NABARD

Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops

1. Horticulture crops

The canvas of horticulture and plantation in India is broad based and multifaceted with fruits, vegetables, potato, tubers, ornamentals, medicinal and aromatic plants, spices, plantation crops and mushroom. Temperate fruits, vegetables, flowers and spices are grown in the North Himalayan region while subtropical and tropical fruits, vegetables, ornamentals, mushroom, spices are cultivated in the rest of India. Spices and plantation crops are found in the peninsular region. Arid zone crops are concentrated in western India. Horticulture and Plantation sector is widely heralded as sunrise sector that provides the dynamic tool for improving economic conditions of the farmers and entrepreneurs, creating diversification opportunities with high value crops, increasing the productivity of land, providing nutritional security, generating employment, ensuring ecological sustainability and enhancing the export earnings. Analysts are of the view that the emergence of Agri - Business ventures in India, is directly correlated to the progress in the plantation and horticulture sector.

2. Commercial prospects nursery enterprises

2.1 Cultivation of traditional fruit crops comprising tropical and sub-tropical fruits like mango, banana, pomegranate, pineapple, grape, citrus and which has the potential to provide sustainable livelihood to the small land holders both under irrigated as well as rainfed conditions. However, timely availability quality planting material for perennial horticulture crops and absence of standardisation and certification are the major issues in the promotion of area expansion under these crops across the States. While several state governments have established nursery production facilities under respective line departments, the demand far exceeds the production from the government nursery units. Thus there exists good scope for establishing commercial nursery production unit to meet. Considering the fact that good quality planting material fetch a premium price, investment in a commercial nursery unit is considered to be a viable and profitable proposition.

2.2 Apart from perennial horticulture crops, there is an increasing demand for nursery plants for ornamental flowers and foliage plants. Exclusive production of vegetable seedling and supplying the same to farmers is also emerging as a profitable horticulture enterprise in major vegetable growing belts across the States. Overall, the commercial nursery activity may be categorized as under :

a. Nursery production for perennial fruit crops
b. Nursery production for short duration annual vegetable crops under poly tunnels/ shade houses
c. Ornamental plants nurseries for flowering and foliage plants

d. Primary and secondary hardening facilities for tissue culture plants, normally under tie-up arrangement/franchise with established tissue culture plant production laboratories.

2.3 Considering the demand for quality planting material for fruit crops and the opportunity to promote as a horticulture business enterprise in potential pockets across different regions in the country, a prospects as a "***Bankable Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops"*** is prepared for the guidance of entrepreneurs and bankers.

2.4 The model scheme envisages production of quality planting material of major perennial horticulture crops viz., mango, guava, sapota, pomegranate, aonla, ber, cashew, etc., adopting improved propagation techniques, in special growing structures adhering to quality standards. The ***basic assumptions*** made while preparing the scheme are indicated below.

- The entrepreneur possesses requisite knowledge, aptitude and skills for taking up nursery production which is a specialized activity. Where such skills are lacking, the entrepreneur should acquire the same through special training and capacity building programmes from State Agriculture Universities/Research stations/KVKs and or State Government Horticulture Farms.
- The location selected is agro-climatically suitable for cultivation / multiplication of identified plant species.
- The entrepreneur possesses adequate land suitable for nursery production activity with assured irrigation facilities /potential.
- Nursery capacity to produce 25000 to 30000 quality plants (grafts or layers of perennial fruit crops per annum.
- The unit comprises of a mother plant garden of descript varieties of commercial significance to meet bud-wood / scion requirements
- Root stock will be raised in the nursery unit with compatible species preferably with disease tolerant (eg. Rangapur Lime for citrus species) and /or dwarfing rootstocks.
- Improved methods of propagation like veneer, epicotyl /stone grafting/softwood grafting to be adopted
- Plant growing structures like mist chambers, poly house, and shade net facilities provided to improve success rate and production of better quality planting material
- Provision made for related infrastructure facilities like irrigation (water storage tank, drip/ micro sprinklers/ misting), store house for inputs, work area for pot mixture and potting operations, fencing, etc.

The requirements for the envisaged model scheme are discussed in the following paragraphs.

3. Location and Infrastructure Requirements for Nursery Units

3.1 Location

Commercial nursery production units are required to be set up in areas which are agro-climatically suitable for cultivation of envisaged crops. The areas should be well connected to road / rail networks to facilitate transport. Areas prone for natural calamities like floods, cyclones, high velocity winds, extreme temperatures, frosts, should be avoided. In some of the states, specific locations are popular as nursery production zones where critical inputs including skilled labour and other logistic supports are well established. Such locations may be preferred for taking up the activity. Entrepreneurs may also seek the guidance from the district agriculture / horticulture departments or KVKs in the regions for identifying ideal location for nursery units.

3.2 Soils

Well drained, light to medium textured fertile soils are preferred for setting up commercial nursery units. Low lying areas prone for water logging, saline and alkaline soils should be avoided.

3.3 Irrigation source

Availability of good quality assured irrigation resources is an important pre-requisite for setting up of a commercial nursery production unit. The source of water could be a well with suitable lifting device.

3.4 Availability of labour

Nursery production is highly labour intensive where both skilled and semi-skilled labour are critical inputs. Therefore, timely availability of labour needs to be ensured while shortlisting the location. Since nursery operations like grafting, layering, budding, etc., are highly skilled activities, availability of skilled labour and / or training and capacity building in such operations and technical support from KVKs and horticulture department are crucial for success of commercial nursery unit.

3.5 Power

Regular power supply is to be ensured since it is necessary for operating irrigation system/ misting arrangements in the nursery

4. Project Components

4.1 Irrigation Infrastructure

4.1.1 Depending upon the production components of an integrated nursery units which comprises of mother plant garden, rootstock nurseries, poly tunnels, mist chambers, etc., different types of irrigation systems are required to be designed and installed. These include :

a. Drip irrigation system for Mother Plants;

b. Manual watering with rose cans or micro sprinklers for root stock nursery beds and shade net areas;

c. Micro sprinkler for poly tunnels for vegetable nursery production where envisaged;

d. Water storage tank (masonry structure or HDPE tanks of 10000 L capacity)

e. A well laid out pipe line distribution system across the nursery unit to meet the above requirements.

4.2 Propagation Structures:

Propagation structures are necessary for ensuring better root growth, bud/graft union, hardening and higher success rate in plant multiplication. The specific requirements of plant growing structures vary for different types of nurseries. For multiplication of perennial horticultural crops as envisaged under the model scheme, the following structures are considered necessary.

4.2.a. Mist Chambers

Mist chambers provide a humid and cool micro environment that is necessary for propagation of soft wood cuttings, hard to root species. The requirement of mist chamber for perennial fruit crops nursery depends upon the species/varieties to be propagated. A mist chamber of 15 to 20 sq m area is considered adequate for the nursery model envisaged.

4.2.b. Poly house

In a poly house, temperature, light and humidity are maintained at optimum conditions required for quick growth and development of grafted/budded plants. This would help in higher success rate of multiplication with better and healthy nursery plants. A poly house to stock around 10,000 rooted /budded / grafted nursery plants (1/3 of envisaged production) at any given point of time is required for which, a 200 sq m poly house area (naturally ventilated of suitable dimensions) is provided for. Vacant space available in the poly house for shorter / intervening periods of about 3 to 4 weeks can be effectively utilized for commercial production of nursery for short duration/annual crops like vegetables and flowers in protrays.

4.2.c. Shade net area

Shade net area provides necessary microclimate for acclamization and hardening of layered/budded / grafted plants and offer protection from direct sunlight, heavy rainfall and heat waves/dry winds. Shade house would also facilitate raising of seedlings in bags directly where necessary. Considering the envisaged capacity of the nursery, a she net area of 500 sq. meters (to house 10000 grafts at any given point of time) is considered adequate. Like in poly house, vacant space available under the shade net area for shorter / intervening periods of about 3 to 4 weeks can be effectively utilized for commercial production of nursery for short duration/annual crops like vegetables and flowers in portrays or under poly-tunnels.

4.3 Mother plants garden

4.3.1 Production of true to type good quality planting material is the basic objective of a commercial nursery unit. To ensure the same, it is necessary that the bud wood/ scion material is sourced from “true to variety” mother plants. Since the timely availability and

regular supply of scion material is necessary, an exclusive mother plants garden is maintained as part of commercial nursery unit, where different perennial horticulture crops and their varieties in demand are grown in separate plots variety wise. Important criteria for selection of mother plants include genetic purity (true to type / variety), vigorous, healthy and high yielding. They should be free from pests, diseases and viruses. It is important that these mother plants are sourced from reliable / authentic sources like government nurseries or from research stations or from registered nurseries of repute. Since the purpose of mother plant garden is to ensure more of graftable shoots / scions, high density planting at a spacing of 2mX2m is maintained. This would also facilitate grafting operation where approach grafting/ air layering are involved.

4.3.2 Under the model project establishing an exclusive mother plant garden with 1500 mother plants of different crops and varieties is provided. The demand for varieties is highly region specific and the nursery units are required to select such varieties for propagation depending upon the targeted regions for marketing and the varietal preference in for those regions. An area of 6000 sq m (1.5 acres) would be necessary for establishing the mother plant garden in well laid-out plots with variety wise demarcation. This would ensure production of around 30000 saleable grafts per year from 4 the year of operations.

4.4 Nursery and Rootstock Seed Beds

Nursery beds are required for raising rootstock seedlings especially in crops where propagation by budding / grafting is involved. The rootstock material is raised directly in nursery beds or in polybags in a well laid out plots of 1.25 meter width and of any convenient length. A working area of 60cm between the beds is necessary for undertaking sowing, intercultural operations (weeding, watering, plant protection, etc.) and uprooting of rootstock plants.

4.5 Pot mixture preparation and potting yard

Preparation of potting mixture and potting are important activities for which adequate space is necessary for keeping of inputs (soil, leaf mold, manure, pots, etc). For better growth and establishment of nursery plants after grafting operations, a good potting mixture is necessary. The potting mixtures is prepared by mixing fertile red soil with well decomposed FYM and leaf mold, and sand in 2:1:1 proportion which is utilized for filling of pots / polybags. An area of 30 to 50 sq m is demarcated for potting operations. Structures for Nursery

4.6 Tools and Implements

Nursery operations require special tools like budding/grafting knives, and implements including sprayers and equipment like wheel barrows for movement of inputs/potted plants within the nursery area. Adequate financial provision is made to meet these requirements.

4.7 Fencing

The nursery area is required to be adequately protected from stray cattle and tress-passing with proper fencing. Considering the total area required which approximately works out to

about 7500 sq m area (about 2 acres), fencing covering a length of 450 running meters is provided in the model scheme

4.8 Maintenance / Operational requirements

The operational expenses upto three years of establishing and maintaining the nursery unit are capitalized considering the following factors.

- The proposed model scheme involves establishment of mother plant garden. Being perennial crops, it would be necessary for the plants to attain adequate growth before taking up budding/layering/grafting operations/harvesting of shoots for scion material. The graftable scions will be available from second year planting and optimum number of around 25 graftable scions from 4 th year.
- Rootstock production operations (for production of grafts) are required to be commenced from second year onwards to synchronize with availability of scion material
- Considering the time taken for grafting, hardening and curing, the saleable grafts will be available only from the third year of commencing the nursery unit. The income from sale of grafts will be realized only from the third year and stabilized income from 5 th year.
- Factoring-in the above, it is necessary that adequate financial resources are made available for the nursery enterprise to meet the operational expenses at least upto third year after establishment. These operational expenses include, maintenance of mother plant garden, expenses for raising of root stock material, irrigation, plant protection, interculture, etc., depending upon the crop specific requirements.

5. Technical Considerations

5.1 Area requirement

For setting up a nursery unit to produce about 30,000 grafts/planting material, an area of about 2 acres (0.80 ha) with assured irrigation facilities is required. The component wise area requirement details are indicated below :

Area Requirement			Total Area (Sq m)
A. Establishment and Maintenance of mother plant garden			
No. of plants :		1500	**6000**
Spacing :	2 M X 2 M	4 sq m	
Area required for Mother plant garden			
B. Rootstock Nurseries			
Germination %		40%	**700**
No. of Rootstocks Required from IV year		93750	
Spacing for rootstock nursery		15 cm X 10 cm	

Area Requirement		Total Area (Sq m)
Bed Area Required	700 sq.m approx. (50 beds of 10 m X 1.25m)	
C. Plant Growing structures		
1. Poly house (For 10000 grafted plants at a time)		**200**
2. Mist chamber (approximate area)		**20**
3. Shade net area for hardening for keeping 10000 plants approx. from IV year (in batches)		500
D. Area for Utilities, Infrastructure		
1. Store room, potting, etc.		**50**
2. Other requirements (soil mixing, potting etc.)		**80**
Total Area Required		**7550**

5.2 Varietal selection for mother plant garden

Some of the important varieties that are in demand are indicated below for reference. The list is only indicative. Varieties need to be identified / selected considering the preferences / demand in targeted market regions.

- ***Mango:*** Kesar, Alphonso, Banganpalli (Baneshan), Neelam, Totapuri, Sendhura, Dasheri, Langra, hybrid varieties like Amrapali, Mallika, Arka Aruna, Arka Puneet, Ratna, etc.
- ***Sapota:*** Kalipatti, Cricket ball,
- ***Guava:*** Sardar (L-49), Allahabad Safeda
- ***Pomegranate:*** Ganesh, G-137, Bhagawa
- ***Ber:*** Gola, Seb, Banarasi, Umran,
- ***Aonla:*** Banarasi, Krishna, Kanchan, Anand-1 and Anand-2
- ***Sweet orange:*** Nucellar.
- ***Mandarin Orange:*** Nagpur Santhra, Coorg Santhra (for South Indian hilly regions), Khasi Mandarin (for NE Region)
- ***Cashew :*** Vengurla – 4, 5, 6, 7 and 8, BPP 4, BPP 6, BPP 8, etc.
- ***Coconut:*** Tall (ECT, WCT and Tiptur Tall varieties) and T X D hybrids

5.3 Propagation Methods

The propagation methods vary from species to species. While both traditional and improved grafting methods are in practice, the emphasis is on the latter considering the factors like success rate, quality, post planting survival, etc. Necessary propagation structures have been provided in the model scheme for adopting such practices. The common / popular propagation methods adopted for different horticulture species are indicated for reference. The entrepreneurs are required to adopt specific technologies in consultation with the technical experts and nursery regulations in vogue.

- Mango : Stone Grafting, Softwood grafting, Approach Grafting, Veneer Grafting.

- Guava : Layering
- Pomegranate : Air layering, stem cutting
- Sapota : Soft wood grafting, Approach grafting
- Cashew nut : Softwood grafting, stone grafting
- Citrus : Budding
- Aonla : Layering
- Ber : Budding / grafting

5.4 General Quality Standards for Nursery Plant

- The graft union should be well established, healthy, and free from any vegetative growth /branching from root stock portion i.e., below bud/graft union.
- Plant morphological characters should be true to the species and variety.
- The nursery plant should display vigorous growth and free from pests and disease.
- The shoot and root development of nursery plant should be in proper ratio.
- The nursery plants should be free from weeds

In several States, nursery production by private entrepreneurs is governed / regulated by specific regulations / conditions. The entrepreneurs are required to fulfill the same for ensuring production of quality planting material. The entrepreneurs may consult the officials of line departments and seek their guidance in this regard. The banks concerned may consider stipulating the same as one of the terms & conditions while sanctioning such proposals.

5.5 Production skills and market orientation

Nursery being a specialized commercial enterprise and the success is always linked to the quality of the planting material produced. It is necessary that the entrepreneurs acquire necessary skills through appropriate training and capacity building. The entrepreneur should also have a clear understanding of the crop and variety specific demand for planting material across different regions and should plan the production programme accordingly. The infrastructure created, especially poly house, shade net area, etc., should be effectively utilized. Preference may be given to Agriculture Graduates under AC/ABC scheme.

6. Project Cost

Commercial nursery production is highly capital intensive. The project components include capital investment items viz., establishment of mother plant garden, irrigation infrastructure, poly house, mist chamber, shade net area, fencing and other utilities. Considering the income generation pattern, which commence from third year of establishment, capitalization of operational expenses (maintenance of mother plant garden, root stock production, labour, etc.) for initial three years. The total unit cost for the initial three years works out to

₹17,75,,500/- (1 year : ₹12,59,300/-; 2 year ₹2,08,400/- and 3 year ₹.3,07,800). The component wise breakup details are furnished in ***Annexure 1.***

7. Sources of funds

7.1 The model scheme is designed as a bankable scheme, with bank credit as major source of finance. The planting and maintenance cost covering the first three years is considered capitalized and the total unit cost is arrived at Rs. 17.755 lakh. The total financial outlay, bank loan and borrowers margin components are as under:

(Amt. in ₹)

Source of Funds	Year 1	Year 2	Year 3	Total
Total Cost	1259300	208400	307800	1775500
Margin (upto 25%)	315300	52400	76800	444500
Bank Loan (upto75%)	944000	156000	231000	1331000

The item wise and year-wise break-up details are furnished in ***Annexure 1***.

7.2 The bank loan is phased over three-year period. The subsidy component, available, if any, will be reckoned towards margin contribution or as source of funding depending upon the pattern of assistance. The terms of lending like margin money, security, repayment, etc., as prescribed by the financing bank are to be adhered by the entrepreneur seeking assistance.

8. Financial viability of the investment

8.1 Income parameters

Production of saleable commences from third year and stablilizes from 5 th year onwards. The production parameters and sales realization per graft vary from crop to crop and varieties. For the purpose of model scheme, average production norms and income parameters have been assumed as under :

Parameters	Year 2	Year 3	Year 4	Year 5 onwards
No. of Scions available/plant	8	15	25	25
Total Scions from 1500 plants	12000	22500	37500	37500
Rootstocks required	12000	22500	37500	37500
Seeds to be sown with 40% germination	30000	56250	93750	93750
No. of plants grafted	12000	22500	37500	37500
Survival/success rate @80%				
Saleable grafts		9600	18000	30000
Sales price per graft (Rs.)		35	35	40

Note: If there is a reliable source for supply of scion during the initial period of establishment of nursery, the entrepreneur may source the scion and use the full capacity of the nursery infrastructure. Under such circumstances, the economics may be modified suitably.

As mentioned in the foregoing paragraphs, the vacant space available in plant growing structures like poly house, mist chamber and shade net area can be effectively utilized for production of nursery for annual vegetables and flower crops that are in demand for selling to farmers. This would help in income generation even during the gestation period and partly servicing the interest on term loan. Necessary provision has been made in the unit cost for capitalization of first year expenses.

8.2 Key financial indicators

The financial viability analysis of the model scheme is made based on the above income parameters and the particulars are furnished in ***Annexure 2.*** The net income realization commences from third year and stabilizes from 5 th year. The net present worth of the investment and the BCR works out at ₹1396817 and 1.38 : 1 respectively. The Internal Rate of Return (IRR) works out at 30%. The investment thus considered financially viable.

9. Repayment

As indicated in the foregoing paragraphs, the initial investment on capital items and operational expenses covering second and third year are capitalized. Considering the cashflow and surpluses available, need based deferment of interest may be considered by the financing banks depending upon the borrower's needs / other sources of income. However, the model repayment schedule is worked out including the deferment of interest. The total repayment period works out to 9 years including 5 years grace period and the details are furnished in ***Annexure 3***. The model scheme is considered bankable with the above assumptions.

10. Conclusion

The ***Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops*** is considered financially viable and bankable with the above assumptions.

Annexure 1

Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops

Cost of Establishment and Maintenance

(Amt. in ₹)

Particulars	**Unit/Rate**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Cost of planting material for mother plants @ Rs. 75/ plant	75	112500					112500
Maintenance @ Rs. 60/plant	60	90000	90000	90000	90000	90000	450000
Cost of Seed for rootstock raising @ Rs. 300/1000	300		9000	16875	28125	28125	82125
Cost of pot mixture (manure, red earth leaf mold) for rootstock in polybags/pots	5		60000	112500	187500	187500	547500
Plant protection (mother plants, rootstock/grafted plants)		4000	5000	6000	7000	7000	29000
Infrastructure							0
Poly house 200 sq m	930	186000					186000
Mist chamber	550	11000					11000
Shade house (shadenets) 500 sq m	710	355000					355000
Irrigation infrastructure							0
Drip irrigation for mother plant garden (1500 plants)	40000	40000					40000
Water storage tank 10000 L capacity		75000					75000
Store room 50 sq @ Rs.5000/sq m	5000	250000					250000
fencing (8000 sq m area / 450 rm approximately)	75	33750					33750
Total Material cost		1157250	164000	225375	312625	312625	2171875
Labour Mandays							
Land Preparation		15					15
Pit digging for mother plants		60					60
Planting of mother plants		50					50
Nursery for rootstocks							
Labour for preparation of 50 beds 1.25mX1 m each bed			5	5	5	5	20
Sowing				10	15	20	45

Annexure 1

Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops

Cost of Establishment and Maintenance

(Amt. in ₹)

Particulars	**Unit/Rate**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
filling of poly bags/pots			12	22	35	35	104
Uprooting of rootstocks and planting in polybags	200		60	110	190	190	550
Grafting (100 grafts / layers per manday	100		120	230	380	380	1110
curing and maintenance			10	15	20	20	65
Miscellaneous (plant protection / weeding /shifting)		10	15	20	25	25	95
Total Labour requirement		***135***	***222***	***412***	***670***	***675***	***2114***
Labour Cost	200	27000	44400	82400	134000	135000	**422800**
Provision for raising of vegetable / annual flower crops nurseries*	LS	75000					
Total Cost (Material and labour& provision for annual crops nurseries)		1259250	208400	307775	446625	447625	2669675
Rounded		1259300	208400	307800	446600	447600	2669700
Parameters		**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**
No. of Scions available/plant		8	15	25	25	25	25
Total Scions from 1500 plants	1500	12000	22500	37500	37500	37500	37500
Rootstocks required		12000	22500	37500	37500	37500	37500
Seeds to be sown with 40% germination		30000	56250	93750	93750	93750	93750
No. of plants grafted		12000	22500	37500	37500	37500	37500
Survival/success rate	80%						
Saleable grafts			9600	18000	30000	30000	30000
Sales price per graft			35	35	40	40	40
Unit Cost capitalized upto 3 years		**1775500**					
**** Provision made for first year only, for effective utilization of nursery infrastructure during intervening periods. The income from sale of vegetable/flower crops nursery will be utilized for meeting expenses from second year onwards.***							

Annexure 2

Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops

Financial Analysis

(Amt. in ₹)

INCOME & EXPENDITURE	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7 to 15**
INCOME							
No. of plants grafted	0	12000	22500	37500	37500	37500	37500
Survival/success rate	0	80%	80%	80%	80%	80%	80%
Saleable grafts	0	0	9600	18000	30000	30000	30000
Sales price per graft	0	0	35	35	40	40	40
Income from sale of grafts/budded plants	0	0	336000	630000	1200000	1200000	1200000
Income from sale of vegetables & flowers nursery	150000	150000	150000	150000	150000	150000	150000
Gross Income	***150000***	***150000***	***486000***	***780000***	***1350000***	***1350000***	***1350000***
EXPENDITURE							
Capital Expenditure	1259300						
Recurring Expenditure (operational costs)		208400	307800	446600	447600	447600	447600
Expenses for raising of nursery for annual crops	75000	75000	75000	75000	75000	75000	75000
Repairs and maintenance of plant growing structures				138000			
Total Expenditure	***1334300***	***283400***	***382800***	***659600***	***522600***	***522600***	***522600***
Net Income	**-1184300**	**-133400**	**103200**	**120400**	**827400**	**827400**	**827400**
Present Worth – Costs	**3652288**						
Present Worth – Benefits	**5049106**						
Net Present Worth	**1396817**						
BCR	**1.38**						
IRR	**30%**						

Annexure 3

Model Scheme for establishment of Modern Nursery Unit for production of quality planting material for perennial horticultural crops

(Amt. in ₹)

Repayment Schedule

Source of Funds		Year 1	Year 2	Year 3	Total
Total Cost		1259300	208400	307800	1775500
Margin (upto 25%)	25%	315300	52400	76800	444500
Bank Loan (upto 75%)	75%	944000	156000	231000	1331000
Rate of Interest	13%				

Year	Loan Outstanding at the beginning of the year	Interest		Gross Surplus	Outgo		Total Outgo (75%)	Net Surplus	Loan outstanding at the end of the year	Deferred interest outstanding
		Current Int.	*Current + Deferred Int. outstanding*		*Principal*	*Interest*				
1	944000	122720	122720	0	0	0	0	0	944000	122720
2	1100000	143000	265720	0	0	0	0	0	1100000	265720
3	1331000	173030	438750	103200	0	77400	77400	25800	1331000	361350
4	1331000	173030	534380	120400	0	90300	90300	30100	1331000	444080
5	1331000	173030	617110	827400	0	617110	617110	210290	1331000	0
6	1331000	173030	173030	827400	447570	173030	620600	206800	883430	0
7	883430	114846	114846	827400	505754	114846	620600	206800	377676	0
8	377676	49098	49098	661800	377676	49098	496400	165400	0	0
9	0	0	0	827400	0	0	0	827400	0	

Repayment : 8 years with 5 years grace. Considering the cash flow and other sources of income, financing banks may consider deferment of interest during initial two years period. Accrued interest together with current interest to be recovered from 3 rd to 5 th years.