-  
Leaf curl Virus and  
Powdery mildew
- Yield (t/ha)
- B:C ratio
- Two way, T-test





## 7. Multiple Diseases tolerant variety in Bottle gourd-Arka Shreyas



### Rationale

Due to high incidence of Gummy stem blight (33%), Anthracnose (27%), Powdery Mildew (21%) & Downy Mildew (27%) bottle gourd crop suffers.

IIHR released hybrid is tolerant to all four diseases.



128 ha

Dist. Avg.  
Yield

7.5 t/ ha

Potential Yield  
35 t/ha



### Technology: IIHR (B) – 2021

- Variety: Arka Shreyas
- RDF : 75:100:70 NPK kg/ha
- AMC: Drenching @ 10 ml/lit
- Vegetable Special: 3gm /lit at start of flower initiation stage and regular application at 15 days interval
- Neem Soap @7 gm /lit
- Yellow sticky traps @15 Nos /ha
- Spraying of Spinosad @ 0.25ml/lit
- Check: Local variety

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	5 (2 ha)
Villages	Mudugere (T) Veerammanhalli (Pavagada tq.) and Sivanagere (Madhugiri) Chikkadoddawadi (K)
Scientists	PP, PB & Horti
Other educational activities	Training, Method demonstrations, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds	40 gms	2000
Bio fertilizer AMC	10 Kg	2500
Neem Cake	100Kg	2000
Yellow sticky trap	6 Nos.	220
Vegetable special	6 kg	1080
Neem Soap	5 Kgs	1300
Cost per Demo		9,100
Total cost for Demonstration		45,500

### Variables & Statistical Tools



- Disease incidence (%)-  
Gummy stem blight,  
Anthracnose, PM and DM
- Pests incidence (%) -Leaf  
Miner, Thrips
- Yield (q/ha)
- B:C ratio
- Mean, T-test

## 8. Demonstration of High yielding Tuberose hybrid- Arka Nirantara

### Rationale

The farmers cultivate local varieties suffer nematode infestation (29%), leading to reduction in quality and quantity in flowers

They have poor vase life (2-3 days).

It is essential to demonstrate Hybrid Arka Nirantara single type and nematode tolerant variety with good vase life and quality.



Dist. Avg. Yield  
6 t/ha

Potential Yield  
12 t/ha



### Technology: IIHR (B), 2016

- A hybrid with single type flowers and gives high spike yield. It exhibits early flowering and prolonged blooming period from 6-8 months. It is tolerant to nematodes (*Meloidogyne incognita*). 6-7 days vase life
- Each plant produces about 40 -45 flowers.
- RDF : 100:50:50 NPK kg/ha
- AMC : Drenching @ 20gm /lit (10, 45 DAS)
- Neem soap : @ 7 g/lit
- Check: Local variety

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	5 (0.4 ha)
Villages	Veeramanahalli (P), Karemadanahalli (S), Rangapura(M), Mudugere (T)
Scientists	Horti, SS & PP
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds bulbs	9000 Nos. (60 kg)	9000
Bio fertilizer AMC	6 Kg	840
Cost per Demo		9,840
Total cost for Demonstration		49,200

### Variables & Statistical Tools



- No. of Flowers/plant
- Flower yield/plant (gm)
- Spike length (cm)
- Vase life (days)
- Yield (t/ha)
- B:C ratio
- Two way, T-test



### Rationale

Fishery is an important enterprise of the district

Low yield, monoculture, improper utilization of space in farm ponds and poor management are the major problems.

So, an FLD on composite Fish culture is proposed to improve the productivity and income of farmers.



Dist. Avg.  
Yield  
250 kg/ ha

### Technology: KVAFSU, 2016

High yielding varieties Catla, Rohu, and Amur/ Common carp (4:3:3)



Rohu



Catla



Amur Carp

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	5 (2 ha)
Villages	D.Nagenahalli, Urdigere
Scientists	Extn.
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./ trial	Cost (Rs.)
Fingerlings (No.)	5000	2000
Initial feed	10 kg	500
Cost /demonstration		2500
Total cost for demonstrations		12,500

### Variables & Statistical Tools



- Growth (1<sup>st</sup>, 3<sup>rd</sup>, 6<sup>th</sup>, 9<sup>th</sup> and 12<sup>th</sup> months)
- Yield (Kg/year)
- BCR

## 10. Demonstration of Bio fortified Pearl millet Hybrid VPMH-14 for Value Addition

### **Rationale**

Iron deficiency is more prevalent especially in adolescent girls and women.

To combat iron deficiency VPMH 14 will be demonstrated



VPMH-14 Pearl  
Millet

### **Technology: UAS(D): 2021**

- Demonstration of High yielding Pearl millet Hybrid VPMH-14 Rich in Iron (70 ppm) and zinc (45 ppm) for Value Addition.

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	10 (2 ha)
Villages	Karemadenahalli, Hosapalya (Sira), Chikkadoddawadi (Koratagere) and Rangapura (M)
Scientists	HS, PB & PP
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds (VPMH-14)	5 kg	500
Packing materials	5 Kg	1500
Labels (No.s)	200	500
Cost per Demo		2,500
Total cost for Demonstration		25,000

### Variables & Statistical Tools



- Yield parameters
- Economics
- BCR
- Consumer Acceptability & Market linkage



## 11. Demonstration on Arka Sasya poshak Ras: A Liquid Nutrient Formulation for Soil-less Vegetable Production

### Rationale

As terrace gardens are becoming a common feature in today's urban development, use of grow bags with soil for vegetables cultivation on terrace is found to be tiresome to manage for women.

Alternate to it is soilless cultivation using cocopeat and use of Arka Sasya Poshak, as a one stop solution from public sector research.

### Technology: IIHR (B), 2020

The liquid nutrient formulation (comprising solutions A & B) is a unique balanced blend of the Primary, secondary (N, P, K, Ca, Mg and S) and micro nutrients (Fe, Mn, Cu, Zn, B and Mo) which are required to support the growth of vegetables grown on cocopeat. Check: Sambrama MN fertilizer



### Usage:

- One litre each of nutrient solution A and B can be diluted with 200 litres of water (5ml/litre) and applied @200ml per plant (tomato, chilli, cabbage, cucumber, ridge gourd etc).
- For leafy vegetables, 3.5ml of each nutrient solution A and B may be diluted in one litre of water and applied @ 600ml per bag of size 4x1x1 feet.
- The frequency of nutrient solution application is two times per week starting from the 10th day of transplantation upto 30 days from date of sowing or transplanting and 3 times/week there after.

## Description, Inputs & Statistics

Particulars	Details
Season	--
Demos	10 No.s
Villages	Tumakuru Urban
Scientists	HS, Horti & SS
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Arka Sasya Poshak Ras	2 lits	600
Cost per Demo		600
Total cost for Demonstration		6,000

### Variables & Statistical Tools



- Yield of vegetables (Kg)
- Savings (Rs)
- Vegetables adequacy %



# Front Line Demonstrations (Continued)

## 12. Enhancement of Productivity by Short duration Finger millet: KMR-630

### Rationale

Finger millet is an important cereal crop in Tumakuru district.

Drought, delayed monsoon, erratic rainfall and blast (23.5%) lead to low productivity

It is essential to demonstrate blast resistant Finger millet KMR-630



Dist. Avg.  
Yield  
16.5 q/t/  
ha

Potential Yield  
25 q/t/ha



### Technology: UAS (B), 2018

- 95-100 days duration
- KMR-630 Seeds 12.5 kg/ha.
- Red gram seeds (intercrop) - 5 kg/ha
- Bio-fertilizer (AMC)-1Kg
- FYM- 10 t/ha.
- RDF - 50:37:40 NPK kg/ha
- Zinc Sulphate - 12.5 kg /ha.
- Borax -10kg / ha.
- Check: GPU-28 var.



## Outcome

- Increase in yield by 25%, compared to farmers practices
- The variety can be harvested 20 days early compared to local Finger millet



Finger millet KMR-630 FLD plot



Finger millet (GPU 28)



## Feedback

The new variety is tolerant to Finger millet blast.

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	10 (4 ha)
Villages	Chikkadoddavadi (K), D,Nagenahalli (K), Rangapura (M), Karimadenahalli (S), Veerammanahalli (P)
Scientists	SS & PP
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds (KMR-630)	10 kg	500
Biofertilizer (AMC)	1 kg	140
Borax	4 kg	835
Zinc sulphate	5 kg	300
Cost per Demo		1,775
Total cost for Demonstration		17,750

### Variables & Statistical Tools



- Plant height (cm)
- Blast severity (%)
- Yield (q/ha)
- Fodder Yield (q/ha)
- B:C ratio
- Mean, T-test

## 13. *Mucuna pruriens* L.) for the Improvement of Soil Properties in Coconut

### Rationale

- Poor soil condition and low soil fertility in Coconut orchards coupled with Weed problem is the main cause for the lower Productivity in District.
- Interspace in Coconut is vacant and unutilized for longer period again leading to lower Productivity in Coconut.



Dist. Avg. Yield  
5,800 No.s/ha

Potential Yield  
10,000  
No.s/ha



### Technology: IIHR (2014)

Mucuna was found to leave behind > 25tons/ha of biomass at the end of the cropping season which helped to improve the soil health in a significant way. The biodegradation of the Mucuna residues were found to increase the soil phenolic acids significantly which helped to control germination of weed seeds.

### Arka Dhanwantri Features:

Seed yield of 4.2 t/ha, Long duration: 185-190 days  
Purple flowers on long rachis, No Fruiting in basal nodes,  
Shiny black seed coat / medium sized seeds.

## Outcome

- Mucuna as a mulching crop resulted in 92% less weeds as compared to check plot.
- to coconut palm, compared to check.
- Approximately 20 tons/ha of Biomass is added to the soil

### ARKA DHANWANTARI



## Feedback

- Soil Moisture level significantly higher than the Check facilitating more water availability



# Description, Inputs & Statistics

Particulars	Details
Season	All seasons
Demos	20 (8 ha)
Villages	Hosahalli, Bukapatna, Hosahalli (S) Badabanahalli (M)
Scientists	PB & SS
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds (Arka Dhanwantari)	10 kg	1200
Soil testing Before and after		400
Cost per Demo		1,600
Total cost for Demonstration		32,000

## Variables & Statistical Tools



- Dry matter Production/unit area after 90 days of sowing
- Total Dry matter production/unit area
- Organic carbon % after Incorporation.
- Coconut yield - Nuts per ha.
- B:C ratio

## 14. Demonstration of Arka Prasan Ridge gourd variety for higher productivity

### Rationale

Non adoption of suitable HY-OP varieties that are shorter in duration than prevailing hybrids/varieties that are known for less number of harvests and lower yield



Dist. Avg. Yield  
70 qlt/ha

Potential Yield  
150 qlt/ha



### Technology: IIHR (B)

- Open pollinated variety
- Early variety (42-45 days for first picking).
- Green, long, tender fruits, excellent cooking quality.
- Nutritionally rich in antioxidant activity and minerals like phosphorus, Calcium and zinc .
- Yields 26.0 t/ha in 120-135 days.

## Outcome

- Demonstration with Arka prasana Ridge gourd variety gave 12 ton/ha yield compared to 8.4 ton/ha in check.
- Use of Fruit fly traps contributed reduction in fruit fly damage to the tune of 72% compared to check plot.
- Net income for the demo plot was Rs.1.3 lakh/ha while check plot it was Rs. 66,000/ha.



## Feedback

- Fruits are attractive, long, straight, tender green hence very much preferred in market

# Description, Inputs & Statistics

Particulars	Details
Season	All seasons
Demos	10 (4 ha)
Villages	Kumbarhalli (S), Rangapura (M)
Scientists	PB
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds (Arka Prasan)	1.5 kg	2,200
Cost per Demo		2,200
Total cost for Demonstration		22,000



## Variables & Statistical Tools



- Days taken for first picking.
- Days taken for last picking.
- Weight of fruit (g).
- Number of fruits per plant
- Yield (q/ha)
- B:C ratio



## 15. Demonstration of Multi cut Fodder Sorghum: CoFS 31

### Rationale

Availability of fodder during summer is a major issue. That issue can be solved by COFS-31 which is available throughout the year.



Dist. Avg.  
Yield  
15 t/ ha  
Potential Yield  
100 t/ha



### Technology: TNAU , 2014

- Fodder Sorghum CoFS 31
- 5-6 cuts/year (60 days interval)
- Succulent leaves and stem
- High protein (8.41%)
- Green fodder yield - 170 t/ha
- Less Crude fiber (34%)
- Seeds - 10kg
- AMC -20 kg
- Check: Fodder Sorghum (Local)

## Outcome

- Yield of about 35 tonnes/ha was obtained.
- Milk yield has increased by 2 litres.



## Feedback

- It is free from itching problem.
- Animals love to eat because of tender shoots.
- Some showed interest in seed production activity

## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	10 (0.4 ha)
Villages	Kodigehalli (T) Tanganahalli (K) and Chikkadoddavadi
Scientists	Extn. & SS
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Seeds (Co FS 31)	1 Kg	600
Bio fertilizers AMC	2 Kg	280
Cost per Demo		880
Total cost for Demonstration		8,800

### Variables & Statistical Tools



- No. of tillers /hill
- Yield - t/ha
- Milk yield liters /day  
(Before/After)
- Mean, T-test

## Rationale

Coconut grown in an area of about 1,45,616 ha in Tumakuru. Awareness need to be created on value addition as an income generating activity.



## Technology: CPCRI, Kasargod 2016

- Demonstration on preparation of coconut chips and coconut burfi
- Market linkage

## Variables & Statistical Tools



- Quantity of different value added products produced
- Income
- BCR



## Description, Inputs & Statistics

Particulars	Details
Season	--
Demos	2 SHGs
Villages	Chikkahalli (T)
Scientists	HS
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Slicer	1	3000
Sealing Machine	1	3000
Weighing Balance	1	3000
Packing Materials & Labels	1	6000
Cost per Demo		15,000
Total cost for Demonstration		30,000

### Rationale

Millets grown in an area of about 2,900 ha. Instead of selling the grains as such, awareness need to be created on value addition to gain more income.

Lack of knowledge on nutritive value of millet.

Lack of knowledge on value addition.



### Technology: UAS (D) & UAS (B)

- Demonstration on different value added products like malt, savories etc.
- Market linkage

### Variables & Statistical Tools



- Quantity of products produced
- Income
- BCR
- Employment generated
- Man-days involved

## Description, Inputs & Statistics

Particulars	Details
Season	--
Demos	2 SHGs
Villages	Guluru Arakere
Scientists	HS
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Sealing Machine	1	3500
Weighing Balance	1	3500
Packing Materials & Labels	1	8000
Cost per Demo		15,000
Total cost for Demonstration		30,000

# Demonstration on Nutri gardens for Nutrition security to the farm families

## Rationale

- Insufficient consumption of vegetables leads to micro nutrients deficiency mainly vitamin A, iron, calcium etc.
- Establishment of nutri garden helps to increase the availability and the consumption of vegetables in turn helps to combat nutrient deficiencies.



## Technology: UAS (B) / IIHR (B)

- Demonstration on Establishment of scientific Nutrition Garden

## Variables & Statistical Tools



- Yield of vegetables (kg)
- Average Vegetable production per month (kg)
- Savings (Rs)
- Vegetables adequacy %



## Description, Inputs & Statistics

Particulars	Details
Season	<i>Kharif</i>
Demos	30
Villages	Karemadenahalli & Hosapalya (Sira)
Scientists	HS, Horti & PB
Other educational activities	Training, Field Day

Critical inputs (per demo)	Qty./demo	Cost (Rs.)
Vegetable seed kit	1 No.	230
Vegetable special	0.5 kg	90
AMC liquid	1 l	250
Neem soap	0.5 kg	130
Saplings (Drumstick, papaya, Lime, Chakramuni, Curry leaf, Banana)	Each one	300
Cost per Demo		1,000
Total cost for Demonstration		30,000



# Other Mandated Activities

# Training Programmes

Farmers/  
Farm Women  
37



Training Programmes  
58



Sponsored  
2



Rural Youth  
11



Vocational  
1



Extension Personnel  
7



7



## Extension Activities



Sl.No.	Extension activity	No. of activities	Targeted number of participants
1	Advisory services	130	845
2	Diagnostic visits	40	140
3	Field days	8	450
4	Group discussions	05	550
5	Kisan gosthies	1	2000
6	Film shows	2	260
7	Self -Help Groups (SHGs) meetings	5	350
8	Kisan Melas	1	10000
9	Exhibitions	05	2000
10	Scientists' visit to farmers fields	25	260
11	Plant/soil health/animal health camps	2	100
12	Farm science club meetings	1	50
13	Ex-trainees sammelans (Meetings)	1	50
14	Farmers' seminars/workshops	1	250





## Extension Activities



Sl.No.	Extension activity	No. of activities	Targeted number of participants
12	Farm science club meetings	1	50
13	Ex-trainees sammelans (Meetings)	1	50
14	Farmers' seminars/workshops	1	250
15	Method demonstrations	25	1325
16	Celebration of important days	5	350
17	Special day celebrations	5	150
18	Exposure visits	1	20
19	Technology week celebration	1	200
20	Farmers Field School (FFS)	1	50
21	Farm innovators meet	1	200
22	Awareness programmes	1	200
<b>Total</b>		<b>267</b>	<b>19800</b>





Sl.No.	Type of samples	No.of samples to be analyzed
1	Soil	1,500
2	Water	1,000
3	Plant	50



# Revolving Fund Activities (2022-23)

- Purchase of farm items like drip irrigation materials (for about Rs.1 lakh)
- Construction of Stall feed unit for sheep (for about Rs.2 lakhs)
- Construction of drainage channel for farm and SWTL (for about Rs.4 lakhs)
- Partial fencing for farm (Rs. 3 lakhs)
- Purchase of raw materials for production units (for about Rs.25 lakhs)
- Millet Cafeteria, Natural farming plot, Honey testing lab





# Honey Testing Lab - National Bee Board (Rs.1 Crore Project)



Inauguration on May 20<sup>th</sup> 2022





# Budget utilized (2021-22) & proposed (2022-23)



PARTICULARS		Expenditure for the year 2021-22	BE proposed for the year 2022-23
		Rs. In Lakhs	Rs. In Lakhs
<b>A. REVENUE (Recurring Contingencies)</b>			
1	Pay & Allowances	179.98	205
2	Traveling allowances	0.1	2
3	Contingencies		
a	Stationery, telephone, postage and other expenditure on office running, publication of Newsletter	2.98	5
b	POL, repair of vehicles, tractor and equipments	2.82	3
c	Food/refreshment for farmers / extension personnel @ Rs.150/person/day	0.69	1
d	Training material (need based materials and equipments for conducting the training)	0.16	0.25
e	Frontline demonstration	3.23	3.4
f	On farm testing (on need based, location specific and newly generated information in the major production production systems of the area)	0.81	0.7
g	Integrated Farming System (IFS) (Min. 5 Units)	0	0
h	Training of extension functionaries	0.02	0.25
i	Extension Activities	0.17	0.25
j	Farmers' Field School	0.25	0
k	EDP (1 No.) / Innovative activities	0.6	0.6
l	Soil & Water Testing & Issue of Soil Health Cards	0.25	0.25
m	Maintenance of building (Repair & Renovation)	0.62	2
n	Nutrigardens - 25 demonstrations	0.3	0.3
o	Video Production		
p	Library ( News Paper & Magazines)	0.05	0.05
<b>TOTAL (A)</b>		<b>193.03</b>	<b>224.05</b>
<b>B. CAPITAL (Non-Recurring Contingencies)</b>			
1	Equipments & Furniture	6	0
2	Works	0	10
3	Vehicle	0	9
4	Library ( Books, Journals)	0	0
<b>TOTAL (B)</b>		<b>6</b>	<b>19</b>
<b>GRAND TOTAL</b>		<b>199.03</b>	<b>243.05</b>





**Thanks a lot**