

Business Plan 2009-2010

Magadi Vayalagam Vegetable Growers' Association



**BUSINESS PLAN OF THE MAGADI
VAYALAGAM VEGETABLE GROWERS'
ASSOCIATION, MAGADI, KARNATAKA,
INDIA**

Resource Centres on Urban Agriculture and Food Security/International Water Management Institute. 2010. *Business plan of the Magadi Vayalagam Vegetable Growers Association, Magadi, Karnataka, India.*

This publication has been prepared under the From Seed to Table Programme implemented by the International Network of Resource Centres on Urban Agriculture and Food Security (RUA Foundation, www.ruaf.org), of which the International Water Management Institute is not only a full member but also the regional coordinator of the RUA Foundation-CFF Programme in South Asia, (IWMI, <http://ruaf-asia.iwmi.org/>) with funding from the Dutch Ministry of Foreign Affairs (DGIS, The Netherlands).

The views and opinions expressed in this publication do not necessarily state or reflect those of RUA Foundation or IWMI, and should not be used for advertising or product-endorsement purposes. RUA Foundation, IWMI or the MVVGA does not warrant or assume any legal liability or responsibility for the completeness or usefulness of products or processes mentioned in this publication.

Contents

1	Executive Summary	v
2	Abbreviations and Acronyms	vi
3	Business Idea.....	1
4	Innovative Activities.....	1
5	Project Description	3
6	Operational Plan	3
7	Production Plan	5
8	Processing	8
9	Marketing	8
10	Market Analysis	9
11	Quality of Carrot	10
12	Financial Plan	12
13	General Assumptions	12
14	Fund Allocation	13
15	Receipts and Payments Account	19
16	Balance Sheet.....	23
17	Per Day Analysis at Association Level	25
18	Cost of Production	25
19	Break-even Analysis	26
20	Sensitivity Analysis and B:C (Ratio).....	27
21	Season-Wise Profitability to the Farmers.....	29
22	Organizational Plan	30
23	Partner Strategy	32

Executive Summary

The Magadi Vayalagam Vegetable Growers' Association aims to produce graded and packaged carrot (*Daucus carota*) of the super Kurroda variety, for the Bangalore supermarkets and the local markets. The association will supply carrot throughout the year from January 2010.

At present, there are 94 farmers in the association and these members will be the beneficiaries of the project. Each farmer will produce carrot during two cycles per year, in 3 *guntas* (3,078 ft²) per cycle yielding 900 kg/year.

The total cost of producing 100 kg of carrot is estimated at INR517. It comprises a share of fixed costs (INR283) and variable costs (INR234). The assumption of the association on profitability is based on the total production of carrot for each cycle as 36,000 kg. This is the weight of the produce that will be supplied to the market after deducting 10% as harvesting loss. The break-even quantity of produce is 24,654 kg to achieve profitability at the rate of INR7.5/kg of carrot.

The initial investment of the association is estimated at INR1,390,780. The breakdown of costs is as follows: INR262,000 of assets to the association, INR250,000 as a corpus to the association, INR363,500 for promotional and developmental activities, INR110,250 in-kind contribution to the farmers and INR413,000 as a revolving fund to the farmers.

Sensitivity analyses show that the worst case scenario is when farmers get INR7/kg of carrot which will yield a profit of INR1.83/kg when the benefit cost ratio will be 1.22. Even in the worst case, a farmer can get a net profit of up to INR0.22 for an investment of INR1.00. In the best case scenario, when the farmer gets INR15/kg of carrot, the profit will be INR9.83/kg. The best and worst case scenarios are developed considering the fluctuation of prices.

All these analyses and plans show the profitability and sustainability of the association. In the first year, the association will have INR399,110 as cash at the bank and it will grow up to INR679,487 at the end of 5 years. Hence, both the carrot business and the association will be sustainable. The business plan of the association gives the details of its activities.

Acronyms

ATMA	Agricultural Technology Management Agency
B:C (Ratio)	Benefit Cost Ratio
FSC	Finance Subcommittee
INR	Indian rupees
MoPO	Most promising option
MTSC	Marketing and Transportation Subcommittee
MVVGA	Magadi Vayalagam Vegetable Growers' Association
PPSC	Production and Procurement Subcommittee
RUAF	Resource Centres on Urban Agriculture and Food Security
UoM	Unit of measurement
UPFS	Urban Producers' Field School

BUSINESS PLAN OF THE MAGADI VAYALAGAM VEGETABLE GROWERS' ASSOCIATION, MAGADI, KARNATAKA, INDIA

BUSINESS IDEA

The most promising option for the Magadi Vayalagam Vegetable Growers' Association (MVVGA) is the "Production of Carrot (*Daucus carota*) using High Yielding Variety (HYV) seeds and marketing of graded and packaged produce for higher end markets," which includes supermarkets and organized wholesale markets. The produce will be graded as A and B where the A grade (good quality) product will be supplied to the supermarkets and organized wholesale markets and B grade (ordinary quality) product to the local market.

Carrot is not a traditional crop in Magadi but it has been grown for many years and still continues to be grown. Urban producers sell carrot in the local market without grading and sorting. Hence, they fetch low prices for their produce.

INNOVATIVE ACTIVITIES

1. **Soil testing:** Soil tests will be done before implementing the plan. Soil samples will be collected from all the 100 plots to learn about their nutritional status. This is very important for recommending the required quantity of fertilizers to the fields. In practice, farmers never test the soil quality and, therefore, the innovation is to introduce the farmers to the laboratories where the testing can be done.
2. **Organic farming:** The MVVGA aims to promote production and usage of organic manure (vermi-compost) and bio-pesticides (neem seed kernel extract spray and *panchagavya*, which is an organic preparation with a mixture five products [cow dung, cow

urine, curd, ghee and cow milk] and can be used as an organic pesticide and manure). It reduces environmental pollution and improves the soil health. It also reduces the dependency over external inputs. Hence, the cost of production can be minimized. Neem seeds and leaves are freely available in the field.

3. **Grading:** Primary grading is done at the producers' level as per the market requirements. The quality of the product is ensured at common collection centres of the association.
4. **Packaging:** At present, urban producers do not practise any packaging. They sell their product directly to the middlemen in the local market without packaging. So an innovation can be introduced at the producer level to pack the product in 20 kg crates as per the standards expected by the buyers. It also reduces the cost of transportation (loading and unloading) and mechanical damage. Hence, wastage can be minimized. The weight and packaging will be ensured at the common collection centres of the association.
5. **Marketing:** Urban producers sell the product individually at local markets to the middlemen. Here the farmers do not get the best deal, and their profits can be affected. The farmers have very poor bargaining capacity when they sell their produce individually. To overcome this, collective marketing will be introduced.
6. **Production methods:** Most producers have not been trained on the best practices in carrot production and they continue practising their own traditional methods with locally available inputs which may not be of good quality. For the production of good-quality carrot, good training is crucial: this will be provided by the University of Agricultural Sciences and Department of Horticulture. A best practices package will be introduced.
7. **Drip irrigation:** Currently, the farmers practise flood irrigation. It consumes more water than the crop requirement. We hope to introduce drip irrigation to minimize wastage. With this method wastage of water and labour charges can be minimized.

PROJECT DESCRIPTION

The project is aimed at producing good-quality graded carrot in packets. The project will have 100 farmers, each with plots averaging 3 guntas for growing carrot. Farmers will produce carrot which will be cleaned and graded at the producer level. During the process of grading and packaging each farmer will separately pack carrot as grade A (good quality) and grade B (ordinary quality). Cleaning, grading and packaging will be carried out at a central collection point. Each urban producer brings the produce to the centre, run by the association. The members of the Production and Procurement Subcommittee (PPSC) will ensure the quality of the produce. The Marketing and Transportation Subcommittee (MTSC) will ensure the quality, quantity and transportation of the packaged produce. The produce brought by the farmer will be recorded and graded based on a pre-agreed set of standards, set by the Finance Subcommittee (FSC), before delivering to the markets. A receipt will be issued indicating how much of which grade the farmer has supplied.

The PPSC will procure inputs from the agro-chemical shops to be lent to the farmers. The inputs will be made available on credit which has to be redeemed by the farmers after selling the carrot through the association. Equipment will be bought for the association, so that the farmers can hire them as and when needed. A service charge will be levied for grading and packaging, which the farmers will have to bear. The transportation cost will be borne by the association during the first year and thereafter by the farmers.

OPERATIONAL PLAN

Table 1 shows the seasonal calendar for the production and marketing of carrot in Magadi. The green (dry season) and red (rainy season) stars show two seasons during which carrot production takes place. Although the production of carrot can take place in both seasons farmers of Magadi do not grow it in the rainy season, as the roots rot due to poor drainage.

Table 1. Seasonal calendar for carrot production in Magadi (normal practice).

Activity	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Land preparation	**					**						
Sowing of seeds		*					*					
Weed management			**				*	**	**			
Fertilizer application			*	*				*	*			
Management of pest and diseases			****	*					**			
Harvesting									*			
Keeping ready for market									*			
Marketing				*					*			

**= Weeks.

PRODUCTION PLAN

(1) *Variety*

Super Kurroda is the chosen variety of carrot and it fits well with the market requirements and suits the Magadi agro-climatic zone.

(2) *Source of seed, chemicals and fertilizers*

- The Super Kurroda variety is found in Magadi, Nelamangala, Ramanagar and Bangalore agro-product shops.
- The agro-chemicals are found at Magadi, Nelamangala and Bangalore.
- The fertilizers can be procured from the Gayathri Agrochemicals and Fertilizers outlet, Magadi.

(3) *Equipment requirement for producing the most promising option*

The tools required by each producer to grow carrot are given below.

Table 2. Equipment required for carrot production by members and the association.

Item	Quantity
Sickles	2
Spades	2
Sprayers	5 (association)
Soil- and water-testing kit	1 (association)
Power tiller	1 (association)

(4) *Irrigation water*

Some producers of the association do not have water for irrigation. Therefore, they buy water from the farmers who have bore wells. The owners are obliged to give water to those who do not have water.

To facilitate and minimize the water requirement, drip irrigation will be introduced to farmers who face water scarcity. This method of irrigation will reduce the amount of water used and increase efficiency. Simultaneously, the labour requirement to irrigate the crop can be minimized. Farmers will bear 25% of the cost, through the revolving fund of the association, and the balance (75%) will be borne by the project and given as an in-kind contribution.

(5) *Production cycle*

It is hoped that production of carrot will be year-round and therefore it will be staggered to produce carrot throughout the year. Each of the 100 urban producers will grow carrot in 3 guntas of land. They will grow other vegetables in other plots.

As reflected in the seasonal calendar in the first year of production which is 2009, the sowing of carrot will be done in the first week of November. Harvesting of carrot will start by the last week of January 2010. As per our analysis, market requirement ranges from 3 to 5 quintals (a quintal = 100 kg). In a single plot of carrot, harvesting can go on for 10 days. Based on this, 10 staggered sowings will be carried out at 10-day intervals, until all 100 farmers get their turn. Every staggered sowing event will include 10 farmers. Hence, a farmer should harvest around 40 kg/day of carrot, which will meet the requirement of the buyers.

(6) *Production methods*

All urban producers of the association will be trained in the best practices of carrot production. The Urban Producers Field School (UPFS) will provide the production-related support and training to the farmers. The required quality and quantity will be maintained throughout.

(7) *Land preparation*

The association will purchase a power tiller to facilitate the needs of farmers who do not have bullock power to prepare the land. These farmers can hire the power tiller from the association for ploughing the field. The association will charge the farmers on an hourly basis to maintain the equipment in better condition. The charged amount is INR25/hour.

(8) Soil-testing

Soil tests will be done before implementing the plan. Soil samples will be collected from all the 100 plots to learn about the nutritional status of the soil. This is very important to manage and recommend the required quantity of fertilizers to the fields. Hence, the association needs a soil- and water-testing kit for frequent analyses of soil nutrients. The association will charge a minimum of INR10/sample to test the soil in order to recover the maintenance cost of the kit.

(9) Seed treatment

Treated seeds of the super Kurroda variety with the chemical *thiram* are available in the market. Hence, there is no need to go for seed treatment once again.

(10) Vermi-composting

To introduce the concept of organic cultivation, vermi-composting will be initiated. The farmers who have a minimum number of ruminants are eligible to get the benefit to produce vermi-compost. Benefitted farmers will get 25% of the total cost from the association as a revolving fund and the remaining cost (75%) will be borne by the project as an in-kind contribution to the farmer. The beneficiary will give 20% of the total production until such time the 75% cost is recovered.

(11) Post-harvest activities

Every producer will harvest, wash and clean and provisionally grade the carrot. Centralized subcommittees of the association will take care of final grading, cleaning, and packaging of produce as per the buyers' requirements. An Urban Producers Field School session will be held to train the producers on the best post-harvest practices.

(12) Coordination

In order to have consistency in the quality and quantity produced, PPSC will be established to monitor the performance of the crop throughout the production cycle. The association will take care of building the capacity of farmers to produce good-quality carrot through the UPFS.

PROCESSING

Carrot will not be processed into another form. However, it has to be washed, cleaned and sorted into different grades amongst which will be the two standards—grade A and grade B quality.

Equipment Required

All the urban producers will need the following processing and marketing equipment (Table 3).

Table 3. Processing and marketing equipment required by members and the association.

Item	Quantity
Basins	2
Rubber baskets	2
Labelled crates	30 (association)
Measuring scale	1 (association)

MARKETING

(1) *Promotion*

Product leaflets on the most promising option (MoPO) will be produced and distributed to potential buyers. All-India Radio will also be used to promote the MoPO.

(2) *Taking orders*

The MTSC is responsible for collecting orders from buyers. The product will be supplied based on the indent of the buyers. This subcommittee will take orders on the phone from Reliance Fresh (a supermarket that buys Magadi produce) every evening for the following day's requirement.

(3) *Storage, marketing and transport*

The collected and packaged produce will be stored in a warehouse rented by the association. A vehicle will be hired by the MTSC for distribution

of the produce to buyers. Transportation cost will be borne by the association as an in-kind contribution to the farmers during the first year. This committee is also responsible for deciding how much of the different grades will be sold at the two different markets, i.e., the Reliance Fresh supermarket and the local market. In a way, the best product according to the standards will go to the supermarket. Grading and weighing will be done in front of the marketing committee under pre-set criteria. The farmer will get a receipt for the quantity and the grade supplied. A person from the MTSC will be taking the produce to the markets.

MARKET ANALYSIS

Buyers for MVVGA Carrot

1. *Reliance Fresh:*

The distribution centre is located near Nelamangala of the Bangalore urban district which is 38 km from Magadi. This supermarket requires grade A quality produce.

2. *Local market:*

The daily local market of Magadi has been identified as the market for grade B quality produce.

3. *SAFAL:*

This is the wholesale market located at Whitefield, Bangalore which is 120 km from Magadi. This market demands only graded produce.

Recent Changes in Marketing

An analysis of market prices between Reliance Fresh and the local market has brought changes in the marketing strategy of the business plan. As there is no difference between the price of Reliance Fresh and that of the local market, the association will bear the extra cost for transportation. Hence, farmers may get less profit from supplying the local market. Simultaneously, the association has taken alternative options to market its produce. As an output of this effort, a retailer of Bangalore came

forward to purchase produce of association members with the following caveats:

- Transportation cost has to borne by the retailer.
- Assurance of market price based on prevailing prices at the local market on the same day.
- All produce of the association farmers has to be linked.
- The retailer has to purchase produce every evening between 7.00 and 8.00 p.m.
- The retailer has to pay the full amount in the form of cash on the same day.
- The association has to provide all produce in bunches rather than on a weight basis.

Advantages for the Association Farmers over Reliance Fresh and the Local Market

- The association can save transportation cost.
- It can save time.
- There is less drudgery.

QUALITY OF CARROT

I *Grade A:*

This grade is orange, has a conical shape and rounded tips, and is 10-12 cm long with a good taste. This product should not be mechanically damaged, infected with pests and diseases, misshapen (split) and over-size or under-size; nor should it include a greenish top.

II *Grade B:*

It can include under-size or misshapen produce even with a minimum mechanical damage.

Note: The Reliance Fresh and SAFAL demand only grade A quality carrot. Hence, the local market will be restricted to grade B quality only.

Competitiveness

The strength of the MoPO would be that the carrot would be graded (i.e., quality) and nicely packed in crates. The association of 100 urban producers with adequate land and water to produce large quantities of carrot is capable of supplying the required quantity of produce consistently to the buyers.

Demand by the Potential Buyers

- Reliance Fresh—300 to 400 kg/day.
- SAFAL—2 to 3 tonnes (2,000 to 3,000 kg) per (single) supply.
- Local market—100 kg/day.

Production Capacity of the MVVGA

The production of carrot from MVVGA was estimated to be 90,000 kg/year. Considering losses of about 10% about 81,000 kg will be the amount that MVVGA can supply to its buyers.

Price

Carrot supplied will fetch INR8/kg (grade A) from Reliance Fresh, INR7/kg (grade A) from SAFAL and INR3/kg (grade B) from the local market. The average prices for grade A and grade B are INR7.5/kg and INR3/kg, respectively.

Production Calendar

It was agreed that there would be two production cycles a year, and the duration of the crop is 3 months. As per the demand of the buyers MVVGA will stagger the sowings at 10-day intervals to give a year-round supply. Every staggered sowing event includes 10 farmers. Hence, the area covered each time is 30 guntas out of which 45 quintals of produce can be obtained. These 45 quintals can be harvested in 10 days without affecting the quality of the produce. Hence, everyday MVVGA will get 4.5 quintals of produce as per the buyers' requirement.

Meeting Buyers

The product will be delivered at the distribution centres of Reliance Fresh and SAFAL. The retailer of the local market will collect the produce from the MVVGA collection centres.

Promotion

The product will be promoted by labelling the crates, distributing promotional leaflets/brochures, participating in agricultural shows, campaigning with line department events and using the All-India Radio.

FINANCIAL PLAN

The model of the financial plan is based on the community activities being carried out by farmers at their respective farms and in the association.

GENERAL ASSUMPTIONS

Magadi Vayalagam Vegetable Growers' Association will have 100 farmers as its members. Lifetime membership fee of all members is estimated at INR10,000 contributing towards the capital of the association. In addition, a revolving fund will be set up through the association with the micro-finance concept. Other main assumptions are as follows:

1. Each farmer will reserve 3,078 ft² of plot for cultivation of carrot under this project per cycle. Therefore, the total area of cultivation will be 6 ha/year.
2. It is assumed that for each production cycle there will be 10 staggered sowings with 10 farmers each time in 10-day intervals.
3. The association will get 4 to 5 quintals/day of carrot from 10 farmers to meet the demand of buyers.
4. Each farmer will grow two crops a year.

5. The MVVGA will register under the Trust Act. Hence, this association will be exempted from tax.
6. MVVGA will secure €20,000 as a grant from the project
7. MVVGA will secure start-up capital for purchase of equipment, tools, seeds and other inputs.
8. Each member will be given all the necessary inputs in the form of in-kind or revolving fund contributions.
9. All equipment of the association will be given to the farmers on a hire basis.
10. An office of the association can be hired on a lease basis.
11. The revolving fund will be distributed at an interest of 10%/annum.

FUND ALLOCATION

Figure 1 and Table 4 show the total fund allocation to the different activities of the association. The meanings of some terms used in this are given below:

Assets to the association: These are the economic resources owned by the association, e.g., power tiller, sprayers, soil- and water-test kits, etc.

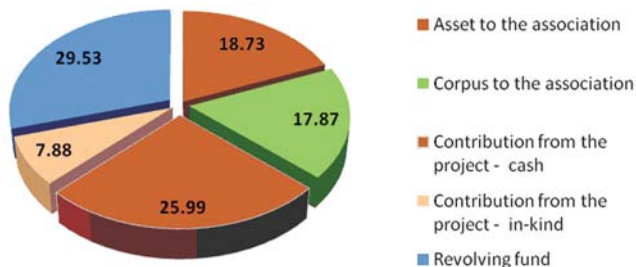
Fixed deposit: It is a fixed amount of cash; this capital cannot be used for any purpose; only its earnings like interest can be used to meet the association's expenditure.

Project contribution: The fund is given to individual farmers both in cash and in-kind. This fund will not be recovered from the individual farmers by the association.

Revolving fund: It is a loan to the farmers. It has to be repaid to the association with interest.

Out of the total estimated budget 30% has been allocated for the revolving fund. The balance is allocated as follows: assets (19%), corpus to the association (18%), promotional and developmental activities (26%) and in-kind contribution to the farmers (8%).

Figure 1. Allocation of project funds for different components (%).



In promotional and developmental activities, out of the estimated total cost of drip irrigation kits and vermi-composting units, the project will bear 75% while beneficiaries will contribute the balance. The revolving fund has to be given to the beneficiaries for their contribution towards purchase of drip irrigation kits and construction of vermi-composting units. Altogether 45 farmers will be selected as beneficiaries of these activities out of whom 20 are selected for drip irrigation and 25 for vermi-composting.

Table 4. Allocation of project funds to different components.

Sl. No.	Stage/Activities	Unit Quantity (no.)	Unit rate (INR)	Amount (INR)	Allocation of project fund (INR)		
					Asset to the association	Corpus to the association	Revolving fund to farmers
1.0 Tools/Equipment							
1.1	Power tiller	Nos. 1	100,000	100,000	100,000		
1.2	Sprayers	Nos. 5	2,900	14,500	14,500		
1.3	Soil- and water-testing kit	Nos. 1	25,000	25,000	25,000		
1.4	Plastic crates	Nos. 30	750	22,500	22,500		
1.5	Weighing balance	Nos. 1	25,000	25,000	25,000		
1.6	Sickles	Nos. 200	50	10,000			10,000
1.7	Spades	Nos. 200	100	20,000			20,000
1.8	Basins	Nos. 200	150	30,000			30,000
1.9	Rubber baskets	Nos. 200	100	20,000			20,000
2.0 Cultivation							
2.1	Farmyard manure	1,000 kg	60	24,000			24,000
2.2	Seeds	kg 25	1,650	41,250			41,250
2.3	Fertilizers	kg 870	10	8,700			8,700

(Continued)

Table 4. Allocation of project funds to different components (*continued*).

Sl. No.	Stage/Activities	Unit Quantity (no.)	Unit rate (INR)	Amount (INR)	Allocation of project fund (INR)		
					Asset to the association	Corpus to the association	Revolving fund to farmers
2.4	Labour	Person- 1,500 days	75	112,500			112,500
2.5	Organic pesticide spray						
2.5.1	Neem seed kernel extract spray	Nos. 100	100	10,000		10,000	
2.5.2	Panchagavya	Nos. 100	150	15,000		15,000	
2.6	Drip irrigation kit	Nos. 20	5,000	100,000		75,000	25,000
2.7	Vermi-compost	Nos. 25	6,000	150,000		112,500	37,500
3.0	Harvesting and marketing						
3.1	Labour (harvesting, cleaning, grading)	Nos. 400	85	34,000			34,000
3.2	Transportation cost	kg 35,330	1	35,330		35,330	
3.3	Farmers (cash in hand)	INR 100	1,000	100,000			100,000
4.0	Infrastructure of the collection centre						
4.1	Fixed deposit		250,000	250,000			250,000
4.2	Tables	Nos. 2	2,500	5,000		5,000	

(Continued)

Table 4. Allocation of project funds to different components (*continued*).

Sl. No.	Stage/Activities	Unit Quantity (no.)	Unit rate (INR)	Amount (INR)	Allocation of project fund (INR)		
					Asset to the association	Corpus to the association	Revolving fund to farmers
4.3	Chairs	Nos. 12	350	4,200	4,200		
4.4	Floor tarpaulin	Nos. 1	2,000	2,000	2,000		
4.5	Rechargeable lantern	Nos. 1	1,800	1,800	1,800		
4.6	File rack	Nos. 1	1,000	1,000	1,000		
4.7	Cupboard	Nos. 1	8,000	8,000	8,000		
4.8	Fans	Nos. 2	1,500	3,000	3,000		
4.9	Cash at bank	INR 1	50,000	50,000	50,000		
4.10	Salary for accountant	Months 12	2,000	24,000			24,000
5.0	Promotion						
5.1	Boards	Nos. 2	1,000	2,000			2,000
5.2	Brochures	Nos. 2,000	5	10,000			10,000
5.3	Mass media	Days 50	200	10,000			10,000
6.0	Capacity-building						
6.1	Training to the local team (water-related)			70,000			70,000

(Continued)

Table 4. Allocation of project funds to different components (*continued*).

Sl. No.	Stage/Activities	Unit Quantity (no.)	Unit rate (INR)	Amount (INR)	Allocation of project fund (INR)		
					Asset to the association	Corpus to the association	Project contribution In-kind to farmers
6.2	Awareness programmes	Nos. 20	3,000	60,000		60,000	
7.0	Total cost (INR)			1,398,780	262,000	250,000	363,500
	Total cost (Euro)			19,793	3,707	3,538	5,144
8.0	Percentage			100	18.73	17.87	25.99
							7.88
							29.53

RECEIPTS AND PAYMENTS ACCOUNT

The estimated year-wise receipts and payments are shown in Table 5. The MVVGA will get INR2,154,290 as receipts and the association will get a net profit of INR399,110 for the first year. The main components of the income are as follows:

- 1. Lifetime membership fee:** INR100 will be collected from each individual of the association and the total amount will be INR10,000.
- 2. Outright grant:** Very recently, the government launched a scheme for the development of agriculture called the “ATMA Scheme, 2009–Agriculture Technology Management Agency” programme. This is meant for groups of people (less than 20) interested in agriculture-related activities. The group should have a set of common objectives, and our local team together with the MSF, was able to tap this scheme, as there was a common set of objectives for our groups in the association. This is an outright grant from the government; however, we will convert it into a revolving fund for the groups/clusters. The plan is to give training per cluster by the department through consultants from the Agriculture University. For the training, the government spends INR5,000/group, and overall INR30,000 will be spent on our carrot growers. The outright grant per group is INR10,000, and the carrot growers will receive a total of INR60,000.
- 3. Hire charges from the power tiller:** The power tiller is estimated to work at least 2.5 hours/day. Therefore, the power tiller will be hired for 80 hours/month. The hiring charges would be INR25/hour. Hence, the power tiller will yield INR2,000/month. The gross amount earned by the power tiller will be INR24,000/year. After 2 years the efficiency of the power tiller may decrease at 10%/year and, hence, income will decrease every year.
- 4. Contribution from vermi-compost:** Vermi-compost production for the first year is estimated to be 670 kg/unit. It will be 16,750 kg/year for 25 units. The association will get 20% out of the total

Table 5. Projected receipts and payments account of MVVGA.

Description	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
To Receipts					
Cash in hand	0	0	0	0	0
Cash at bank	0	399,110	466,295	536,605	606,264
Project fund received	1,398,780	0	0	0	0
Lifetime membership fee	10,000	0	0	0	0
Outright grant by Agriculture Department (ATMA)	60,000	0	0	0	0
Hire charges from power tiller	24,000	24,000	21,600	19,440	17,496
Contribution from vermi-compost	10,000	45,000	45,000	45,000	45,000
Hire charges from sprayer	3,000	3,300	3,630	3,993	4,392
Soil- and water-testing charges	1,500	1,650	1,815	1,997	2,196
Interest on short-term loan (revolving fund)	37,170	40,515	44,162	48,136	52,468
Service charges at 2% of market value	14,840	16,695	17,887	19,875	21,200
Interest from bank	1,000	39,911	46,630	53,660	60,626
Returns from carrot sales	594,000	653,400	718,740	790,614	869,675
Total	2,154,290	1,223,581	1,365,759	1,519,320	1,679,317
By Payments					
Power tiller	100,000	0	0	0	0
Sprayers	14,500	0	0	0	0
Soil- and water-testing kit	25,000	0	0	0	0
Plastic crates	22,500	0	0	5,000	5,000
Weighing balance	25,000	0	0	0	0
Drip irrigation kit	75,000	0	0	0	0
ATMA grant to the clusters	60,000				

Description	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
By Payments					
Vermi-compost structure	112,500				
Office rent	15,000	15,000	15,000	15,000	15,000
Short-term loan (revolving fund)	413,000	0	0	0	0
Cultivation expenses paid to farmers (in-kind)	110,280	0	0	0	0
Payment to the farmers	594,000	653,400	718,740	790,614	869,676
Salary to Accountant	24,000	26,400	29,040	31,944	35,138
Promotional expenses	22,000	2,000	2,000	2,000	2,000
Training to the staff	70,000	0	0	0	0
Training and awareness programme expenses	26,000	10,000	10,000	10,000	10,000
Expenses for infrastructure at the collective centre	25,000	0	0	0	0
Maintenance of equipment	4,000	4,200	4,410	4,630	4,862
Salary to professionals	0	30,000	33,000	36,300	39,930
Telephone	3,500	2,400	2,400	2,400	2,400
General maintenance of office (water, cleaning and electricity)	5,400	5,796	6,229	6,701	7,219
Stationery	1,500	1,500	1,650	1,683	1,717
Monthly training and awareness programme expenses	1,800	1,890	1,985	2,084	2,188
Auditing expenses	3,000	2,000	2,000	2,000	2,000
AGBM expenses	2,000	2,500	2,500	2,500	2,500
Bank charges	200	200	200	200	200
Cash in hand	0	0	0	0	0
Cash at bank	399,110	466,295	536,605	606,264	679,487
Total	2,154,290	1,223,581	1,365,759	1,519,320	1,679,317

production to recover the amount given as in-kind to the beneficiaries. Thus, the estimated amount at 20% will be 3,350 kg/year from 25 units. The prevailing price for the vermi-compost is INR3.00. Hence, the association will get around INR10,000 (3,350X3) for the first year from vermi-composting. Thereafter, it will get 15,075 kg/year from 25 units due to the increase of production cycles and yield INR45,000/year.

5. **Hire charges from sprayer:** The MVVGA will purchase five sprayers for the benefit of the association farmers. In the first year, each sprayer is estimated to get 40 working days. Hence, the number of working days for the five sprayers will be 200. Sprayers will be hired at the rate of INR15/day. Hence, the association will get INR3,000/year. Thereafter, the number of working days is expected to increase by 10% due to expansion of production activities by association farmers.
6. **Soil- and water-testing charges:** Charges will be levied at the rate of INR10/sample and 150 samples are expected to be analysed per year. Hence, the income earned from the soil- and water-testing kit will be INR1,500/year. Due to expansion of production activities a 10% increase in usage of this instrument may be anticipated. Hence, the income earned from this will increase at 10%/year.
7. **Interest on revolving fund:** Short-term loans will be given to the clusters based on the requirement and total available member savings. The amount available for short-term loans as a revolving fund of the association is INR413,000 for which a 10% interest rate will be charged. Hence, the association will get INR41,300. The final amount of the loan will increase by calculating the amount at compound interest. Hence, the income to the association will increase year to year.
8. **Service charges:** A service charge will be levied at 2% on the total earnings for the day by selling carrot. The agreed quantity of carrot to the supermarket is 300–500 kg. However, in reality our farmers can produce 405 kg/day (A grade = 324 kg + B grade - 81 kg). Based on a conservative estimate (at least) agreed upon with

BALANCE SHEET

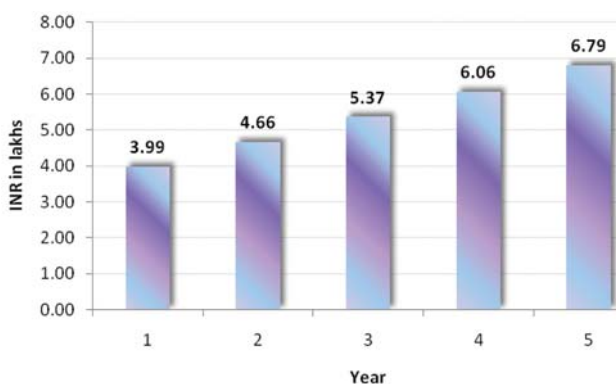
Table 6. Project balance sheet of Magadi Vayalagam Vegetable Growers' Association.

Description	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
Assets					
Short-term loan	413,000	450,170	453,515	457,162	461,136
Fixed assets					
Power tiller	87,500	75,000	62,500	50,000	37,500
less: depreciation	12,500	12,500	12,500	12,500	12,500
Sprayers	11,600	8,700	5,800	2,900	0
less: depreciation	2,900	2,900	2,900	2,900	2,900
Soil- and water-testing kit	20,000	15,000	10,000	5,000	0
less: depreciation	5,000	5,000	5,000	5,000	5,000
Plastic crates	18,000	13,500	9,000	4,500	0
less: depreciation	4,500	4,500	4,500	4,500	4,500
Weighing balance	20,000	15,000	10,000	5,000	0
less: depreciation	5,000	5,000	5,000	5,000	5,000
Fixed deposit	250,000	250,000	250,000	250,000	250,000
Membership fee	10,000	0	0	0	0
Cash in hand	0	0	0	0	0
Cash at bank	399,110	466,295	536,605	606,263	679,488
Total	1,259,110	1,323,565	1,367,320	1,410,725	1,458,024
Liabilities					
General fund					
Opening balance	0	1,229,210	1,293,665	1,337,420	1,380,825
Add: During the year	1,259,110	64,455	43,755	43,405	47,299
Total	1,259,110	1,323,565	1,367,320	1,410,725	1,458,024

the supermarket, the A grade carrot will fetch INR7.5/kg whereas the B grade carrot will be sold at INR3 in the local market. As such, the daily earnings are expected be INR2,673 and the service charge deducted will be 2% which would be INR54/day. This will be income for the association. The business is expected to be carried out for 275 days of the first year. Hence, the income earned as service charge is INR14,840 for the first year. Due to expansion of business activities from the second year, the association will expect a 10% increase in income from year to year.

9. **Interest from bank:** The association is expected to earn at least INR1,000 for the first year as interest for the deposited amount at the bank. Thereafter, for the amount of cash at the bank the association will get interest at the rate of 3% for the respective years.
10. **Returns from carrot sales:** Actually this is a turnover of the association business. This will be repaid to the respective farmers as per the supply of carrot to the association.

Figure 2. Year to year growth of cash at bank.



PER DAY ANALYSIS AT ASSOCIATION LEVEL

The association is estimated to produce 405 kg of carrot of both grades (A and B), after accounting for a 10% of harvest losses. Everyday turnover will be around INR2,673 (INR7.5 per day). Out of this, the association will levy a 2% service charge, amounting to INR54/day as earnings for the association. This service charge will be the income for the association (Tables 7 and 8). Therefore, the income earned is INR6.35/kg from grade A carrot and INR2.94/kg from grade B carrot.

Table 7. Per day analysis of carrot produce at association level.

Particulars	UoM	Value
Yield/gunta	kg	150
Yield/30 guntas	kg	4,500
Expected per day produce	kg	450
10% loss	kg	45
After loss	kg	405

Table 8. Grade-wise per day turnover analysis at association level.

Particulars	UoM	Grade	
		A	B
Quantity	kg	324	81
Price	INR/kg	7.5	3
Revenue	INR	2,430	243
Transportation cost	INR	324	0
Service charge at 2%	INR	48.6	4.86
Revenue after deducting costs	INR	2,057.4	238.14

COST OF PRODUCTION

The total fixed cost for the association to produce carrot in 3 ha (per cycle) is estimated to be INR127,175 (Table 9). Variable costs for production of carrot in one acre will be INR14,050 (Table 10). The association will not use chemical pesticides; instead, organic pesticides like neem seed kernel extract and pachagavya will be introduced. It will reduce the cost of production and minimize environmental pollution.

Table 9. Fixed costs/cycle (INR).

Particulars	Amount
Salary and wages	6,000
Revolving fund	103,250
Depreciation on machinery	6,675
Maintenance	1,000
House rent	1,500
Land rent	6,000
Membership fee	250
Water charges	2,500
Total	127,175

Table 10. Variable cost/acre (INR)/cycle.

Particulars	UoM	Qty	Unit price	Amount
Seeds	kg	2	1,300	2,600
Farmyard manure	1,000 kg	10	400	4,000
Fertilizers	kg	145	10	1,450
Organic manure	kg	500	5	2,500
Organic pesticide	litre	100	3	300
Land preparation	INR	1	300	300
Labour (all activities)	Person-days	30	80	2,400
Marketing cost	INR	5	100	500
Total				14,050

Note: Qty=Quantity.

BREAK-EVEN ANALYSIS

The MVVGA will expect to produce 36,000 kg of carrot for each cycle. The fixed cost and variable cost/unit to produce the above amount will be INR127,175 and INR2.34, respectively. The break-even quantity will be 24,654 units. The gross margin at the maximum level of sales will be INR58,525 (Table 11 and Figure 3).

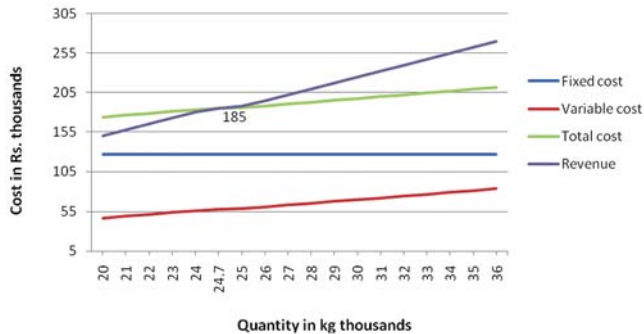
Table 11. Break-even analysis.

Break-even analysis		Magadi Vayalagam Vegetable Growers' Association			
Total fixed cost (INR)	127,175				
Total variable unit cost (INR)	2.34				
Unit selling price (INR)	7.5				
Expected unit sales (kg)/cycle	36,000				
Break-even unit	24,654				
Units (kg)	Fixed cost (INR)	Variable cost (INR)	Total cost (INR)	Revenue (INR)	Gross margin (INR)
20,000	127,175	46,833.33	174,008.33	150,000	-24,008.33
21,000	127,175	49,175	176,350	157,500	-18,850

Table 11 (Continued).

22,000	127,175	51,516.67	1,78,691.67	1,65,000	-13,691.67
23,000	127,175	53,858.33	1,81,033.33	1,72,500	-8,533.33
24,000	127,175	56,200	1,83,375	1,80,000	-3,375
24,654	127,175	57,732.11	1,84,907.11	1,84,907.11	0
25,000	127,175	58,541.67	1,85,716.67	1,87,500	1,783.33
26,000	127,175	60,883.33	1,88,058.33	1,95,000	6,941.67
27,000	127,175	63,225	1,90,400	2,02,500	12,100
28,000	127,175	65,566.67	1,92,741.67	2,10,000	17,258.33
29,000	127,175	67,908.33	1,95,083.33	2,17,500	22,416.67
30,000	127,175	70,250	1,97,425	2,25,000	27,575
32,000	127,175	74,933.33	2,02,108.33	2,40,000	37,891.67
33,000	127,175	77,275	2,04,450	2,47,500	43,050
34,000	127,175	79,616.67	2,06,791.67	2,55,000	48,208.33
35,000	127,175	81,958.33	2,09,133.33	2,62,500	53,366.67
36,000	127,175	84,300	2,11,475	2,70,000	58,525

Figure 3. Break-even analysis.



SENSITIVITY ANALYSIS AND B:C (RATIO)

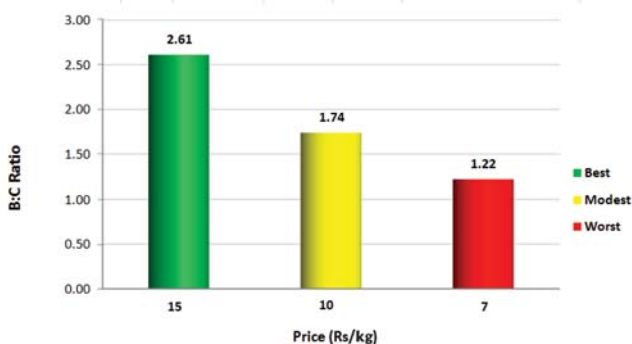
Table 12 and Figure 4 show the results of a sensitivity and benefit cost analysis. This analysis is developed based on the fluctuation of prices. The best price in this season is INR15/kg of carrot at which rate the benefit

Table 12. Sensitivity analysis and B:C (ratio).

Sensitivity analysis based on the fluctuation of price.					Magadi Vayalagam Vegetable Growers' Association
Particulars	UoM	Best	Modest	Worst	
Yield from 1 gunta	kg	150	150	150	
After 10% loss	kg	135	135	135	
Price	INR/kg	15	10	7	
Market value	INR	2,025	1,350	945	
Production cost	INR/kg	5.17	5.17	5.17	
Net profit	INR/kg	9.83	4.83	1.83	
Production cost/ gunta	INR	776	776	776	
B:C (ratio)		2.61	1.74	1.22	

Production cost/kg.	
Particulars	Cost (INR)
Fixed cost	2.83
Variable	2.34
Total	5.17

Figure 4. Benefit cost ratio at different price levels.



cost ratio will be 2.61. It means that a farmer will get INR2.61 against his investment of INR1.00 in carrot production. The lowest price for carrot for the current year was INR7/kg. It will be the worst scenario for the cultivation of carrot. Even though it is the worst a farmer will be benefitted by INR1.22 against his investment of INR1.00 in cultivation of carrot.

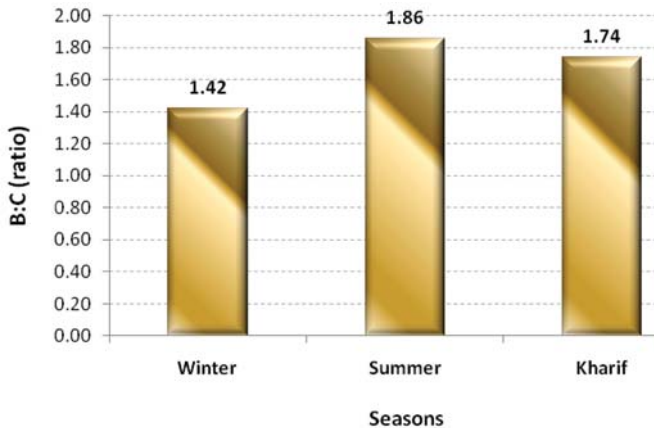
SEASON-WISE PROFITABILITY TO THE FARMERS

It is better to analyse the farmer's profit in different seasons because prices of vegetables fluctuate from season to season. An analysis shows that the profit would be more in summer than in *kharif* (the rainy season) and winter seasons. This is due to the prevalence of higher prices and less production of carrot (Table 13 and Figure 5).

Table 13. Season-wise profitability to the farmer.

Particulars	UoM	Winter	Summer	Rainy season
Yield from 1 gunta	kg	175	160	100
After 10% loss	kg	157.50	144	90
Price (INR/kg)	(INR/kg)	7	10	15
Market value	INR	1,102.50	1,440	1,350
Production cost/kg	INR	5.17	5.17	5.17
Net profit	(INR/kg)	1.83	4.83	9.83
Production cost/gunta	INR	776	776	776
B:C (ratio)		1.42	1.86	1.74

Figure 5. Benefit cost analysis for different crop seasons.

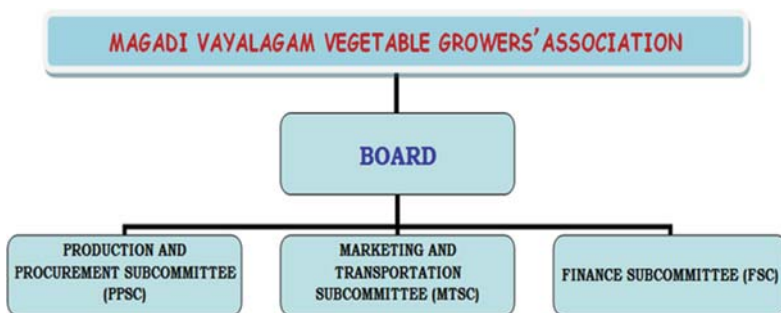


ORGANIZATIONAL PLAN

Internal organizational structure

The functions of MVVGA will be administration, procurement and management of inputs, financial management, record keeping, production and processing, transportation, marketing and skills improvement. The persons tasked with these functions will not be paid as employees of MVVGA for the first 6 months. This position will be reviewed once sufficient funds have been accumulated and MVVGA is operating profitably to afford payment to the employees. The first position to be filled is that of the person to manage the MVVGA accounts.

The administrative functions will be headed by a *President*, *Secretary (taking minutes and record keeping)* and *Treasurer (management of financial aspects)*. The Board will comprise 11 members out of whom two members will be from each subcommittee and the rest will be the co-option members from group representatives of MVVGA.



Executive Committee (EC): Administrative functions like coordination, communication and supervision of all functions will be done by this committee and it will be headed by the President. The Chair of the Financial Committee will be Treasurer while other members of the association will be selected in plenary meetings.

Production and procurement subcommittee (PPSC): Procurement, distribution and storage of inputs, assessment of group production,

grading of the produce and care and maintenance are the roles and responsibilities of this subcommittee.

Marketing and transportation subcommittee (MTSC): Finding markets, taking orders, advertising, product promotion and transportation of the product to the clients come under this subcommittee.

Finance subcommittee (FSC): Source of financing and credit, management of MVVGA finances including debts, and maintenance of books of accounts will be done by this subcommittee.

Note: Each subcommittee will have five members. These roles and responsibilities will be carried out by the respective subcommittees.

Financial Management

The Treasurer will manage the finances of MVVGA. In order to issue a cheque, three signatory panels will be created in which the President and Treasurer will be in Panel A (people representatives) and one member from the nodal agency (Dhan Foundation) will be in Panel B. All three persons from these two panels will be authorized to sign on a single cheque for it to be valid.

MVVGA Records

MVVGA will maintain the following records: Production, procurement, storage, sales, finance, books of accounts (cash book, ledger, voucher and receipt), committee reports, annual reports and all records of EC meetings. The farmer will keep his own record book of his supply and rates of payment. This work will be done by the finance subcommittee.

Product Strategy

MVVGA will offer high-quality and well-packaged carrot required for consumption in Bangalore markets. The required quantity of graded carrot will be supplied on a planned basis throughout the year.

Sustainability of the Association

Resources from the Departments of Agriculture and Horticulture will be mobilized as per availability. Revenue for the association will come from membership fees and service charges, revolving fund, fixed deposit (office rent) and hiring charges of equipment belonging to the association. This revenue will take care of the sustainability of the association.

PARTNER STRATEGY

MVVGA has a range of partners based on its functions and requirements as stipulated below.

1. Production and grading
 - a. Extension
 - Department of Horticulture
 - Department of Agriculture
 - University of Agricultural Sciences, Bangalore
 - Reliance Fresh
 - b. Inputs
 - Shilpa Hitech Seeds and Fertilizers, Bangalore: seeds/fertilizers/pesticides
 - Nanjundeshwari, Magadi: as above
 - Bangalore Hardware: sprayers, buckets, baskets, basins, masks, plastic crates
2. Product promotion and marketing
 - a. All-India Radio
 - Product promotion
 - b. Departments of Agriculture and Horticulture
 - Agriculture exhibitions and field days for product promotion
 - c. Raitha Samparka Kendra
 - Promotion of product through campaigns

3. Training
 - a. Reliance Fresh
 - Production, processing and grading
 - b. Department of Industrial Extension
 - Training youths for self-employment
 - c. Department of Women and Children Development
 - Childcare and other community issues
 - d. Department of Horticulture
 - Management of agro-chemicals
 - e. University of Agricultural Sciences
 - Production techniques of crops and vermi-composting
4. Community development
 - a. Department of Watershed Development
 - Desiltation of water bodies
 - b. Department of Forests
 - Planting trees around the town
5. Finance and credit
 - a. Kalanjiam Development Finance Services
 - Credit
 - b. Nationalized banks
 - Financial assistance for development of agriculture
6. Licences and permits
 - a. Department of Revenue
 - Registration of association
 - Support for tax exemption

