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VEGETABLE CULTIVATION PANDALS/MINI POLY HOUSE/SHADE NET IN VIRAJIPET AND MADIKERI BLOCKS

1. Introduction

Kodagu is a hilly district of Karnataka popularly called as Coorg. This hilly region is a part of Western Ghat and it occupies an area of 4,102 square km (1,584 sq mi) in the Western Ghats of southwestern Karnataka. As of 2011, the population of the district was 554519. Kodagu (Coorg), the thickly wooded grandeur on the Western Ghats, is the most beautiful hill station of Karnataka. Much of land in Kodagu is used for agriculture. Characteristically and historically, paddy fields are found on the valley floors, with Coffee and pepper as agro-forestry in the surrounding hills mainly near Madikeri. The most common plantation crop is coffee, especially Coffee of Robusta variety. Kodagu is the highest coffee production region in India, Coffee revenue has facilitated Kodagu to become one of the richest districts in India.

The main river in Kodagu is the Kaveri (Cauvery), which originates at Talakaveri, located on the eastern side of the Western Ghats, and with its tributaries, drains the greater part of Kodagu. In July and August, rainfall is intense, and there are often showers into November. Yearly rainfall may exceed 4,000 mm (160 in) in some areas. In dense jungle tracts, rainfall reaches 3,000 to 3,800 mm (120 to 150 in) and 1,500 to 2,500 mm (59 to 98 in) in the bamboo district to the west. Kodagu has an average temperature of 15 °C (59 °F), ranging from 11 to 28 °C (52 to 82 °F), with the highest temperatures occurring in April and May.



Cultivation of horticultural crops provide an important source of livelihood and generates substantial employment on account of being labour-intensive for the rural population of India. India stands second in vegetable production (next to China) with an annual production of 87.53 million tons from 5.86 million hectares, which is 14.4% of the world production. Adoption of high yielding cultivars and hybrids and suitable production technologies has largely contributed to higher production and productivity. With changes in income and consumption patterns, demand for vegetables has also increased. More than 40 kinds of vegetables belonging to different groups, namely Cucurbits (cucumber, gourd, pumpkin, etc.),

Cole crops (cabbage, cauliflower, broccoli, and turnip), solanaceous (eggplant, pepper, tomato, Chilli), root and leafy vegetables are grown in different agro-climatic zones of the country.

Kodagu District being endowed with diversified agro-climatic conditions has a vibrant horticulture sector which has been identified as one of the growth engines for increasing overall agriculture growth. The agro-climatic conditions and soils enable farmers to grow wide variety of crops including horticulture crops (comprising of fruits, vegetables and flowers). In the recent years, it is observed that increasing cost (coffee & pepper) resulting in decline in margins/net returns are pushing farmers into distress. At the same time, there is growing demand for fresh vegetables in the market. As the production of vegetables is lower than the demand, the prices are constantly increasing putting heavy financial burden on the consumers. Less water requirement compared to Paddy and remunerative price to the produce (vegetables) are attracting small and marginal farmers for cultivation of vegetables. The present area under vegetable cultivation in Kodagu District is about 487 ha with annual production of 5926 MT and average productivity of 12.16 MTs per hectare. The average value of vegetable production in the District stood at Rs. 456.00 lakh. In the water scarcity conditions and exploiting valuable ground water resource, cultivation of high water consuming Paddy is not technically feasible. It is also observed that the net returns per acre of Paddy cultivation are in the range of Rs. 10,000-12000 per acre. In this context cultivation of vegetables with less water for getting remunerative margins is found to be highly feasible.

Kodagu District normally depends on the vegetable-growing districts of Mysore, Hassan and even Bengaluru for its requirements. Planters in the district have traditionally grown vegetables in their kitchen gardens for domestic use, but never on a commercial scale. This could soon become a reality. Exotic, high-value varieties such as lettuce, broccoli, celery and Chinese cabbage too could be cultivated here. The Research Institutes have taken up trials over the past two years to demonstrate the commercial viability for traditional vegetables, and over the last one year for exotic varieties,

The booming hospitality sector in Kodagu, with thousands of homestays and resorts, currently depends on growers in Nilgiris for exotic vegetables. Moreover, agri. experts recommend that coffee planters should diversify into vegetable cultivation to broad-base their income, as coffee output and prices have fluctuated greatly in recent years. Unlike coffee and pepper, which provide returns once a year, vegetables make money almost every day or week during the season. However, rising wages and unpredictable prices are major concerns.

Planters in Kodagu have never looked beyond coffee and pepper. But now they are slowly showing interest in growing vegetables. The Chettalli station has screened about 12 different vegetables for local cultivation. It is also developing a package of effective cultivation practices. There are few progressive farmers as also JLG members in Kodagu District, who are trying their hands at cultivating Tomatoes, Ladies Finger, Okra and French Beans. In their paddy fields, which normally idled for at least six months after harvest, they have, for few years now, been growing vegetables. Few farmers had traditionally grown vegetables in some areas such as Kodlipet and Shanivarsanthe, and efforts were on to bring in new areas. In recent years vegetables such as colocasia, sweet potato and elephant foot yam were becoming popular in the region. Some farmers are exploring ways to grow newer vegetables such as broccoli and lettuce under polyhouses.

The vegetable cultivation earned them extra money (admittedly way less than their income from coffee and pepper), but it also earned them goodwill in the neighborhood and among the labourers, as the produce is cheaper than market rates. They are among a handful of coffee planters assisted by scientists at the Central Horticultural Experiment Station (CHES) at Chettalli, Kodagu, to diversify farm operations.

IIHR is targeting 35,000 hectares of paddy land mostly left fallow for 6 months to grow vegetables. If things go according to plan, Kodagu, the land of coffee and pepper, may turn into one of the major destinations for high-value vegetable cultivation a few years from now. A survey conducted by the Indian Institute of Horticultural Research (IIHR) showed that paddy was being cultivated on about 35,000 hectares of plain land in the hilly district of Kodagu. Most of this is being left fallow for six months from October to March after the monsoon. Vegetable experts in the IIHR want to make best use of the land during the “off-season” by motivating people to take up vegetable cultivation. As per IIHR, Vegetable Crops Division, it is possible to cultivate vegetables during the off-season as their water requirement is not as huge as paddy. Also, the weather in Kodagu is similar to that of Ooty, where vegetables are in high demand. Above all, vegetable farming fetches at least one-and-a-half times more returns than paddy. Preliminary work towards promotion of vegetable cultivation has already begun. The IIHR has developed model farms on about 50 hectares in different areas of Kodagu where high-value hybrid varieties developed by it are being cultivated. The Institute has also held many field days since 2012 in different areas of the district, where cultivation of different vegetables at the model farms has been showcased. IIHR is confident that it may be possible to encourage farmers to take up vegetable cultivation on a minimum of 100 hectares during the year 2018-19.

At present, vegetables like okra, tomato, beans, yard-long beans and chillies are being promoted, while other vegetables such as carrot will be introduced in the next phase. Onion cultivation has also been introduced on an experimental basis. The marketing network for the vegetables in Kodagu is not advanced. The IIHR is in talks with the State Horticulture Department, which has promised to provide facilities for sale of vegetables in different parts of the district. Plans are also afoot to sell the vegetables to other districts and States as and when the production increases. Cultivation of vegetables, particularly the climber vegetables namely Ridge gourd (*Beera*), Bitter gourd (*Kakara*), Coccinia and Bottle gourd (*Sorakaya*), etc., are gaining popularity among farmers as they are fetching highly remunerative price in the market. However, for obtaining good quality climber vegetables coupled with high yield, conducive environment in the form of supporting structure popularly known as pandal for facilitating easy climbing and spreading of the crop is required in addition to following suggested package of crop management practices. In general, climber vegetables need proper support for their growth and development. Pandals are special structures used for twining vegetables. The weak climbers utilize this support, which protects the produce from soiling and increases exposure to sunlight and aeration, thereby increasing the number of flower buds, ultimately resulting in more fruit of superior size and quality. Use of drip irrigation is slowly picking up.

Poly houses/Shade nets aim to develop protected cultivation of vegetables and flowers for higher productivity and quality. Government of Karnataka is encouraging the construction of poly houses/Shade nets. Cultivation of vegetables like Tomato, Cucurbits, Bell Pepper, Cucumber and other vegetables are taken up under Poly house/Shade net facilitating protected cultivation in off season. However, construction of large polyhouses is capital intensive forbidding small and marginal farmers from the activity. In order to address this issue Mini Poly Houses and shade nets are being encouraged in the district with bank loan and marketing tie up.

Horticulture Department is providing subsidy for Pandal cultivation. MGNREGS is also supporting small and marginal farmers to take up pandal vegetable cultivation in half acre land. Further subsidy is available for drip irrigation under TSMIP. To take advantage of these facilities and to improve the farmers' income it is proposed to take up Area Development Scheme on Pandals/Mini Poly House/Shade net vegetable cultivation.

Objectives

- Means of self employment
- To increase the Vegetable production in the district
- To introduce the drip irrigation for improving the quality and productivity of crops for enhancing farmers income (per drop more crop).
- Better utilization of the land for getting higher returns.

2.Selection of the Area

Dept. of Horticulture, Karimnagar identified the potential mandals and villages for financing under Pandals/Mini Poly House/Shade net vegetable cultivation. The vegetables suitable for Pandal cultivation are Bottle gourd, Ridge gourd, Coccinia, Beans, Bitter gourd and Bottle gourd, etc. Similarly different kind of vegetables could be grown under mini polyhouse/shade net. The list of identified mandals and villages for financing under the scheme are given below:

S. No.	Name of the Block	Name of the Village
1	Virajpet	Bittangala
		Kadangamarooru
		Karada
		Bellumadu
		Ammathi
		Ontiyangadi
		Chembebelluru
		Arji
		Heggala
		Kakotuparambu
		Mythadi
2	Madikeri	Kunjila
		Kunjilageri
		Cherambane
		Nelaji
		Hodduru
		Cheyandane
		Murunadu
		Yavakapady
		Ballamavati

3.Selection of beneficiaries

The branches of Syndicate Bank, Corporation Bank, Kavery Grameena Bank and Kodagu DCC Bank would be tied up for financing of pandal vegetable cultivation/mini polyhouse/shade net. In most of the above villages the services of Horticulture Officers are available. Other services, if any available from Horticulture Department will be tied up with the above area.

4.Training/Capacity building of the beneficiaries

The Department of Horticulture introduced the system of cultivation of vegetables on *pandals*, both permanent and semi-permanent to increase productivity of twining vegetables under RKVY Programme. Cultivation of vegetables need to be encouraged in a cluster approach in potential *mandals*. Thereafter, producers' hubs and collection centers to support the farmers in the entire value chain need to be systematically developed to ensure reasonable price for their produce. Further the vegetable farmers need to be formed as Farmer Producer Organization(FPO) for collective procurement of inputs, adoption of technology and collective marketing of produce. In order to ground the proposed Pandals/Mini Poly house/Shade net vegetable cultivation units support from Department of Horticulture is felt vital in the following areas:

Motivating and preparing farmers at village level:

- Motivating farmers by way of exposure visits/presenting success stories
- Advanced preparation of production plan in vegetable clusters.
- Ensure supply and availability of Hybrid Vegetable seed and other inputs.
- Introduction of latest advance technology.
- Demonstration of technology and programmes in cluster areas.
- Dissemination of information through multimedia regarding technology and availability of inputs.

Technology dissemination

- Capacity building and intensive training programmes for vegetable farmers are taken up to empower farmer in sustainable/ profitable vegetable production round the year.
- Capacity building for officers and stake holders and re-orient extension activities to be more demand-driven in Vegetable clusters.
- Exposure visits to advance technologies.

5. Partners in implementation, convergence of efforts & Support from State Government.

- Develop marketing linkages by establishment of collection centres.
- Ensuring availability of quality vegetable seed, latest farm machinery through custom hiring centres through Agriculture department.
- The selected beneficiaries/farmers may be trained by RSETI

6. Techno economic assumptions& project components

Availability of Land

The Blocks/Villages selected have good potential for vegetable cultivation. Farmers who own land and having bore well/open well with adequate water will be considered under the scheme. Based on the interest of the farmer and location of market, the financing is done by banks.

Source of Construction materials for pandals/mini polyhouses/shade nets

The required materials for these structures will be procured from the approved agencies and their assistance will be taken in erecting these structures. For providing Drip Irrigation also support from reputed agencies like Jain irrigation or any other approved agencies will be solicited and assistance o under State/Central Minor Irrigation Schemes will be utilized.

Source of seed and other inputs

Good quality seed will be procured from the market by the individual farmers. The advisory services from Horticulture Department will be availed. The farmers would be encouraged to procure inputs collectively for saving in cost through collective bargaining power. It will be suggested to the farmers to go for joint procurement of various inputs in bulk. Some farmers will be encouraged to go for vermicomposting as well as preparation of bio pesticides under natural farming which can be used by these farmers.

Capacity Building and Maintenance

The farmers who are interested and coming forward for the activity will be provided Capacity Building training on these aspects with the help of Horticulture Department, KVK Gonikoppal, IIHR Chettalli and other agencies. They will also be trained in maintenance of these structures.

Marketing

All the villages indicated above are within a radius of 15-20 kms from the Block Head Quarters. They are also near to some of the markets like Virajpet, Madikeri, Napoklu, Gonikoppal, Murnadu where regular trading of vegetables takes place daily. Some of the farmers can be provided stalls in existing rythu bazars or suitable locations with the help of Horticulture

Department and District Administration. At a later stage combined marketing will be suggested to the farmers. There are few agencies from outside the district/state have also shown interest in buying the quality vegetables grown by the farmers in the district

Experience/Training

Banks are free to finance the borrowers with previous experience or who are ready to take up these activities on a commercial basis. If required support of Horticulture Department and KVK can be availed for arranging training for group of farmers.

Unit Cost:

The unit cost of erection of permanent pandals including erection of stone posts, GI wire and labour cost works out to Rs. 2.50 lakh per acre. Incidentally, the unit cost of mini-polyhouse/shade net for 500 sq.m area is Rs. 2.50 lakh. The small and marginal farmers often find it difficult to make an investment of Rs. 2.50 lakh and in this context, it is felt that the institutional credit plays an important role in addressing this problem.

Total outlay under Vegetable Cultivation is given below:

(Amount Rs. In lakh)				
S.No.	Particulars	Unit Cost	Physical	Financial
1	Vegetable cultivation under Pandals	2.50	150	375.00
2	Vegetable cultivation under Mini Polyhouse/Shade net	2.50	100	250.00
	Total		250	625.00

Security

Security norms will be as per RBI guidelines by hypothecation of assets created, mortgage of land etc.

Insurance

The structure would be insured as per the scheme guidelines and policies.

Rate of Interest:

The interest varies depending on the bank and the quantum of loan. The ROI assumed for working out economics is 12% p.a.

7. Banking Network

Borrower is assumed to provide a margin of 20% of the project cost as their share and the rest is considered as bank loan. The nearest bank branch will be approached for the purpose. The subsidy available on receipt will be adjusted towards repayment.

The tentative bank wise units proposed are as under:

(Amt ₹. lakh)				
S.No.	Name of Bank	Physical (Units)	Financial Outlay	Bank Loan
1	Kaveri Gr. Bank	50	125.00	100.00
2	KDCCB	50	125.00	100.00
3	Corporation Bank	75	187.50	150.00
4	Syndicate Bank	75	187.50	150.00
	Total	250	625.00	500.00

8. Physical and Financial programme.

Entire units will be financed over a period of next five years beginning from 2018-19 and ending with the financial year 2022-23. Tentative number of units targeted to be financed in each mandal for the year 2018-19 is as under:

(Amt ₹ lakhs)

Sr. No.	District	Block	Name of the Bank	Unit Cost	No. of Units	TFO	Bank Loan	Margin
1	Kodagu	Virajpet	Syndicate Bank, Corporation Bank, KGB, KDCCB	2.50	35	87.50	70.00	17.50
2		Madikeri	"	2.50	15	37.50	30.00	7.50
		Total			250	625.00	500.00	125.00

The bank wise and branch wise plan is given below:

ADS- Pandals/Mini Polyhouse/Shade net Vegetable cultivation: Banking Plan for Karimnagar district

(Amt. ₹ lakh)

Year	2018-19		2019-20		2020-21		2021-22		2022-23	
Bank Branch	No. of units	Bank Loan	No. of units	Bank Loan	No. of units	Bank Loan	No. of units	Bank Loan	No. of units	Bank Loan
Syndicate Bank										
Hodduru	15	30.00	20	42.00	25	55.12	30	69.46	30	72.91
Murnadu	15	30.00	20	42.00	20	44.10	25	57.88	30	72.91
Kunjilageri	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Bellumadu	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Kakotuparambu	15	30.00	15	31.50	20	44.10	25	57.88	30	72.91
Corporation Bank										
Kunjila	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Cheyyandane	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Yevakapady	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Kadanagamarooru	15	30.00	15	31.50	15	33.07	15	34.73	15	36.46
Karada	15	30.00	20	42.00	25	55.12	25	57.88	30	72.91
Kavary Grameena Bank										
Arji	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Heggala	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Bittangala	10	20.00	15	31.50	20	44.10	25	57.88	30	72.91
Nelaji	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Ballamavati	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
KDCCB										
Ammathi	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Ontiyangadi	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Chembebelluru	10	20.00	15	31.50	20	44.10	25	57.88	30	72.91
Mythadi	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30
Cherambane	10	20.00	10	21.00	10	22.05	10	23.15	10	24.30

Phasing of the Projects

It is proposed to phase the implementation of these projects over a period of 5 years and the tentative phasing is as under:

Bank/Year	2018-19		2019-20		2020-21		2021-22		2022-23	
	Phy	Bank Loan	Phy	Bank Loan	Phy	Bank Loan	Phy	Bank Loan	Phy	Bank Loan
Syndicate Bank	75	150.00	85	178.50	95	209.46	110	254.67	120	291.65
Corporation Bank	75	150.00	80	168.00	85	187.40	85	196.80	90	218.75
Kavary Gr.Bank	50	100.00	55	115.50	60	132.30	65	150.48	70	170.11
KDCCB	50	100.00	55	115.50	60	132.30	65	150.48	70	170.11
Total	250	500.00	275	577.50	300	661.44	325	752.44	350	850.64

9. Project Profitability

Pandal Based vegetable cultivation (1 acre model)

Assumptions		
Area	1	acre
Quality seed (ridge gourd/bottle gourd/bitter gourd) and necessary market linkage are readily available		
<u>Crop duration</u>		
Ridge gourd (80-90 days)		
Cost of cultivation (Rs. per acre)		
Vegetables	30000	
Sale price (Rs. Per quintal)		
Vegetables	4000	

Details of cost, income and incremental income

Stage/ season /crop	Area (ha)	Yield (q/ha)	Total yield (q)	Cost of cultivation (Rs./ha)	Sale price (Rs./q)	Total income (Rs.)	Total cost of cultivation	Operating Profit (Rs.)
Vegetables	0.4	100	40	75000	4000	160000	30000	130000
Total								130000

Cost break up & Income		Amount (Rs.)
Poles (200/acre) @Rs. 350 per pole - stone pillars		70000
Cost of wire (GI) (15 Qtl per acre is required @Rs. 7500/Qtl)		112500
Total material cost		182500
Labour cost (@20% of material cost)		36500
Total cost of pandal and wire including erection		219000
rounded to		220000
Cost of cultivation of vegetables/acre/season		30000
Crop yield (40 Qtl/acre)		
Sale price (Rs. 4000 per qtl) & income/season of 90 days		160000
Net income		130000
Assumed life of structure		5 years

ii) Mini Poly Houses

Particulars	Years		
A. Materials	1	2	3
1. Cost Of Seed With 50% Subsidy	5000	3000	3000
2. Cost of Mini Poly Houses Including Installation	180000	-	-
3. Cost of Drip & Other Equipments	20000		
4. Cost of Ploughing And Land Preparation	5000	1000	1000
5. Fertilizers	5000	5000	5000
6. Irrigation	2000	1000	1000
7. Plant Protection	6000	3000	3000
8. Staking Support and Twines	6000	3000	3000
9. Maintenance of Pandal	1000	4000	4000
Sub Total:	230000	20000	20000
B. Operation & Labour	20000	20000	20000
C. Unit Cost(A+B)	250000	40000	40000
Unit Cost:	250000	(First Year)	
Bank Loan:	200000		
Margin	50000		

Though it is possible to grow vegetables throughout the year, for working out financial viability

only one cycle/year or season is considered. For working out the unit cost of Pandals/Mini Poly House vegetable cultivation both cost of erection of pandals (material and labour components) and cost of cultivation of vegetables for one cycle are taken into account. Against the total unit cost of Rs. 2.50 lakh (Rs. 2.20 lakh for erection of pandals and Rs. 30000 towards cost of cultivation of vegetables), Rs. 2 lakh is considered as bank loan and Rs. 50000 is taken as margin money contribution by beneficiary. On getting subsidy the net bank loan comes down to Rs. 1 lakh. The scheme is found to be technically feasible and financially viable. The techno-economic parameters are given in Annexure for ready reference. As there is a target of covering 50 acres under Pandals/Mini Poly House vegetable cultivation during the current year 2015-16, the physical target is kept as 50 acres. The Total Financial Outlay works out to ₹. 1.25 crore with bank loan component of Rs. 1.00 crore. On receipt of subsidy of Rs. 1 lakh per acre the net bank loan comes down to Rs. 0.5 crore.

10. Financial analysis

Years	1	2	3	4	5
Cost (Rs.)	250000	30000	30000	30000	30000
Benefit (Rs.)	160000	160000	160000	160000	160000
Net benefit (Rs.)	-90000	130000	130000	130000	130000
DF (15%)	0.870	0.756	0.658	0.572	0.497
Present worth of cost (Rs.)	217391.30	22684.31	19725.49	17152.60	14915.30
Present worth of benefit (Rs.)	139130.43	120982.99	105202.60	91480.52	79548.28
Net Present Worth(NPW) at 15%DF	244475.81				
Benefit Cost Ratio(BCR)	1.84				
Internal Rate of Return (IRR) %	140.10				

The financial viability assessment indicated NPV of Rs. 244475/-, Benefit Cost Ratio of 1.84:1 and IRR of 140% even with one cycle of growing of vegetables with conservative yield of 10t/ha per year, indicating the activity (Pandals/Mini Poly House vegetable cultivation) as highly viable and bankable.

11. SWOT analysis

Strength:

- The mandals selected are suitable for vegetable cultivation.
- Vegetable cultivation is being taken up in traditional manner and on temporary pandals in the area selected.

Weakness:

- Financing in the area for pandals is new for the banks in the area.
- Price fluctuation of vegetables
- Lack of awareness among farmers

Opportunity:

- Good markets exist in the nearby areas.
- The cultivation also can be taken up under natural farming practices, which will fetch a better price.
- Vegetable production can be taken up in off seasons and this will fetch better price.

Threat:

- Vegetables are perishable in nature.
- Lack of cold stores
- Increasing transportation cost

12. Repayment period

The loan is repayable in 5 years and the repayment schedule is given below:

(Amt. ₹)

Loan outstanding at the beginning of the year	Interest @12 pa.	Surplus	Principal paid	Total Repaid	Surplus after Repayment	DSCR
200000	24000	130000	40000	64000	66000	2.03
160000	19200	130000	40000	59200	70800	2.19
120000	14400	130000	40000	54400	75600	2.39
80000	9600	130000	40000	49600	80400	2.62
40000	4800	130000	40000	44800	85200	2.90

13.Implementation and Monitoring Mechanism

Bank may monitor the performance of the unit. Assistance of Local Horticulture Officers also can be solicited for effective monitoring. The scheme will be discussed with the implementing branches and their controllers and placed in the DCC and the progress will be monitored in the DCC at regular intervals.

14.Expected outcome/conclusion

With a view to enhance the income of small and marginal farmers, ADS on Pandals/Mini Poly house/Shade net vegetable cultivation is formulated. This would result in availability of good quality vegetables, higher production and productivity leading to enhanced income to small and marginal farmers.

ANNEXURE - I**Techno-economic viability of Pandals vegetable cultivation**

Assumptions		
Area	1	acre
Quality seed (ridge gourd/bottle gourd/bitter gourd) and necessary market linkage are readily available		
<u>Crop duration</u>		
Ridge gourd (80-90 days)		
Cost of cultivation (Rs. per acre)		
Vegetables	30000	
Sale price (Rs. Per quintal)		
Vegetables	4000	

Details of cost, income and incremental income

Stage/season /crop	Area (ha)	Yield (q/ha)	Total yield (q)	Cost of cultivation (Rs./ha)	Sale price (Rs./q)	Total income (Rs.)	Total cost of cultivation	Operating Profit (Rs.)
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Cost of cultivation of vegetables/acre/season	30000
Crop yield (40 Qtl/acre)	
Sale price (Rs. 4000 per qtl) & income/season of 90 days	160000
Net income	130000

Assumed life of structure

5 years

Financial parameters

Years	1	2	3	4	5
Cost (Rs.)	250000	30000	30000	30000	30000
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