



CFI Research Grant Planning Workshop 16-18 June, 2026 Jain Hills, Jalgaon

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Year- I Implementation Plan: Fruit based multi layer farming



Project Title : Fruit based Multi storied cropping systems for ensuring nutritional and livelihood security to small landholders of Chitrakoot district in Bundelkhand region

Principal Investigator: Dr. R.S.Negi, Senior Scientist & Head, Deendayal Research Institute, Tulsi Krishi Vigyan Kendra, Ganiwan, Chitrakoot(UP)

- **Project Duration** - 3 Years
- **Budget** - \$ 32967(Two Thousand Nine Hundred & Sixty Seven Only)
- **Project Location** : Manikpur Block Of Chitrakoot District in UP

Landscape, problem statement and target communities:

Agro ecological context:

Agro-climatic Zone: Central Plateau and hills(Bundelkad agro climatic zone)

Soils :Mix of five distinct soils types: gravelly, clayed, sandy loam, red lateritic and silt loam

Agriculture: Rain fed agriculture ,relies heavily on south west monsoon, uneconomical land holdings, 71% marginal famer(av. Land -0.48 ha)

Cropping pattern : Kharif (Pigeonpea, sesame) and millets and Rabi(Wheat, chickpea and mustard) most of the lands remain fallow in kharif

Key challenges being addressed :

- Climate vulnerability
- Small and un economical landholdings
- Lvelihood and nutritional insecurity
- Prevalence of High Malnutrition rates-
- Poor access to nutrients
- Low to poor dietary diversity
- Low & Unstable incomes-
- Seasonal migration:
- Stray and wild animal



Project Landscape : Rugged & undulating, dense forest rich landscape, large portion of the area fall with in or on the fringes of Ranipur Tiger reserves

Target Beneficiaries:

Category	No. of Beneficiaries	%
SC Women	40	40
ST Women	40	40
General	20	20



Year- I Implementation Plan: Fruit based multi layer farming



Ist Q(Upto June)	IInd Q (July- September)	IIIrd Q (October- December)	Ivth Q (January- March)
Site Selection and Planning (Selection of villages, Farm Women Selection, Soil Sample collection & Testing, Identifying Suitable Fruits)	Capacity building: Organize Field school on planting technique of fruit trees, intercropping short duration vegetables, preparation of Jeevamrit & bio pesticide	Capacity building: Recycling of organic waste into vermicompost, intercropping, After care of fruit plant & canopy management of fruit trees	Data Collection: Survival rate of fruit plants, soil moisture retention Initial income generated through sale of vegetables
Conduct baseline survey of selected stakeholders (Socio-economic & Dietary gap assessment)	Planting of Fruit Trees(top layer & middle layer) Filling of Pits, Procurement of Planting Material, Planting of Fruit trees, Sowing /Transplanting of intercrop	Nutrient & Pest Management: • Application of Jeevamrit and Bio pesticide	Capacity Building programs : protection of young plants canopy management and intercultural operations
Capacity Building of stakeholders (Skill training on Layout, soil preparation, pit digging& filling)	Water & Moisture Conservation: Submerged pitcher system of planting (rain fed), Rain water harvesting, Use of organic mulch around plant basin, Micro irrigation	Intercropping: Sowing/transplanting of intercrops	Mutual Experience sharing workshop of stakeholders
System Design and Site preparation (Deep Ploughing, Application of compost/FYM Layout and Planning. Pit Digging)	Nutrient & Pest Management: • Application of Jeevamrit and Bio pesticide		

Key Fruit Species Being Promoted :11



A.	Top Storey Crop Planting System – Square System			
Sr.No.	Fruit Species	Dwarf Cultivars	Planting Distance	No. of Plants
1.	Mango	Amarpali, Arunika, Ambika, Pusa Manohari	5M X 5 M	8
2.	Guava	Shweta, Dhawal, Lalit, Pusa Srijan Thai Guava, Arka Amulya,	5M X 5 M	8
3.	lemon	Kagzi, Luccknow Seedless, Kumcard	5M X 5 M	8
4.	Pomegranate	Bedana,Thai, Afgan Dwarf, Super Bhagwa	5M X 5 M	8
5.	Custard apple	Balanagar, NMK-01, Red Sitaphal, Arka Sahan, Arka Sitaphal	5M X 5 M	8
6.	Ber	Gola, Pant Aparna, Thai ber, Illachi, Kaithali	5M X 5 M	8
7.	Bael	Goma Yashi, Pant Aparna, Pant Shivani, Pant Sujata, CISHB-2	5M X 5 M	8
8.	Jack fruit	Thai Dwarf, Red All Time, All Time Jackfruit, Vietnam Super early	5M X 5 M	8
9.	Jamun	Goma Priyanka, Thai King, Early Dwarf white, Dwarf Balck Jamun	5M X 5 M	8
B.	Filler Tree(Planting in intra row spacing of top stroey crop)			
	Papaya	Red Lady 786, Lal Pari F1, Thai Papaya, Red Sun		72
	Karonda	Pant Manohar, Pant Swarna, Pant Sudarshan and Thai Sweet		72
	Ground storey crop			
C.	Seasonal Veg.	Summer, rainy and winter vegetables		

Production Model(Multi storied –Mixed Fruit Orchard + intercrop:



Farming Situation	Irrigated	Rain fed
Target Group	ST(37.5%) ,SC(37.5%) & General(25%) women	ST(37.5%) ,SC(37.5%) & General(25%) women
Area per farmer(Sqm)	1600	1600
No. of Farmers	50	50
No. of fruit Species	10	10
No. of sites	02	02
No. of Villages	04	04
Method of irrigation	Micro Sprinkler	Submerged pitcher

Top Tier Crop	Perennial fruit crops
Middle tier	Papaya/Karonda
Ground storey crop	Seasonal vegetables/legumes



Year -1 Targets and Deliverables:



	Particulars	No.
1.	Village Covered	10
2.	Households	100
3.	Women Beneficiaries	500
4.	Youth Beneficiaries	250
5.	Fruit Species promoted	11
6.	Trees Planted	14400
7.	Training Planned	10
8.	Nurseries established	01
9.	Farm women workshop	01

Activity	Target(No.)	Deliverable
Selection of Beneficiaries and Baseline Survey	100 household	Baseline Survey report, identifying nutritional gaps, income levels and soil Health status of selected beneficiaries farm
Procurement of Quality Planting Material of fruit species	15000	Identification of reliable suppliers for quality planting material of selected fruit species
Site Development and plantation	100 nutritional garden 7200 fruit plants	Complete pit digging, fencing and layout for intercrops
		Planting of main perennial fruit crops
Middle layer and ground layer crop	7200 Fruit plants as filler tree	Planting of papaya/ moringa/ karonda and initial annual vegetables/ spices/pulse crops as intercrop
Data Collection		income from intercrops , Plant survival rate

Year –1 Resource –Sharing and Collaboration opportunities:



What KVK, Chitrakoot can offer

1.	Technical Expertise	
2.	Planting Material of Papaya and Karonda	
3.	Training Facilities	
4.	Community Mobilization approaches	

Support we need

1.	Baseline methodologies	
2.	Species Identification	
3.	Documentation support	
4.	Quality Planting material	
	Vegetables Seeds	IIHR, Bangalore
5.	Market Linkage	



Baseline, Monitoring Evaluation and learning and Next steps



Livelihood and economic baseline: Assessing the household current annual net income from all sources(crop, livestock, non farm sector and wages

Nutritional Baseline: Document the current household dietary diversity score and nutrient intake

Soil Baseline : Baseline soil organic carbon and moisture retention

farm family Base line survey Performa (Socio economic, Dietary diversity, Dietary intake):

Key Indicators: Increase in Income (Rs/unit area/anum) over base year

Employment generation (Mandays/unit area/year

Dietary diversity score (food groups consumed)

Improvement in Land use efficiency(LER)

Improvement in soil Health(Soil organic carbon %)

Plant survival rate : Plant survival rate (%), Causes of mortality(disease, water or pest)

Budget Summary, risk and mitigation strategy



Risk	Mitigation Strategy
Fruit Plants mortality poor graft union and planting technique	Planting fruit cultivars with strong graft union, Planting fruit trees with Submerged pitcher system technique and mulching ,
Plant mortality due to Drought/ Dry spell	Planting fruit trees with Submerged pitcher system technique and mulching and filling the pitcher with water during dry spell , selecting drought tolerant fruit plants better adapted to local conditions ,Using protective measures like shade net / crop residue during extreme heat
Damage from stray or wild animals	Fencing around the garden – locally available material or wire fencing
pest and disease	Plant disease and insect pest resistant varieties Adopt IPM module for disease and insect pest management need based application of neem based bio pesticides



Category	Approved budget US\$	Ist Installment US\$
Personnel(Field Assistant-1)	6500.00	
Supplies & Services Planting material and field trials	17000.00	
Training & Workshop	2000.00	
Equipment including irrigation structure	733.0	
Travel (only project related)	2000.00	
Monitoring, documentation and publication	600.00	
Field days	1137.00	
Administration charges(10%)	2997.00	
Total	32967.0	9890



Thanks