



**USAID** | **KOSOVO**  
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# USAID KOSOVO PRIVATE ENTERPRISE PROGRAM (KPEP)

## Vegco Business Model A Vegetable Packing, Cooling & Sales Enterprise

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Implemented by  
Booz Allen Hamilton

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### **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government

# VEGCO BUSSINESS MODEL

## A VEGETABLE PACKING, COOLING & SALES ENTERPRISE

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Kosovo Private Enterprise Program, Project Vegco Business Model,  
Contract No. EEM-I-07-00007-00, Task Order No.2

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## EXECUTIVE SUMMARY

The following document examines the development of a vegetable packing, cooling and sales business located in southeast Kosovo. For purposes of this report, the business is referred to as Vegco.

The company will buy and pack peppers, tomatoes, cucumbers, cabbage and melons from approximately 180 farmers. In total, Vegco will purchase 6,150 MT of vegetables over a 28 week period between early April and end October. The raw product will be delivered to the packing plant by the farmers, weighed, pre-cooled and then put into cold storage before sorting and grading. Once the product is sorted and graded, the net weight of the marketable product will be taken; payment to the farmer will be based on this weight (marketable product net-weight). Non-marketable product will be (at the growers' discretion) sold to a food processor or returned to the grower at Vegco's loading dock.

After raw product has been received and cooled, it will be sorted and packed using a variety of technologies. Once packed, it will be returned to the cold store to await shipping to market by refrigerated truck. The packed product will be sold in Kosovo to supermarket chains and a network of selected wholesale agents located in green markets including but not limited to Pristina, Prizren, and Pejë/Peć.

The packing house will employ five full-time salaried workers in positions of General Manager/Sales Manager, Supply Chain Manager, Packing House Manager, Accountant and Office Assistant. Additionally, the business will employ a minimum of 23 seasonal workers (on average); however, this number would increase significantly during the peak packing season between late June and end September.

It is projected that Vegco will sell approximately 718,000 boxes of fresh vegetables valued at €2.59 million annually. The company's variable cost of operations is estimated at €2.083 million. The single largest variable cost line item is payment to growers for raw product. This line item alone totals €1.08 million annually. Vegco's overhead costs are estimated at €106,000 annually. The company (registered as a corporation) will have a 10% tax rate on income. It is estimated that after cost, depreciation, losses and taxes, net income for Vegco will be approximately €333,000 annually.

Total start-up costs for this green field investment include €778,000 for fixed capital costs (including buildings, cold stores, packing lines and other equipment); additionally, the company will need working capital in the amount of approximately €365,000. Together, these capital costs bring the total required investment to €1.143 million. It may be possible to reduce the total investment cost significantly by utilizing less expensive assets such as existing buildings and land (that may have values lower than those estimated in the financial model). Based on the foregoing capital investment requirements and net income, this business generates a ROI of 29%. The ROI is calculated after costs, depreciation, losses and taxes.

There are several key risk areas for the business. One of the leading risks is securing and maintaining a reliable raw product supply at a reasonable cost to the business. A second high risk area for Vegco is managing the selling of the finished product in a way that maximizes gross revenues. Fresh produce markets are notoriously volatile. They can move rapidly and with extreme amplitude. Vegco's marketing strategy is to be a reliable high quality producer with seasonal deliveries that begin early and end late in the year.

## Map



The business model and financial analysis prepared in the following document can be applied in any community within Kosovo that produces significant volumes of fresh vegetables.

While preparing the Vegco financial model, KPEP consultants met with farmers and a potential investor in the village of Krusha. This village is located in the heart of Kosovo’s vegetable belt near highway links to Pristina and Tirana. Given its location in a major vegetable production area and its relative proximity to major transportation links, this site is (for modeling purposes) assumed to be the location of the packing plant business being discussed in the following document.

## **Methodology**

The following study took place over a 30-day period during July 2009. The consultant (David Neubert) and student intern (Tribun Ferizaj) worked in concert with John MacKillop, Competitiveness Director of the USAID Kosovo Private Enterprise Program (KPEP) and his Pristina based staff, to collect data and develop the Vegco business model.

The preparation of this report began with a review of the Macedonian fresh vegetable packing and export sector. The consulting team spent approximately 4 days in Macedonia meeting with vegetable packing house operators, cold storage businesses and a wide variety of agricultural and industrial input suppliers. These meetings and contacts were instrumental in developing the concept for the Vegco business model and confirming business operating costs.

After completing the research in Macedonia, the team met with farmers in Krusha Village, located north northwest of Prizren. Also, at that meeting was Mr. Bytygi, owner of N.N.P. Ndertimi, a Pristina based general contracting firm. Mr. Bytygi expressed a strong interest in investing in the Krusha vegetable packing business. Farmers at the meeting also expressed a willingness to supply produce to the packing house.

Once the field work was completed, the team started to review available statistical data on vegetable production and prices in Kosovo. The Vegco business model was created using the data collected during interviews and from pre-existing wholesale market price data provided on the Inter-Cooperation Program website (funded by the Swiss and Danish governments), and the Ministry of Agriculture and Statistical Office of Kosovo.

## **Acknowledgements**

The consultant would like to thank Neil Parker and his staff at the Swiss/ Danish Inter-Cooperation Project for providing the key market price data used in the Vegco business financial model. Special thanks go to Tribun Ferizaj, student intern, for his work on the business financial model as well as his enthusiasm and creativity.

Finally, a debt of gratitude is also owed to John MacKillop and the entire staff of KPEP for their support of the consulting team and their warm hospitality.

## Vegco Business Model

### A Vegetable Packing, Cooling & Sales Enterprise

## 1 Background

### 1.1 Assignment Objective

In designing the Statement of Work for the Vegetable Collection Center Investment Profile, KPEP identified five key deliverables. In summary, these included:

- The creation of a business model for a vegetable collection center in Kosovo
- The development of a financial model for the vegetable collection
- Identifying required fixed capital and working capital investment levels for the vegetable packing and sales business model and analyzing its profit or loss
- The development of a floor plan for the packing house (collection center) physical plant
- The development of an overall operational plan for the vegetable packing and sales business

### 1.2 The Vegetable Crop Sector in Kosovo

The Ministry of Public Administration Statistical Office of Kosovo has published data based on household surveys indicating that approximately 46% of the country's farmland is utilized for livestock through the production of pastures or green chop forage (see Figure 1). The second largest category of agricultural land use is for dry grains. Vegetables make up the third most important land use category, utilizing about 8% of total cropland. Fruit production (mainly trees) was found to comprise about 2% of total agricultural land use in Kosovo.

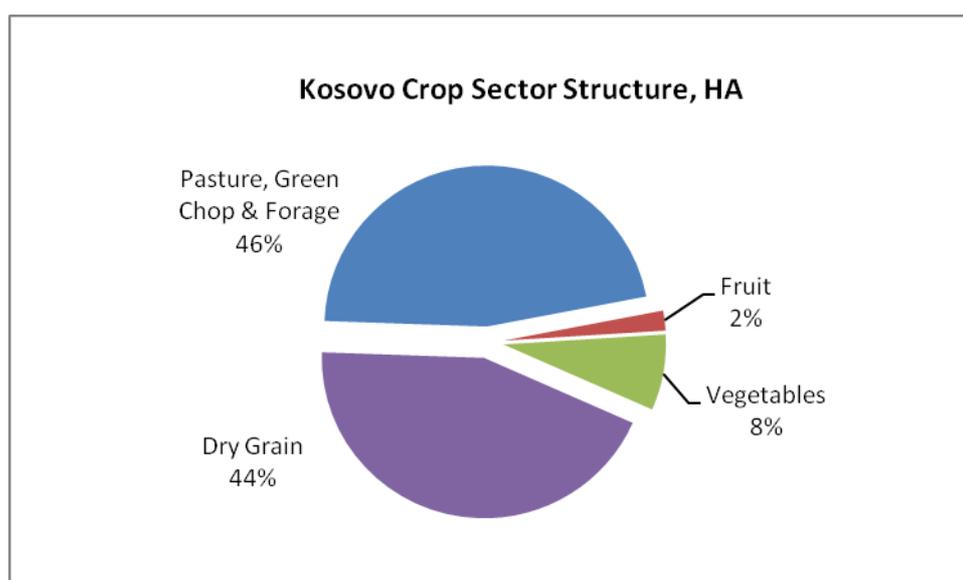


Figure 1

Although vegetables make up a relatively small fraction of the total agricultural area in the country, their higher value makes them disproportionately more important than the household surveys may imply. The June 2009 price for hard red winter wheat (ordinary

protein), Kansas City, MO, was approximately 171 Euros/MT (244 USD/MT)<sup>1</sup>. The value of a metric ton of tomatoes at the farmgate in Krusha village (Prizren District) in late July is estimated at 200 Euros/MT. With an average tomato yield in Kosovo of about 19.3 MT/hectare, the typical farm in Kosovo would generate about 3,860 Euros/HA in farmgate tomatoe revenue. This compares with an estimated wheat yield of 3.4 MT/HA<sup>2</sup> valued at about 581 EUR per HA farmgate.

Based on the foregoing figures, it appears that tomatoes (as a representative vegetable) have the potential, on average, to generate approximately 6.6 times the farmgate value per hectare of wheat. Given the potential earnings that vegetable production can provide farmers, there is significant interest in Kosovo to expand vegetable production and identify technologies and handling systems that will maximize incomes for producers and packers.

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<sup>1</sup> Kansas City wheat price is considered a good cost reference for inland origins. Prices in Kosovo may vary, but would move relative to the Kansas City price.

<sup>2</sup> Mean yield for wheat in Serbia between 2004-2006, source [www.FAOSTAT](http://www.FAOSTAT)

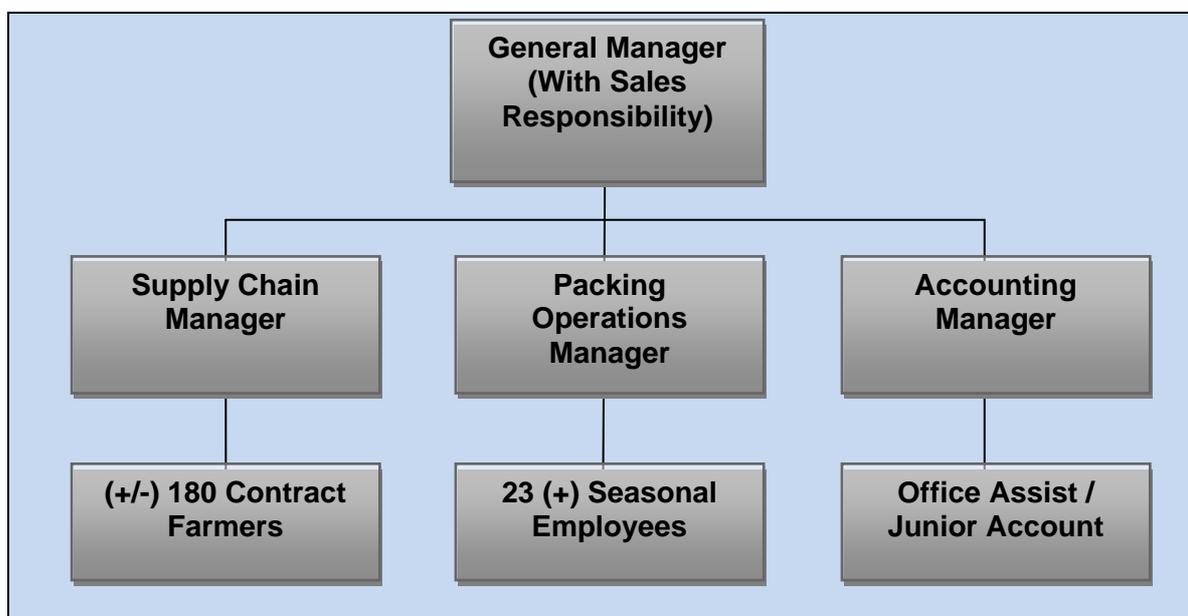
## 2. Company Ownership & Management

### 2.1 Legal Status and Ownership

The financial model developed for the vegetable packing business (hereafter referred to as Vegco) assumes that ownership will be held by a private investor or private investment group as a corporation. Using a corporation ownership model will allow the firm to enjoy a 10% tax rate on income. This compares to a 20% tax rate if Vegco was to be owned as a non-corporate entity for example registered to an individual.

### 2.2 Management & Labor

The organizational chart below illustrates the human resource needs of Vegco. The human resource model assumes that the General Manager will also have the responsibility of market development and sales. This is an extremely critical position; however, of equal importance are the other key positions of Supply Chain Manager, Packing Operations Manager and Accounting Manager.



The Supply Chain Manager will work with approximately 180 farmers (each farm production about 1.5 HA of vegetables). It is the responsibility of the Supply Chain Manager to ensure that specific varieties (preferred by the market) are produced and delivered to the packing house on a weekly schedule agreed upon with the farmers. The Supply Chain Manager is also responsible for transferring improved technology and farming methods to farmers and maintaining a strong relationship between the farmers and Vegco. It is envisioned that the Supply Chain Manager would have a degree in agriculture with significant experience in vegetable crop production and possess strong management skills.

**Packing System  
Technology and Labor  
Requirements**

The number of seasonal employees at the packing house will (for a large part) be determined by the level of technology of the packing line. If the business operates with sorting lines that use technology such as cup sizers, optical color scanning, and other modern technologies, fewer employees may be required. On the other hand, the packing system could be developed with less sophisticated technology and utilize more people than the 23 employees currently envisioned. Using less sophisticated technology in the packing line would decrease fixed capital costs, but would increase variable costs through increased labor requirements.

The Packing Operations Manager will oversee all activities within the packing plant, including receiving raw product, pre-cooling, sorting, grading, packing, and managing the cold stores. Additionally, the Packing Operations Manager would work closely with the Supply Chain Manager and General Manager to schedule production and packing to meet market demands and optimize market timing. The Packing House Manager will supervise a workforce of at least 23 individuals. Most of these employees will work on the packing line, sorting, grading and boxing the vegetables. This level of staffing assumes that the packing house is running only one shift. Additionally, the Packing House Manager will supervise the forklift driver who loads the trucks, the receiving of raw product, and manage the flow of product through the cold stores.

The Accounting Manager will be tasked with overseeing the settlement of all supplier accounts, as well as managing receivables from supermarkets and wholesale agents. This is a time-demanding task, as the Vegco model

anticipates that there will be at least 180 individual farmers providing product to the business, and each of these accounts will need to be tracked and settled individually. Additionally, Vegco will purchase inputs from a variety of suppliers, including box manufacturers, pallet providers, etc. Salaried workers and hourly payroll will also fall under the responsibility of the Accounting Manager.

On the receivable side, the Accounting Manager will oversee settlement of sales to approximately 4 - 6 supermarket buyers located throughout Kosovo, as well as wholesale agents moving the company's product through wholesale markets in key cities such as Pristina, Prizren, Pejë/Peć, and other locations.

Given the Accounting Manager's breadth of responsibilities, it is assumed that the office assistant noted in the organizational chart (above) will support the Accounting Manager in carrying out daily responsibilities. This will also build redundancy into the system to ensure that the business will operate smoothly in the event that the Accounting Manager left the enterprise without fully transitioning job responsibilities to a new employee.

### 3. Vegetable Supply Chain

#### 3.1 Market Volume of Selected Products

The Vegco model assumes that the business will purchase approximately 6,150 MT of vegetables annually from farmers. Figure 2 (below) examines Kosovo farm output for selected vegetables in 2006 and 2007, along with projected output for Vegco in 2010.

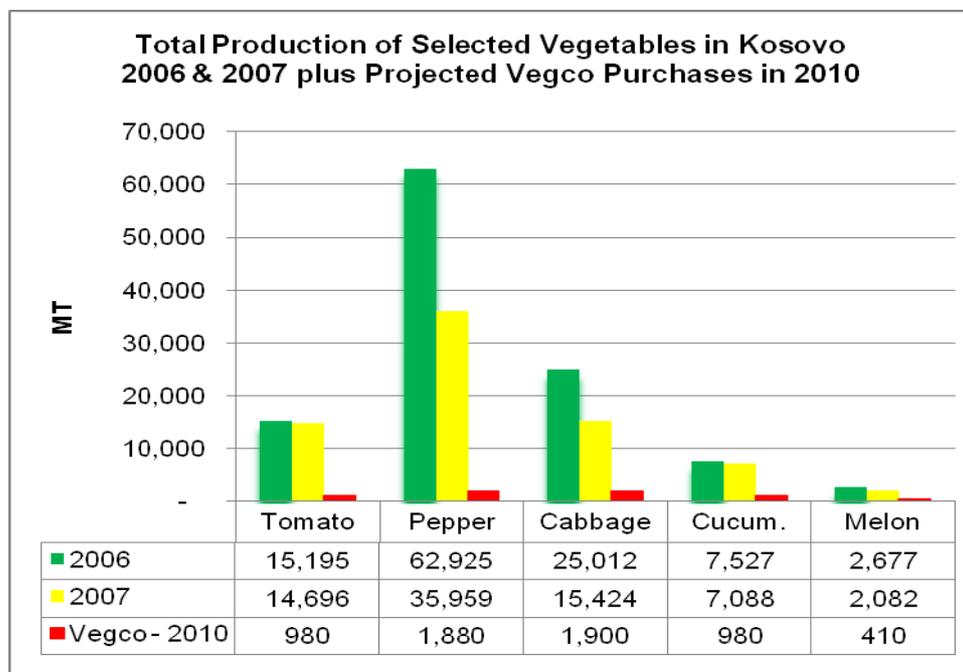


Figure 2

Based on projected 2010 output, Vegco will supply approximately 7% of all tomatoes produced in Kosovo, 4% of the peppers, 9% of cabbage, 13% of cucumbers and 17% of melons (see Figure 3).

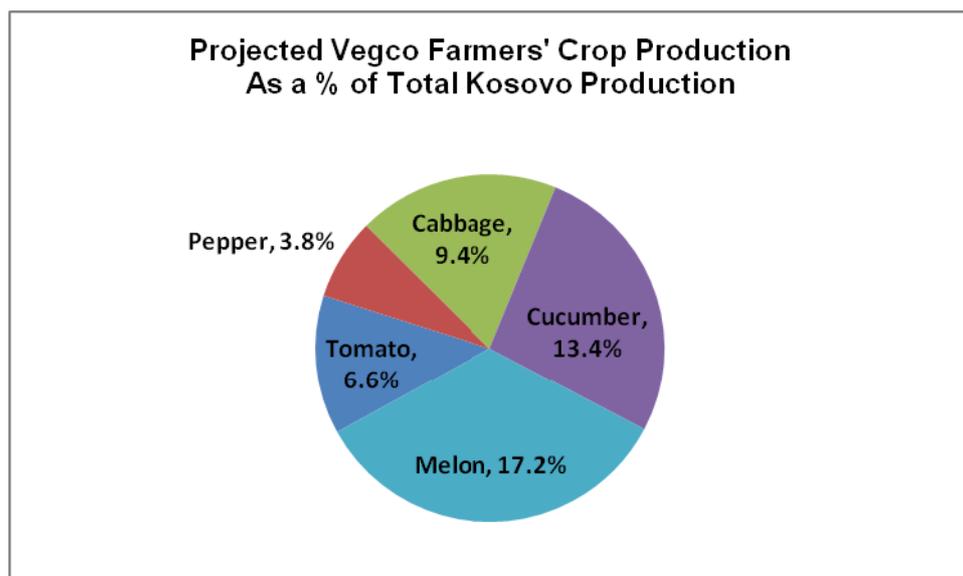


Figure 3

Vegco will be a major player in the Kosovo vegetable market, particularly in light of the fact that the volumes of production indicated in Figure 2 represent total output, not just products sold.

Products such as melons provide a very attractive margin for the business, but it is probably not realistic to exceed 400 – 500 tons of sales, as production above these levels could flood the market with product and drive down price. At the current level, Vegco is capturing 17% of the melon market, which is a significant amount.

Several of the Macedonian vegetable packing businesses that were interviewed during the preparation of the Vegco business model indicated that they were shipping about 20,000 tons annually. Products included tomatoes, cucumbers, onions, as well as other vegetables. These packers had the advantage of exporting their products to markets throughout the Balkans, as well as Hungary and Russia. Macedonia is an earlier producer, and can export into cooler (later) production areas such as Kosovo before local producers can supply the market. Once Kosovo starts producing large volumes of summer vegetables, it is likely that they will become more cost-competitive relative to Macedonian producers, given transportation cost savings. This assumes that yields and on-farm costs would be similar between the two producing areas.

### 3.2 Farm Production & Contracts

On-farm yields in Kosovo are (on average) low, relative to potential yields. Vegco's field department, headed by the Supply Chain Manager, will work with farmers, introducing new technologies and cultural practices to increase yield and quality. Figure 4 (below) compares the average yield for selected crops in Kosovo in 2006, with the gains<sup>3</sup> that should be achievable through technical support to the farmers from Vegco.

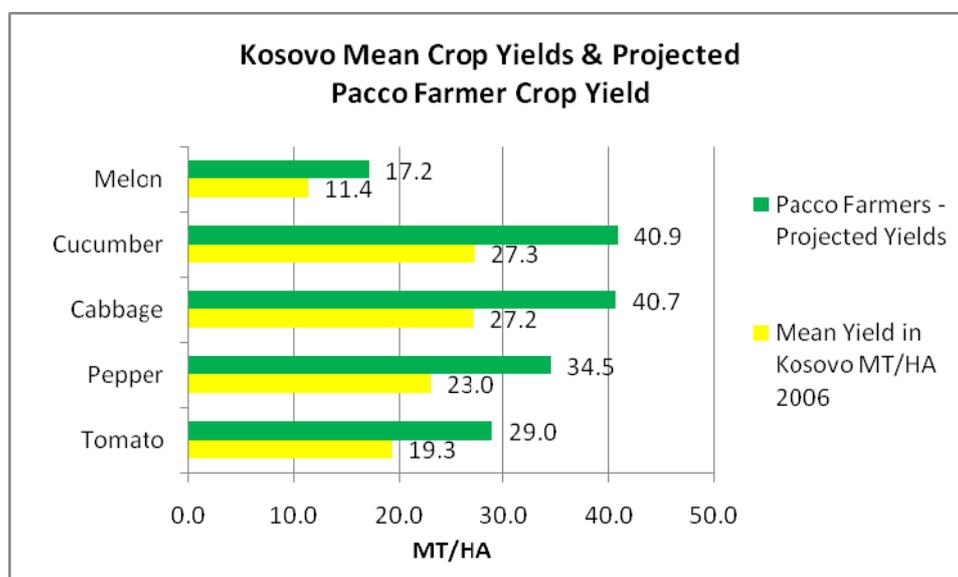


Figure 4

It is in Vegco's best interest to provide some level of technical assistance to farmers. This may include working with input suppliers, donors the Ministry of Agriculture and other partners, to encourage the use of technologies such as improved varieties, plastic tunnels (to extend the growing season), drip irrigation, improved fertility management, and the safe use of agricultural chemicals.

<sup>3</sup> Figure 4 shows a 50% yield increase for Vegco farmers over the 2006 national average.

With the target to pack and sell 6,150 tons of product, Vegco will need to accurately estimate the yields and area that it will require to produce this volume. To do this, managers first need to estimate yield, and then multiply this figure times contracted hectares to achieve the desired output volumes. The product of this calculation will provide the gross tonnage produced. From this number, Vegco's managers need to estimate the percentage of the gross tons that will be sold to Vegco and the percent that will be sold to food processors. For the purposes of the Vegco model, it is assumed that 67% of farm production will be sold to Vegco and 33% of farm output will be sold to food processors or returned to the grower (as non-marketable product) so they can sell it on the local market.

Table 1 shows the estimated yield per hectare needed to meet Vegco's input requirements, the tons of production that will be sold to food processors and the tons that will be sold to Vegco. Assuming that 33% of total output is sold by the farmers to food processors and 67% is sold to Vegco, farmers would need to plant 272.9 hectares, producing 9,180 MT of total product, of which 3,030 MT would be sold to processors and 6,150 MT would be sold to Vegco.

<b>Product</b>	<b>Projected Yields (MT)</b>	<b>Total Crop Area</b>	<b>Total MT Produced</b>	<b>Tons Sold to Food Processors</b>	<b>Tons Sold to Vegco</b>
Tomato	29.0	50.5	1,463	483	980
Pepper	34.5	81.4	2,807	926	1,880
Cabbage	40.7	69.7	2,836	936	1,900
Cucumber	40.9	35.8	1,463	483	980
Melon	17.2	35.6	612	202	410
<b>Total</b>		<b>272.9</b>		<b>3,030</b>	<b>6,150</b>

In order to reach the targets illustrated in Table 1 with a consistent high quality product, Vegco will most likely need to supply farmers with improved seed varieties. By providing farmers with seeds and working with the farmers to develop a planting and delivery schedule, the Vegco Supply Chain Manager can help ensure that product will flow to the plant in an organized fashion.

Hybrid and vegetable seed is a significant cost to the farmer. Many farmers would prefer to plant old open-pollinated varieties or save seeds from the past year's crop rather than spending additional money for hybrid seeds. To ensure that farmers are using varieties preferred by the market, it is assumed in the financial model that Vegco will provide (on average) €300 per farmer to cover the cost of seeds and other selected crop inputs. The Vegco financial model assumes that the company will use a revolving line of credit to cover the (+/-) €55,000 seed cost, therefore the actual cost to the company will be the debt service on the principal. The financial model estimates that debt service for the seed cost will total approximately €2,400 (six month term at 8.75% interest).

Developing a workable contracting system to manage raw product deliveries and ensure that credit to farmers provided by Vegco is repaid is critical to the success of the business. Farmers have to believe (and be shown) that working with Vegco is in their best interest. As soon as farmers do not value their relationship with Vegco, they will start selling their produce through other market channels and Vegco will lose both its raw

product supply, as well as credit provided to the farmers. In some cases, Vegco may be forced to buy from farmers even when they do not want to. Purchasing raw product from farmers is (most likely) the only way Vegco will be able to recover credit payments provided to farmers for crop production. This credit will be deducted from the sales revenue (at the time of delivery) and the balance will be paid to the farmer.

### 3.3 Raw Product Delivery Schedule

Properly managing raw product flow into the plant and onto the market is an essential part of successfully managing the Vegco business. Table 2 provides a product delivery schedule that illustrates the number of tons per week of different vegetables that need to be delivered to the plant in order to service the market.

<b>Table 2: Vegco Raw Product Delivery Schedule (MT/ Week)</b>						
Month	Week	Cucumber	Cabbage	Tomato	Pepper	Melon
April	1	20				
	2	30				
	3	35				
	4	40				
May	5	40	50			
	6	40	100			
	7	40	200			
	8	40	300			
June	9	40	300	20		
	10	40	300	40		
	11	40	300	40		
	12	40	200	60		
July	13	40	100	60	60	20
	14	40	50	60	80	30
	15	40		60	120	30
	16	40		60	140	40
August	17	40		60	140	40
	18	40		60	160	40
	19	40		60	160	40
	20	40		60	160	40
Sept.	21	30		60	180	40
	22	30		60	180	40
	23	30		60	140	30
	24	30		60	120	20
Oct.	25	30		40	100	
	26	30		30	80	
	27	25		20	40	
	28	10		10	20	
<b>Total</b>	All	980	1900	980	1880	410

To accurately achieve these weekly targets, Vegco and its growers need to select specific varieties and planting dates that will deliver the vegetables within the desired time frame. All vegetables have days to maturity labels (after emergence). To estimate the planting date, the farmer will count backwards on the calendar the number of days to maturity noted in the seed information pack. Tomatoes generally have maturity periods between 75 – 125 days (depending on variety). Most market varieties are in the 100 – 110 day window. If, for example, a grower wants to deliver ten tons of tomatoes in the first week of June (this would require plastic tunnel production), they would need to have the plants emerging out of the ground approximately 105 days prior to harvest, or about 16 February. This would require growers to transplant plugs into the hothouse (plastic tunnels) and possibly provide a heat source for the first several weeks after planting when frost is a threat. Obviously, this type of early season production is more costly than open field production, which can start in early April. For the additional expense associated with early or late season production, farmers will need to receive significantly higher prices for their products.

Figure 5 provides a graphic description of the product flow into the packing plant. As can be noted, cucumbers are the first product to arrive (produced in plastic tunnels). Delivery of early season cucumbers begins on or about 1 April. Following cucumbers, cabbage harvest begins in early May. The graphic shows a spike in cabbage packing activities at Vegco, which lasts between the last week of May and the third week of June. Early season cabbage can be profitable, but once the bulk of the crop hits the market, prices fall precipitously and remain low even through the winter months.

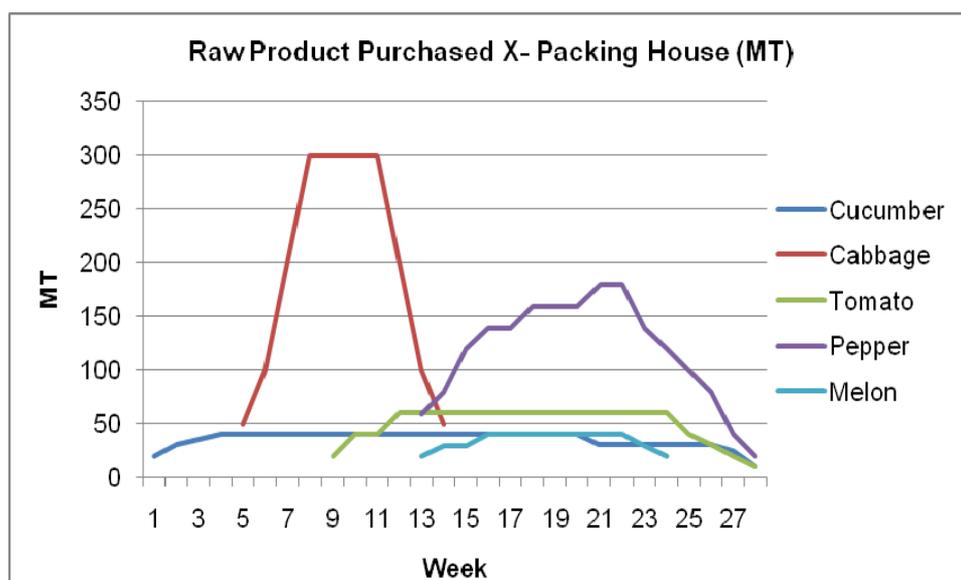


Figure 5

Early season tunnel tomatoes begin coming into the packing plant in early June. By July, the volumes have increased, and Vegco consistently delivers about 60 MT/week to the market. There are a large number of tomato producers in the southwest region of Kosovo, and in the event that Vegco wanted to increase tomato volumes, contracting additional deliveries would most likely not be a problem.

Peppers are the single largest volume product packed at Vegco. Over the sixteen week pepper harvest season, running July through the end of October, the company expects to pack 1880 MT. Again, early and late season production would rely on plastic tunnels to protect the crop from rain, frost and other environmental threats. Without plastic

tunnels, it is likely that the harvest season would be limited to mid-July through early September – a loss of seven to eight weeks output.

### 3.4 Producer Prices & Revenue

The price paid to farmers for raw product is one of the critical factors in determining profitability for Vegco, as well as the economic survival of the farmers. Vegco needs to make a profit, but at the same time, it needs to provide farmers with a financial incentive significant enough to earn their loyalty.

In meetings with farmers in Krusha village, they indicated that a fair price for their products (on average) would range from ten Euro cents/kilo for cabbage, to €30 cents/kilo for melon. Figure 6 shows the prices that farmers stated they would be fair for the products specifically packed for Vegco. These are average prices, and Vegco would need to pay more for early and late season product, and probably pay a bit less for mid-season product.

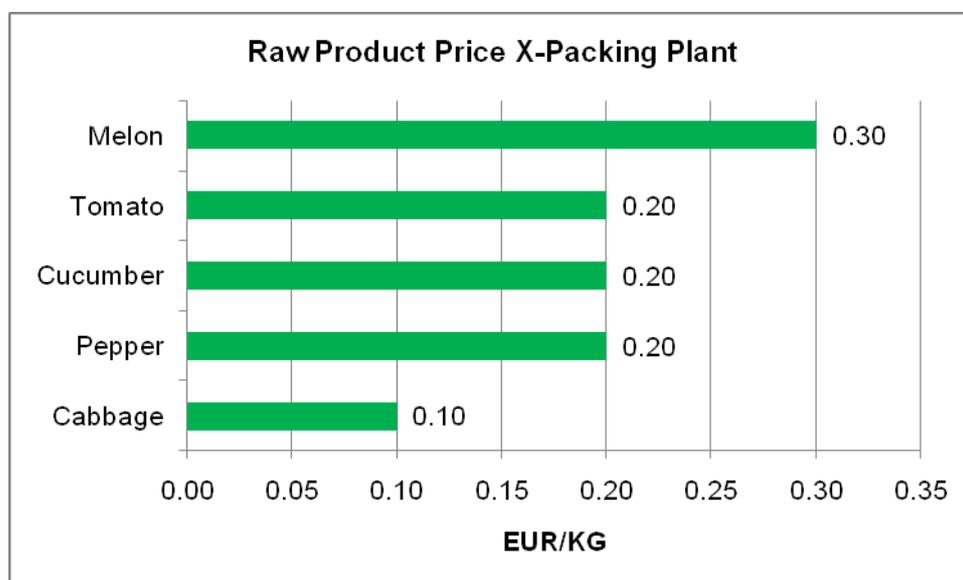


Figure 6

Based on expected yields and average price paid FOB packing plant by Vegco, Figure 7 illustrates the average gross revenue generated per crop per hectare.

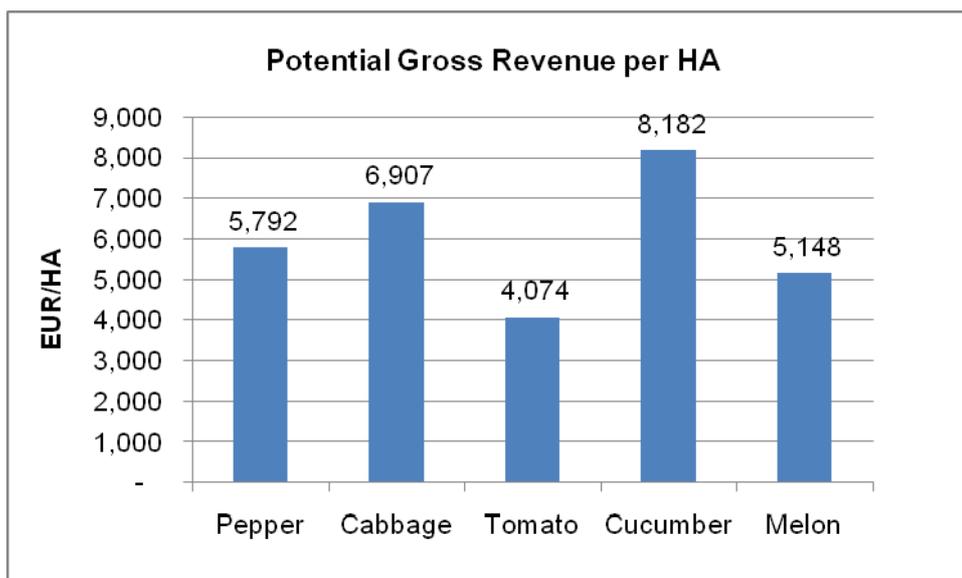


Figure 7

Assuming that each of the 180 farmers working with Vegco would produce approximately 1.5 hectares, gross income values for the farmers would be expected to range between €6,100 (for dedicated tomato growers) and €12,273 (for dedicated cucumber growers). Farmers who produce early and late season crops could expect significantly higher gross incomes, as market prices for products in the early and late seasons are well above the market average price.

Payment to farmers for raw product is Vegco’s single largest variable cost. It makes up approximately 52% of the firm’s total variable costs. Figure 8 illustrates the weekly projected payments to farmers by Vegco. Payments peak in weeks 21 – 24, when volumes are high and prices have begun to recover a bit from mid-season lows.

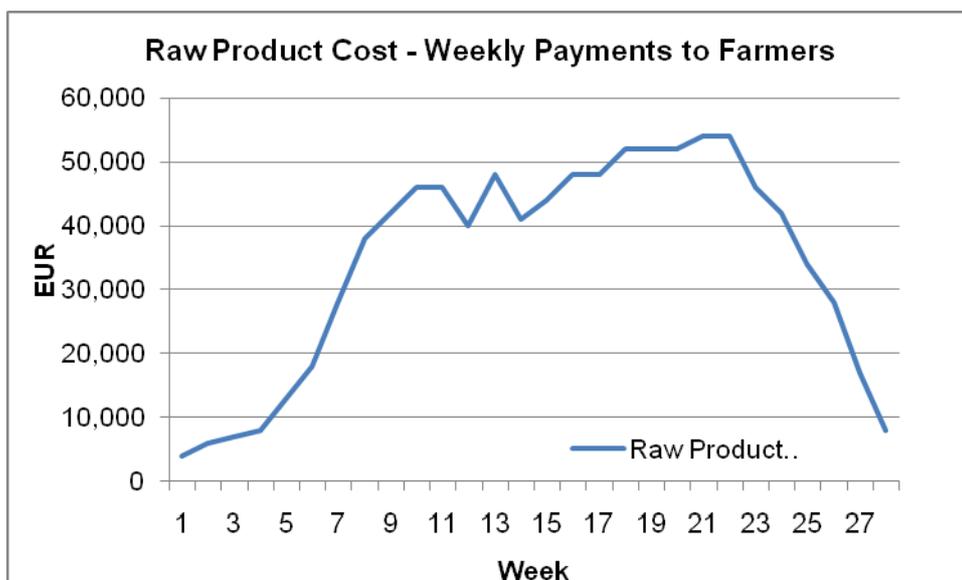


Figure 8

In the average week over the 28 week season, Vegco is projected to provide payments to growers in the amount of €38,600. The weekly range of payments runs from about €53,000 per week at peak season, and approximately €5,000 per week in early season when volumes are at their lowest.

Settlement for weekly payments will be made through wire transfer from Vegco's local bank account to the growers' accounts. This is expected to take place within 14 days after the farmer delivers product to Vegco's loading dock.

## 4. Packing House Operations

### 4.1 Products

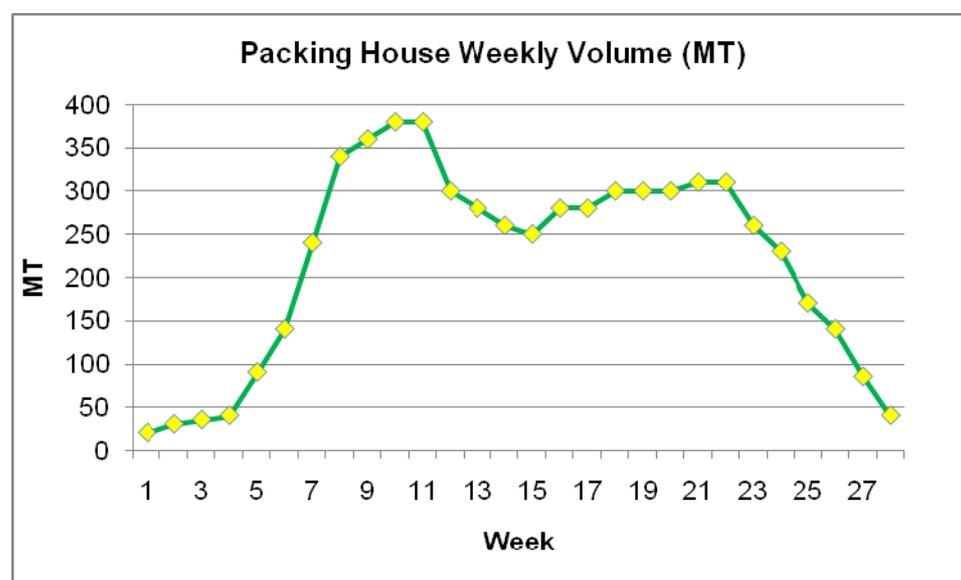
The Vegco packing house produces six different products, each with its own distinctive box and label. Table 3 identifies the box size for each product, and the number of boxes projected to be produced each year.

Product	KG per Box	Boxes Packed per Year
Tomato	6	163,333
Pepper	7	268,571
Cabbage	10	190,000
Cucumber	10	98,000
Melon	20	20,500
Total	na	740,404

The Vegco business model assumes that the packing house will only purchase product of marketable quality. This will require the Packing Operations Manager to track units of produce delivered by individual farmers throughout the sorting process. Product received will be weighed twice – first at the loading dock in the presence of the farmer or representative, and again after the produce has been

sorted to determine the weight and percentage to be retained (purchased) by Vegco. The weight and percentage of product that is designated sub-standard grade will be disposed of at the grower's discretion.

Off-grade product not packed for the fresh market can be either delivered directly to a food processor or returned X-packing plant loading dock to the grower. It is assumed that settlement for any product delivered to a food processor would be handled directly between that company and the grower.



**Figure 9**

Figure 9 examines the weekly pack volume at Vegco in metric tons. There are two crests in every year's production. The first peak is induced mainly by the cabbage season in which Vegco packs approximately 360 MT/week. A small part of this production also includes cucumber and early season tomatoes, but the vast majority is cabbage. The second peak occurs in late August and the first half of September, when tomatoes, peppers, and melons are being harvested along with smaller quantities of cucumbers. On average, Vegco is projected to pack 26,433 boxes of various vegetables per week, or about 4,407 boxes per day (based on a six day work week).

### **The Vegco Business Financial Model**

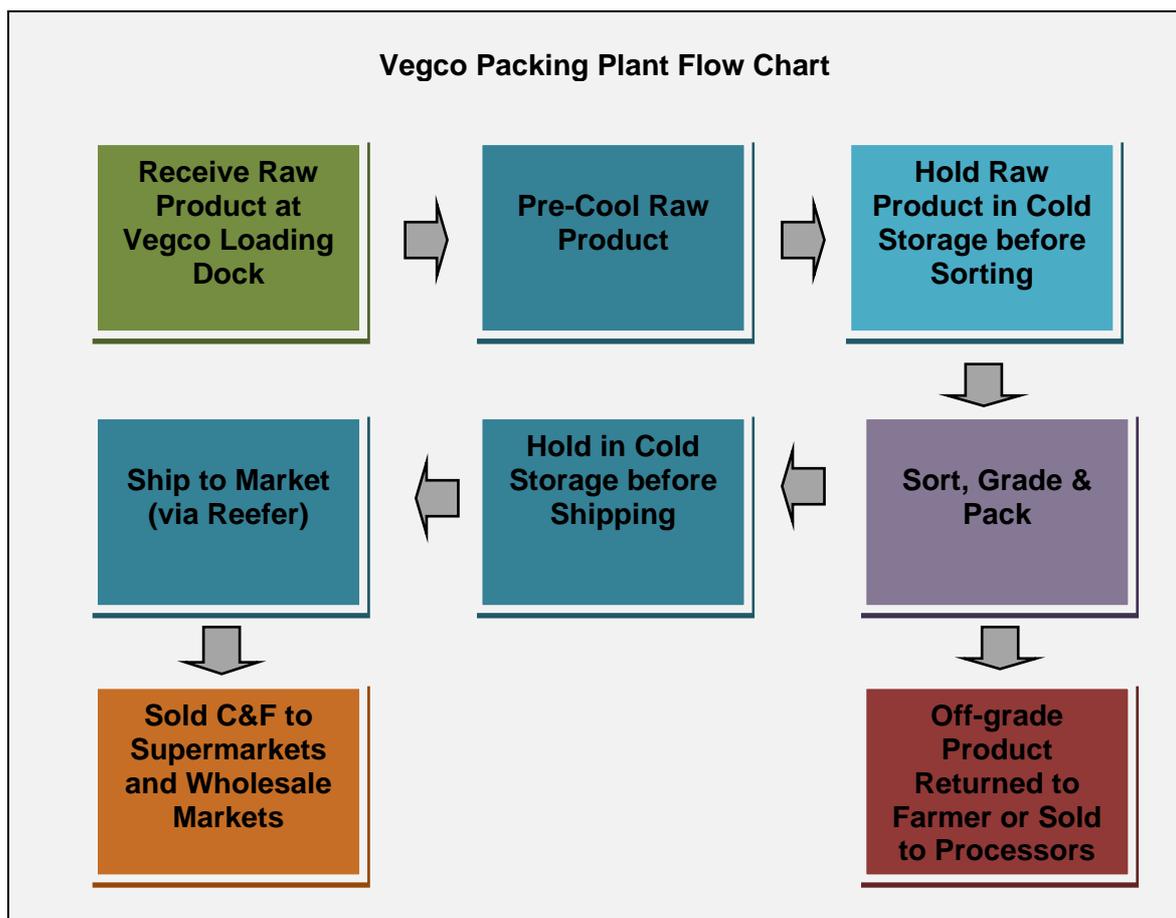
The Vegco financial model assumes that the packing house will receive and sell five different products. These are only representative products for the purpose of financial modeling. It would be possible for the packing house to purchase, pack and sell other products such as broccoli, cauliflower, or other cool season vegetables that would not compete for packing house cold storage space during the mid-summer season.

Additionally, on the Vegco financial model (an Excel model that accompanies this report as a separate file), users can replace any of the five example products with other products, volumes and prices, as well as other variables, and recalculate the company's financial performance based on the new product mix. It is important to note that the accompanying financial model needs to have a value in the "Volume Purchased" assumption, as well as other key assumptions such as purchase price. These values can be any number greater than zero.

For example, if the user wanted to examine how the business would perform if cucumbers were eliminated from the product mix, one could reset the "Volume Purchased – Cucumber" value from 980,000 (kg) to 1 (kg). This would effectively eliminate any financial effect that cucumbers had on the business.

## **4.2 Process, Systems and Management**

The following flow chart illustrates the product flow through the packing plant. The first box shows the product being received at the loading dock. At this point, the product is weighed and a weight receipt is provided to the grower. The next box shows the product being moved into the pre-cooler. This process removes field heat and brings the temperature down before being placed into the cold store. Before sorting, product is held in cold storage to maintain quality. Product will remain in cold storage until orders are received from the market. Once an order is received, the product is taken out of cold storage, sorted, graded, packed, and moved into the second cold store - remaining there till a truck is ready to take it to the buyer.



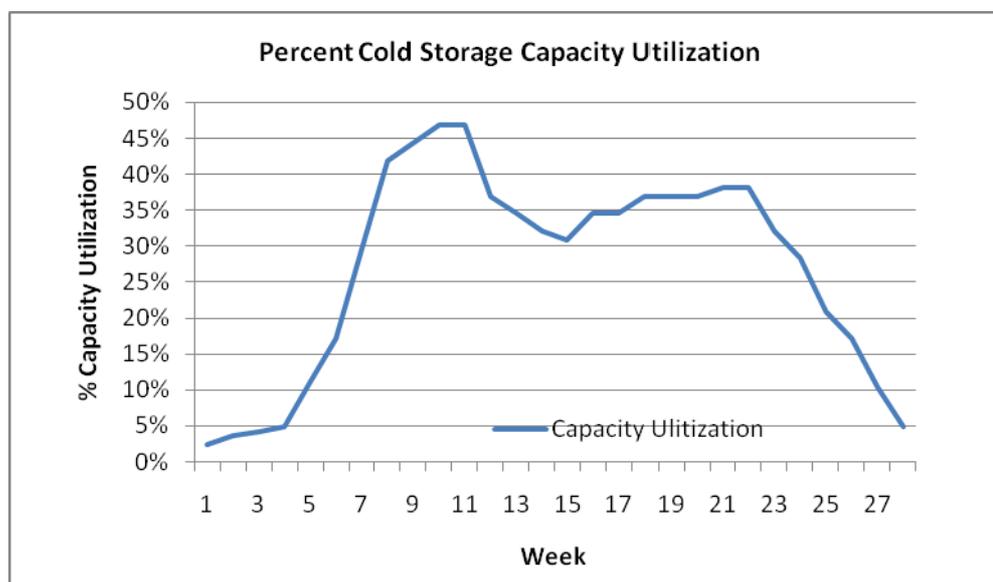
All product is expected to be sold C&F (cost and freight), delivered to the buyer with payment in 30 days. The diagram above also shows off-grade product being taken out of the flow at the sorting and grading point. From here, the off-grade product can be shipped to a food processor or returned to the grower. In either case, the cost of transporting the off-grade product from the packing house to its next destination is borne by the farmer or processor (not Vegco).

It is important to note that farmers will be held to their delivery schedules. If a farmer has an agreement with a packing house to deliver 10 tons of tomatoes/week, the packing house will have the authority to forego additional purchases of tomatoes in that week once they have met the 10 ton target. If the market demands more product, then the packing house would be willing to purchase more from the farmer. The delivery target is designed to help farmers plan their planting and harvest dates, and to ensure a rational flow of product through the packing plant to the market, avoiding any congestion that may lead to loss of product quality and loss of revenue for both the farmer and Vegco.

### 4.3 Cooling & Storage

Cold storage capacity is one of the limiting factors in efficiently running the packing operation. Assuming that at the end of each day (midnight) the last truck has left and the cold store rooms are empty, the projected cold store capacity of 540 cubic meters (two cold rooms each at 270 meters) should allow for a peak capacity utilization of about 46% (see Figure 10). This figure can be lowered further if just-in-time delivery schedules can be implemented, allowing product to spend less time in cold storage. However, given

the realities of logistics management in Kosovo, it is probably not realistic to assume a just-in-time delivery system can be implemented at Vegco during the first five years of operation.



**Figure 10**

The reality of operating Vegco will be that farmers deliver product after sorting crews have gone home or trucks have left for market, trucks do not show up when they are supposed to, and market orders do not arrive as planned. All of these factors will contribute to a slow-down in product through-put and will put additional pressure on the cold storage facility. As noted in Figure 10, only about 46% of the cold store capacity is used (under an optimum operating model). Since the business will not have the benefit of operating under perfect conditions, having 54% excess capacity in the cold storage system will reduce operating risk and allow for future expansion.

In the event that Vegco completely runs out of cold storage room, it would be possible to temporarily hold product in the insulated pre-cooling room. This room would provide an extra 180 cubic meters of storage capacity.

KPEP's consulting team was provided three quotes for the cold storage rooms at Vegco. Two were from equipment providers in Macedonia, and the other was from Kosovo. The Kosovo offer was the lowest, with a total cost of approximately €55,000 for the two cooling rooms and pre-cooler, including insulated floors, wall and roof panels, insulated doors, compressors, and electrical controls (complete units installed). The Kosovo-based firm, Elwing, has experience in cold store construction/insulation and appears to be a good partner. They have also worked with KPEP in the past on other USAID activities and it is assumed that they have passed through the USAID vetting process. This could be relevant if KPEP provided a grant for cold store fixed capital costs to Vegco's investors.

#### **4.4 Trucking & Handling**

The produce packed at Vegco will be shipped to market in trucks. Preferably, these will be refrigerated trucks (reefers). Figure 12 shows the expected number of trucks shipped per week from Vegco to various markets over the 28 week season. It is assumed that the average truck will carry 22 tons of produce. The Vegco financial model assumes that the total annual cost for trucking will be €190,645.

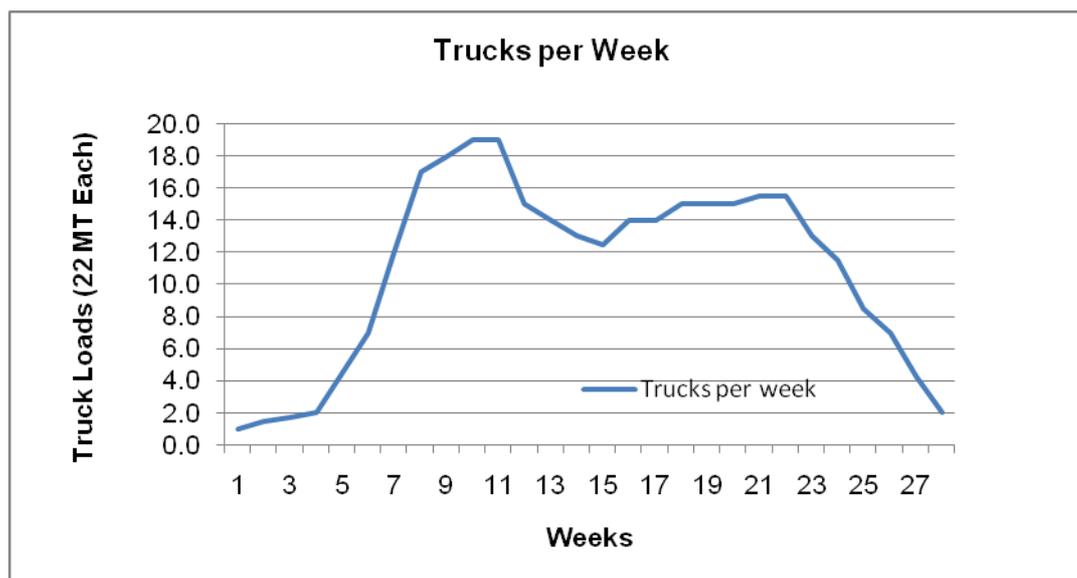


Figure 11

The Vegco financial model assumes that the average cost per truck is €300 from the packing plant to market. The actual variation in trucking costs will be determined by their final destination, as costs to markets in the Prizren region are expected to range in the €100 – 150 amount and trucks to Pristina and beyond are expected to be around €300.

Table 4: Trucking Cost per Box	
Trucking (Packing House to Market)	EUR/Box
Tomato	0.131
Pepper	0.341
Cabbage	0.284
Cucumber	0.170
Melon	0.341

The Vegco financial model calculates a unit cost of transport and handling per box. These values are noted in Table 4.

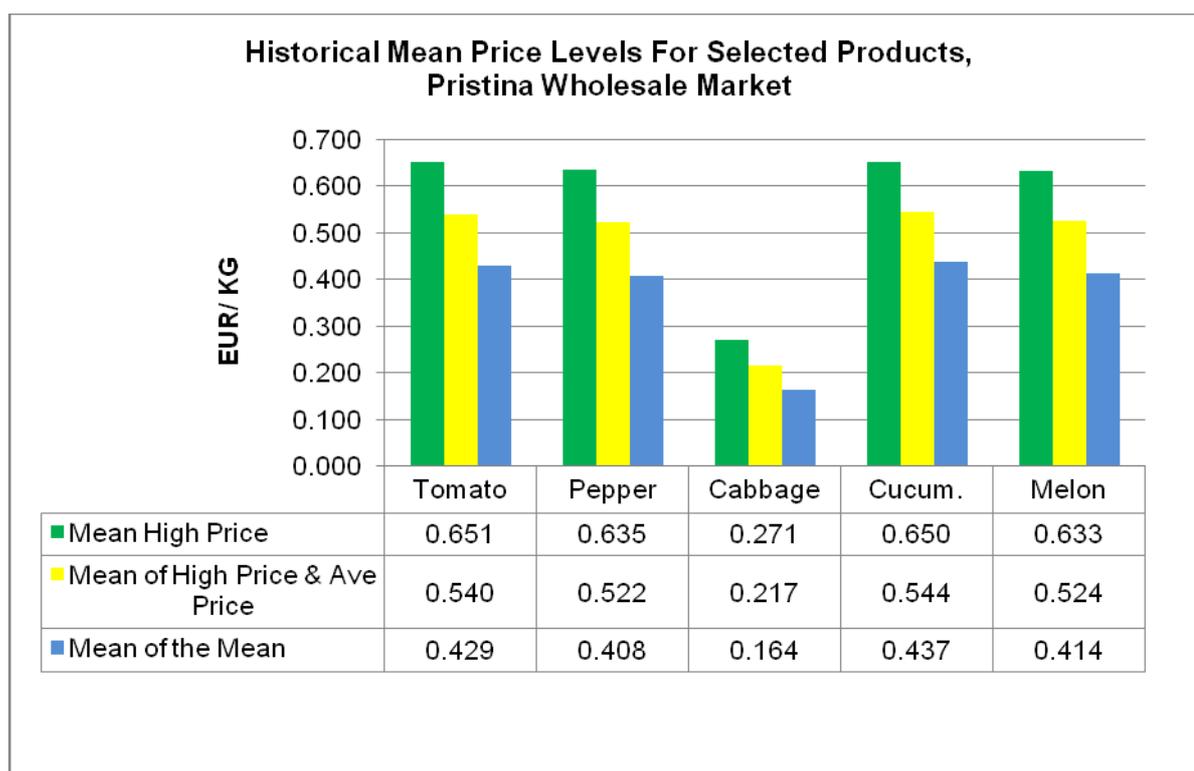
Trucks will be loaded at the packing plant using a forklift. All product shipped will be palletized and strapped with five meters of strapping on each pallet (five rings). Cabbage and melon pallets are expected to be 2.25 meters high; pepper, tomato and cucumber pallets will be loaded to 1.8 meters high. The actual number of boxes per pallet varies by product.

Trucking costs do not include unloading. It is expected that the buyer will pay any costs associated with unloading trucks.

## 5. Sales & Markets

### 5.1 Price History

The single most important variable in determining profitability of Vegco is the selling price of the finished product (sorted and packed vegetables). The Vegco financial model utilizes Pristina wholesale market historical price data as the basis for its selling price assumptions. This price data was collected over a three year period (2006, 2007 and 2008) by the Swiss/Danish Inter-Cooperation Project of Kosovo.



**Figure 12**

The wholesale market price data noted in Figure 11 shows three levels of prices:

- The mean high price is the maximum average price achieved for a commodity over Vegco's marketing period for that commodity.
- The mean of the mean price (the lowest price level) represents the overall average price achieved for the commodity over Vegco's marketing period.
- The mean of the high price and average price (the mid-level price value) is the average price of the mean high price and the mean of the mean price.

It is important to note that in generating the prices, the Vegco model uses the weighted average of the selling price relative to the volume of product that is scheduled to be marketed in a given month. The weighted averages were then used to generate the average selling price for the selected commodity (see Annex I for details).

Once the base price for a commodity was determined using the above process, the Vegco financial model then reduced this price by 10%. This was done because Vegco will not itself be a wholesale market trader. They will use selected traders as commission agents in specific markets. It is assumed that these traders will operate on a 10% commission.

Using the Vegco model as an analytical tool, it is possible to insert the three different price scenarios identified in Figure 11 into the Selling Price Assumption to determine the profitability of the business at the three different price levels. The base case level used in the financial model is the mean of the high price and average price (the middle price level).

## 5.2 Target Markets

Vegco will utilize two primary market channels to move its product. The first and preferred channel is direct sales to supermarkets. There are a number of supermarket chains beginning to operate in Kosovo, including MAXI, ARDI and others. Vegco can sign supply contracts with these firms to provide product on a seasonal basis.

While researching vegetable markets in Kosovo, KPEP consultants met with ABI and ELIF, a Prizren-based dairy and vegetable processing company. This firm has been operating as a food processor for over seven years and more recently entered the supermarket sector. It owns several large stores in southwest Kosovo. ABI and ELIF stated that they currently spend up to €9,000 per day purchasing produce at the local green market (wholesale market). They said they would be interested in working with a company like Vegco to source consistently high product directly from the packing plant.

The second market channel that can be employed is using wholesale traders in Pristina, Prizren, and other green markets to move product. A number of traders in the Pristina market have significant cold storage space available at their shops. These traders would have the capacity to receive product from Vegco and keep it cold (maintaining quality). Vegco needs to identify a small network of wholesale traders that it can work with on an exclusive basis at these markets. Discussions with wholesale traders in the Pristina market indicated that they are interested in receiving more produce from local sources. Vegco is in a good position to be a supplier to these trading companies.

Wholesale traders will need to purchase product below their wholesale selling price. To accommodate this, the Vegco model assumes that sales will be made to wholesalers at 10% below their selling price (traders will sell on a 10% commission). This should give them enough margin to operate profitably, as Vegco will deliver the chilled commodities to their trading locations in the city markets.

## 5.3 Market Timing & Competitive Forces

The primary competitive players in the Kosovo vegetable market appear to be Macedonian export companies that consolidate product from a large number of growers. These companies are primarily located in southern Macedonia along the Greek border. They buy product from the border region, but also buy from areas further north (later season) and ship this to markets throughout the Balkans and beyond. The Macedonian exporters are the primary competitors to Vegco, as they ship into Kosovo's market well into Vegco's packing season.

Turkey is another significant regional exporter of fresh vegetables. Kosovo imports product from Turkey, but most Turkish deliveries occur before or after the Vegco packing season. Nevertheless, Turkey is a low cost producer at the farmgate and if fuel costs remain low, they may find it economical to ship into Kosovo even after regional (local) harvests have begun.

The Vegco model has been developed for the domestic Kosovo market. It would be possible to modify the financial model to show the profit and loss associated with exporting to international markets; however, this would require accurate selling price information for the international target market, as well as an updating of the transportation costs.

There are some of key issues associated with exporting vegetables from Kosovo. Certificates of origin from Kosovo are not recognized by Serbia. This limits transport opportunities through Serbia. Additionally, Kosovo’s harvest season is relatively late and therefore does not occur when prices for vegetables in Europe are high.

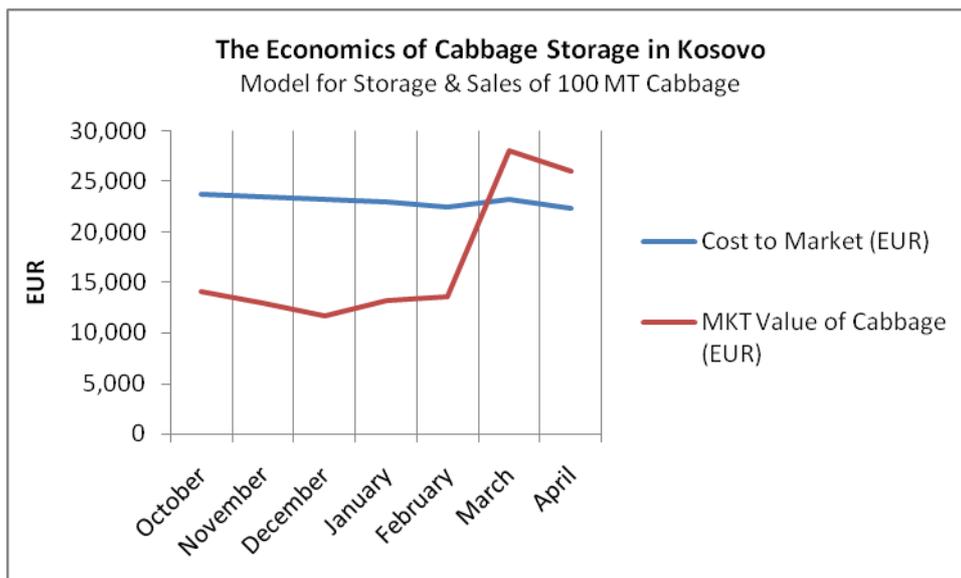


Figure 13

The Vegco packing plant has approximately 540 cubic meters of cold storage available. The financial model for the company assumes that packing and shipping season will end by late October. This provides an opportunity to purchase cabbage when market price is low, and hold it for five months in cold storage to resell when prices are high in March.

Month	Cost to Market (EUR)	MKT Value of Cabbage (EUR)	Profit or Loss (EUR)
October	23,748	14,000	-9,748
November	23,557	12,870	-10,687
December	23,191	11,640	-11,551
January	22,974	13,160	-9,814
February	22,507	13,500	-9,007
March	23,308	28,050	4,742
April	22,372	26,070	3,698

Figure 13 (and accompanying Table 5) provides an analysis of the economics of storing cabbage over the winter and selling it in early spring before the spring cabbage crop is ready for harvest.

The analysis assumes Vegco will purchase 100 MT of cabbage and hold it in storage. The cabbage has a loss rate starting at 1%/month and increases at the rate of 1%/month over a six month period. By the time the

cabbage would be sold in March (for example), 15% of the total product would not make market grade and would be considered a loss.

In Table 5, the column *Cost to Market* includes the cost of the cabbage, cost of cold storage electricity, packing and losses. The *Market (MKT) Value of Cabbage* column is the value of 100 MT of cabbage based on the average monthly price. The average price was calculated using the mean price recorded per month between 2006 and 2008 in the Pristina wholesale market.

Figure 13 (and Table 5) shows that the market price for cabbage remains low through February, then jumps from €13,500 to €28,050. The pattern for this price is probably because cabbage stores well at ambient temperatures in the winter. Farmers and traders can store cabbage in barns through the winter, but shelf life is limited. Once spring temperatures arrive, the product deteriorates quickly. Prices rise as volumes become scarce in late February and March. By April, new season cabbage starts to arrive on the market and drives the price back down. Given this price pattern, the best time to sell cabbage is in March. Selling the cabbage in March can generate a 20% return on the €23,308 investment, theoretically providing a net profit of €4,742.

## 6. Financial Analysis

### 6.1 Revenue Stream

It is projected that Vegco will generate €2.59 million in gross sales revenue based on the sale of five products. Figure 14 examines the revenue by product mix in percentage terms.

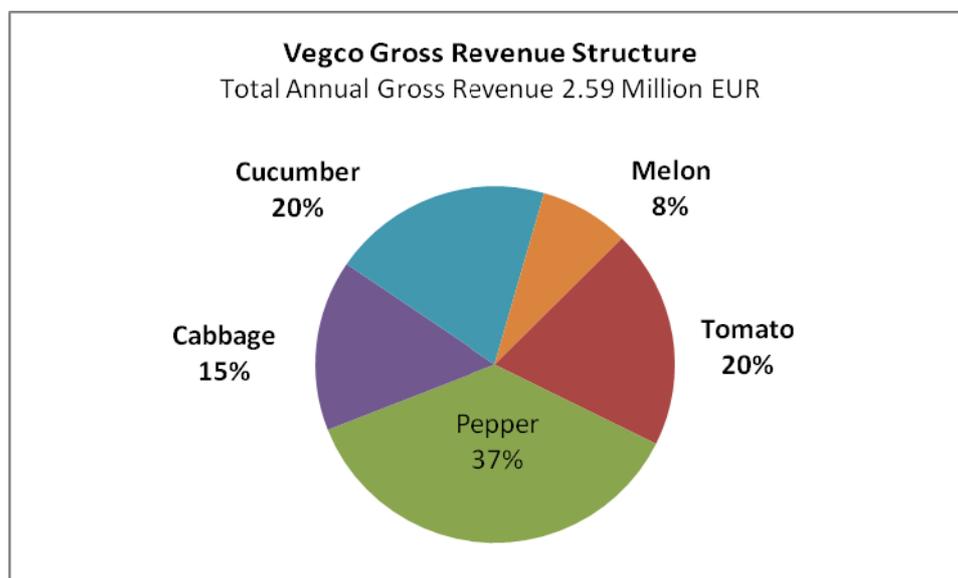


Figure 14

Sales revenues begin flowing into the company in early April with the start of the early cucumber season (see Figure 15). Under the current marketing plan, cabbage provides a significant boost to early season sales revenues. However, analysis shows that cabbage purchased at 0.10 Euro/kilo generates a loss of €0.013/box. This information is detailed in the financial model and is discussed in Section 6.6 (Unit Margins) of this document.

Without cabbage, Vegco's revenue stream would change dramatically. There would be far less revenue in May and June if cabbage was deleted from the product mix. It may be possible to leave cabbage in the packing plan, but to do this, Vegco would need to ask farmers to sell cabbage at a far lower x-packing plant price. If growers sold their cabbage at €0.08/kg, Vegco would only make an €0.08 margin on each box – barely above break-even.

If cabbage is taken out of the revenue stream, it may be difficult to find another crop that could fill an early season delivery window. There may be opportunities to produce fast-growing vegetables such as radishes in the spring for late May and June delivery. That said, it is unlikely that radish volumes would be high enough to keep the packing house operating at a high level of efficiency. Nevertheless, the packing house would still be open in the early spring packing cucumbers (from tunnel production) so adding radishes or another early season crop in place of cabbage could make sense.

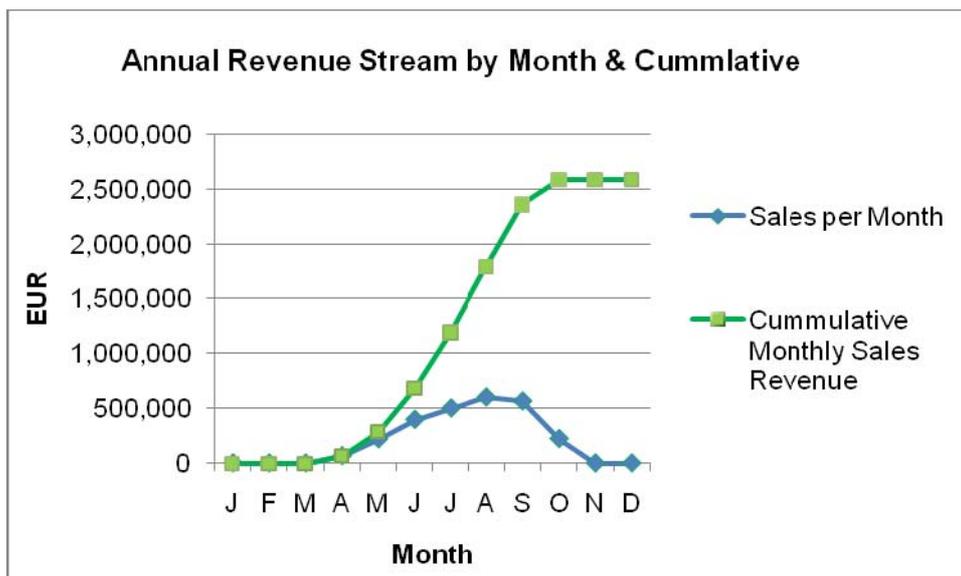


Figure 15

### 6.2 Variable Cost Structure

The total variable cost at Vegco for one year of operation at projected levels of output is €2.083 million. Figure 16 examines these costs in broad categories. Raw product is the largest single cost category making up near 52% of the firms variable cost.

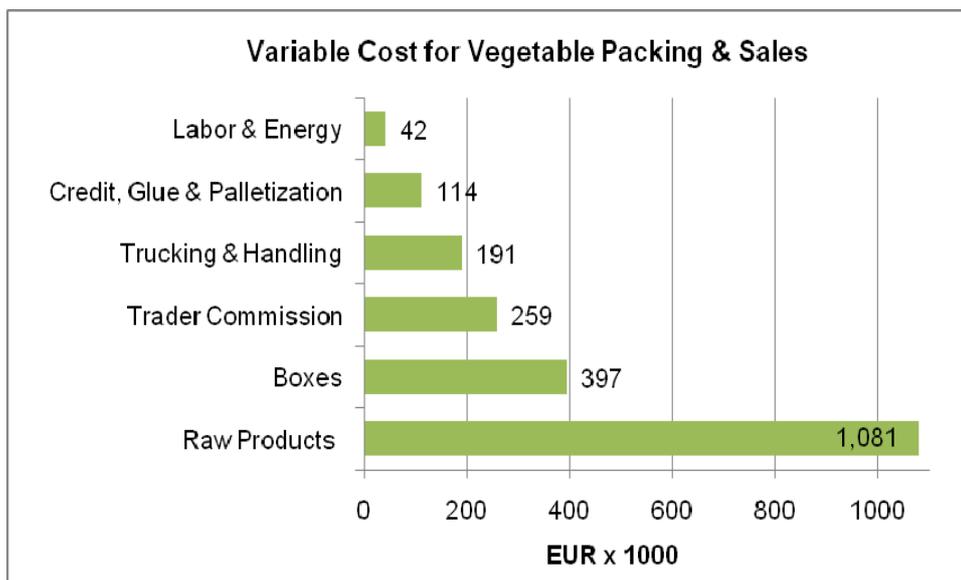


Figure 16

Packing materials (boxes) make up over 19% of total cost. When this is combined with palletization, strapping and glue, the total cost (for packaging materials and shipping aids) is over 24% of total variable cost.

### 6.3 Overhead Cost Structure

Vegco’s annual overhead cost is €106,512. This covers a variety of expenses, including salaried employees, office operations, transport costs (fuel and expenses to operate one light vehicle), and promotion, as well as insurance and maintenance. Overhead costs

per month run at €8,876. Since these are overhead costs, the rate per month is assumed to be constant.

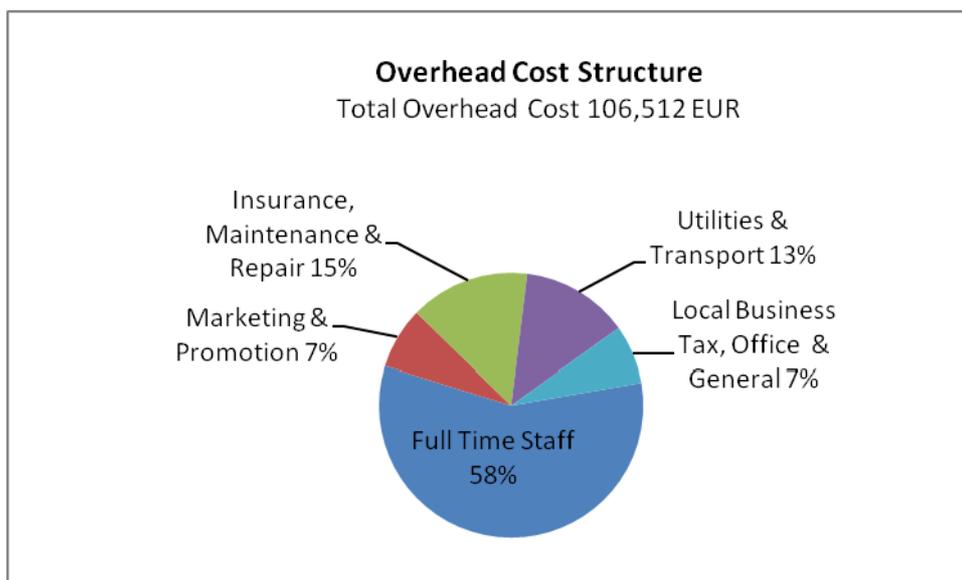


Figure 17

#### 6.4 Capital Investment & Return

The fixed capital cost for the project (including contingency) is approximately €778,000. Figure 18 shows that the equipment capital cost has been estimated at €472,000, or about 60% of total fixed capital.

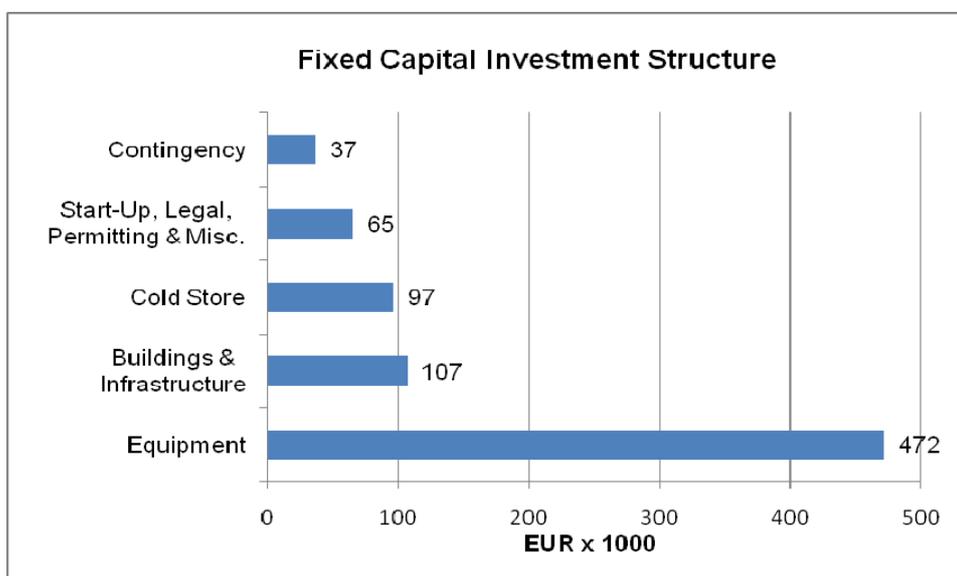


Figure 18

Within the Equipment Line Item, €350,000 are reserved for packing line equipment. This is the single largest capital cost item purchased by the business. The type of packing line and level of technology used is highly variable. Very simple packing systems using high levels of manual labor can be purchased from Turkish suppliers for about €100,000. More sophisticated systems that utilize computerized optical color scanning and computerized cup sizers (weighing and sorting by weight) can be purchased from Italian

suppliers. The cost of these systems would be expected to range from €300,000 to 400,000.

Because of the diversity in the types of products being packed, Vegco will most likely need two packing lines. These will be fairly simple systems that rely on a high degree of manual labor for sorting and packing.

It is important to note that the Vegco plant has been budgeted as a green-field development project. Prices are based on the purchase of new equipment (not used). The developer of the project may choose to reduce fixed costs by purchasing some used equipment such as forklifts, vehicles, and others. Additionally, there may be an opportunity to save money by utilizing an existing building that can be purchased at a lower cost than the €42,000 budgeted for building construction. Additionally, the model assumes that the investor will purchase land valued at €70,000 for the Vegco site. There may be opportunities to purchase land well below this cost and reduce the fixed capital investment.

The working capital budget for Vegco is estimated at €364,971. This is based on a system of payable and receivable settlements in 30 days. The working capital figure is based on an average monthly cash requirement for the company. In July, August and September, costs could exceed the €364,000 working capital level; in this time period, it may be necessary to draw on a credit line at a local bank to make the books balance. If buyers pay on time, the need for short-term credit will be minimal and short.

## 6.5 Cash Flow Analysis

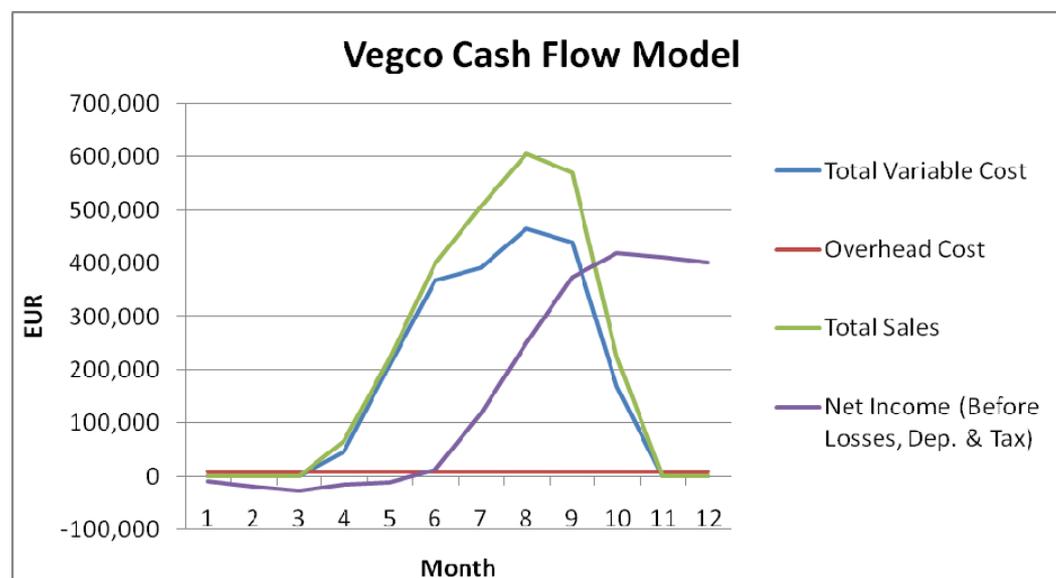


Figure 19

Figure 19 shows the monthly costs, sales and net income for the business. Income remains in the negative numbers until June, when sales volumes increase and revenues start to exceed the combined overhead and variable costs. Overhead costs can be noted at the bottom of the graph as a flat line of consistent value between months. The variable cost and sales revenue values are directly correlated to the sales volume of the firm and the raw product delivery schedule noted earlier in this report.

One of the challenges in managing cash flow is to increase sales and income early in the marketing year. This is a difficult problem in that Kosovo is at a disadvantage in terms of climate relative to lower-elevation producers in Macedonia who spend less on heating

greenhouses in the winter (for early season production) and who enjoy an earlier spring, allowing for earlier harvest dates. Nevertheless, based on the delivery dates provided to KPEP consultants by the farmers, the Vegco financial model appears to be profitable beginning in mid-June.

To achieve the projected cash flow in Figure 19, it will be critical to implement the delivery schedule outlined in Table 2 and Figure 5 of this document. Table 2 shows a fairly aggressive early season delivery schedule, with tomato deliveries beginning the first week of June. This means that tomatoes will absolutely need to be plug-planted (transplanted seedlings) in greenhouses or plastic tunnels in mid to late February. If farmers are not able to achieve the delivery schedule, annual sales revenue will decrease, as well as income.

## 6.6 Unit Margins

Table 6 examines the cost to pack in individual boxes of produce (noted as unit cost), and the losses associated with packing a given commodity. Together, these two costs make up the total unit cost for the product. The selling price in Table 6 is the average price per box that Vegco receives per unit. To calculate the net margin for a product, the unit cost plus losses are subtracted from the selling price. For example, in the case of pepper the selling price (€3.654/box) less costs (€2.690/box + €0.081/box) = net margin (€0.883/Box)<sup>4</sup>.

Table 6: Costs and Margins per Box (Rounded, EUR)					
Product	Unit Cost	Losses	Unit Cost + Losses	Selling Price	Net Margin
<b>Tomato 6 KG /Box</b>	1.946	0.058	2.005	3.240	1.235
<b>Pepper 7 KG/Box</b>	2.690	0.081	2.771	3.654	0.883
<b>Cabbage 10KG/Box</b>	2.230	0.067	2.297	2.170	-0.127
<b>Cucumber 10 KG/Box</b>	3.265	0.098	3.363	5.440	2.077
<b>Melon 20 KG/Box</b>	7.153	0.215	7.367	10.480	3.113

Overall, the Vegco business model shows the company to be making a profit with the assumed products, costs, volumes and prices. However, when analyzing the individual product lines for profitability, it can be seen that not all products are making a profit.

Figure 20 shows the unit margin (the margin per box) for each product sold. As can be noted, melon, cucumber, tomato and pepper all have a net positive margin per box, but cabbage shows a loss per box of €- 0.127 (also noted in Table 6). If Vegco does not pack cabbage, they will realize fewer financial and physical product losses in this category, and their after-tax income for the business will increase.

<sup>4</sup> The data in Table 6 has been rounded to the third decimal point. A more accurate interpretation of this table can be seen in the Vegco financial model by reformatting the cell to show additional decimal places.

It is estimated that Vegco's cabbage product line generates an approximate - €23,000 loss on sales. If Vegco can buy cabbage at a significantly lower price, it could reverse this trend and make a profit on the product.

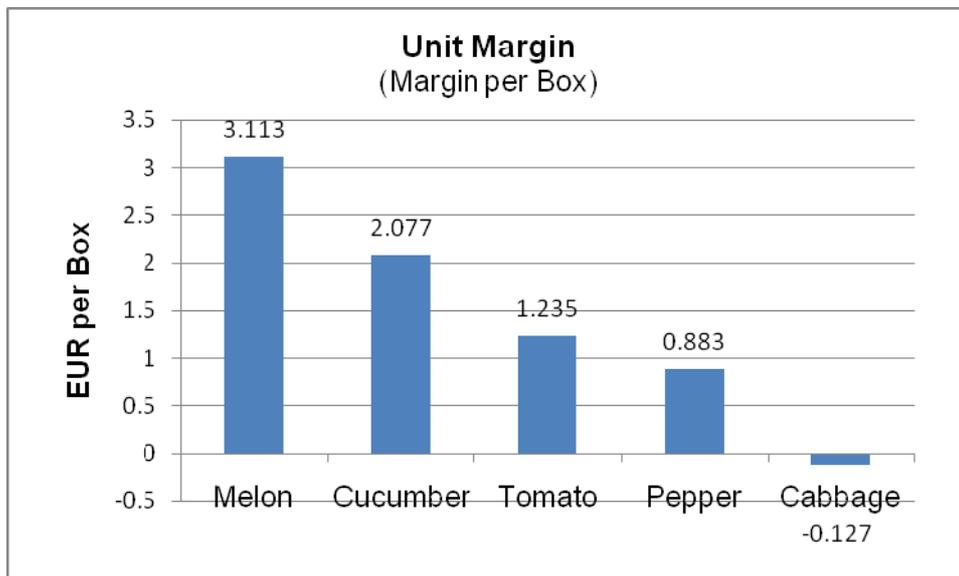


Figure 20

## 7. Risk Analysis

### 7.1 Supply Chain Risk

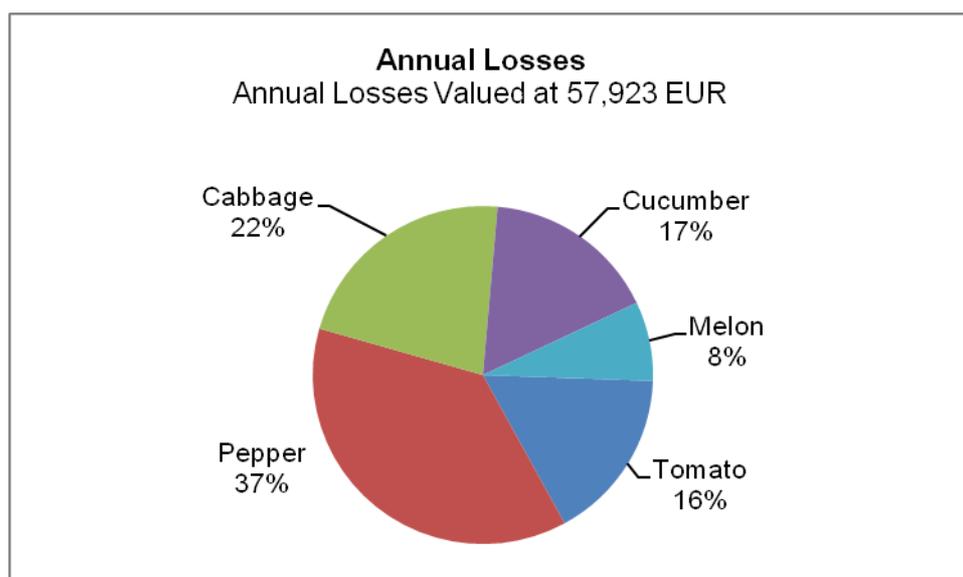
Perhaps the largest single risk to the Vegco business model is developing and maintaining a reliable supply chain. The Vegco investors will have over €778,000 committed to fixed capital investment costs that can only be recouped if adequate raw product flows through the plant. Additionally, Vegco will have cash advances to growers in the form of seed and other inputs totaling approximately €55,000 annually. The seed money is assumed to be made available through a line of credit with a local bank, but in the end, Vegco will need to secure that loan and therefore will be liable for the debt. If farmers do not honor agreements to deliver product on schedule, or if schedules are seriously interrupted due to weather or other uncontrollable events, Vegco's financial situation would be placed in jeopardy.

One way to reduce supply chain risk is to develop a strong link with growers by providing them with a consistent profitable return, and technical assistance to help them increase yields and income over time. The technical assistance part of the relationship is the easiest portion to implement. Consistently helping farmers make a profit can be a bit more difficult, as both Vegco and the farmers are price takers in the marketplace (not price makers).

### 7.2 Process & Handling Risk

Processing and handling risk in the Vegco model is moderate. Once the product is delivered to the packing house, it is placed in cold storage and can be held there for several days before serious issues develop (including running out of cold storage space).

Vegco will only be buying vegetables that are of marketable grade (quality). This will reduce a significant amount of risk, as the company will not be saddled with a large percentage of product that can only be sold at low prices to industrial processors.



**Figure 21**

The Vegco financial model does assume that there are annual handling losses. In the base case, the model shows 3% of the total product purchased will be lost as a result of truck delays, theft, mishandling, etc. This is probably a realistic level, given the fact that

Vegco will be calculating its purchase volume from the farmers after the product has been cooled and sorted. Nevertheless, even at just 3% losses/year, Vegco assumes that its aggregate physical loss of product (in the box) will total nearly €58,000 (see Figure 21).

### 7.3 Market Risk

Market risk in the produce industry is high. This is primarily due to the large variability in prices over relatively short periods of time. Prices can be affected by weather, competitive producers, political events such as border closings, as well as many other physical, social or economic phenomena.

Prices are difficult to accurately forecast; however, the Vegco financial model uses a mid-level assumed price for the sale of its products, positioned between the average maximum price and the average price for the products being sold in the Pristina wholesale market between 2006 and 2008. The prices used in the model have been weighted to reflect the percentage of output (of a product) that will be sold into the market at any one month period. This system of price forecasting is not 100% accurate, but it tries (based on real-life numbers) to portray the price environment in which Vegco will be selling when they are active in the market.

### 7.4 Sensitivity Analysis

A sensitivity analysis was developed for the Vegco financial model. This analysis examined three levels of possible market prices for products sold by Vegco and the resulting change in *After Tax Net Income* and *Return on Investment* and *ROI* (see Table 7). The Best Case analysis utilizes the maximum mean price of selected products sold. Based on this price level, the business generates nearly a 68% ROI. This is probably not a realistic price expectation, as Vegco cannot expect to receive the mean maximum high price every day it is in the market.

Case: Selling Price	After Tax Net Income	ROI
Best Case: Max Mean Selling Price	783,120	67.9%
Base Case: Mean of the Means Selling Price	333,393	29.2%
Worst Case: Mean Market Selling Price	-117,410	-10.4%

The Base Case scenario utilizes prices generated from the maximum mean and the mean market selling price for each commodity (weighted to reflect the volume Vegco sells into the market each month). In this case, Vegco generates a 29% ROI.

The Worst Case scenario is if Vegco receives only the mean market selling price. In

this case, the company will lose 117,410€ annually and generate a negative 10% ROI. Given Vegco's technology and management, it is reasonable to assume that on any given day, Vegco's products will be selling above the mean market price.

Table 8: Product Mix Sensitivity		
Base Case: With & Without Cabbage	After Tax Net Income	ROI
With Selling Cabbage	333,393	29.2%
Without Selling Cabbage	356,517	33.2%

Table 8 examines the sensitivity of including cabbage in the product mix or omitting it. As can be noted, the company increases its ROI by 4% if it drops cabbage from its product line. This results in after-tax net income

increasing from €333,393 annually to €356,517. In the financial model, it would be possible to substitute another product in the place of cabbage. This might be radishes or some other early season crop that can be purchased at a price that will allow Vegco to generate a profit on that product line.

Table 9: ROI Sensitivity To USAID Grant Assistance			
Grant Amount For Fix Capital Equipment (EUR)			ROI
Case	USD	EUR	
Best Case	50,000	35,000	30.1%
Good Case	25,000	17,500	29.6%
Base Case	0	0	29.2%

Table 9 examines the effect of a USAID (or other) grant on Vegco's ROI. In the Best Case scenario, a 50,000 USD grant (€35,000) targeted towards fixed capital costs, would result in increasing the Base Case financial model ROI by 0.9%. This €35,000 grant would

equal about 4.5% of total fixed capital cost. In the Good Case scenario, a €17,500 grant would increase Vegco's ROI by 0.4%, while covering approximately 2.25% of total fixed capital cost.

## **8. Findings**

Based on the field research and financial model developed by the KPEP consulting team, it appears that a vegetable packing plant business could be profitable in Kosovo. The company's profitability is dependent on a number of key factors including the availability of raw product within the 28 week packing season (as defined in this report). Additionally, the business would need to purchase raw product at prices identified in this report and sell at price levels above the Pristina Wholesale Market mean price.

This report and accompanying financial model are intended to be tools used by investors to analyze their own vegetable packing business models. Each investor will need to create an individual fixed capital cost budget and modify variables in the Vegco financial model as necessary to reflect their view of reality.

## Annex I: Pristina Wholesale Market Price History

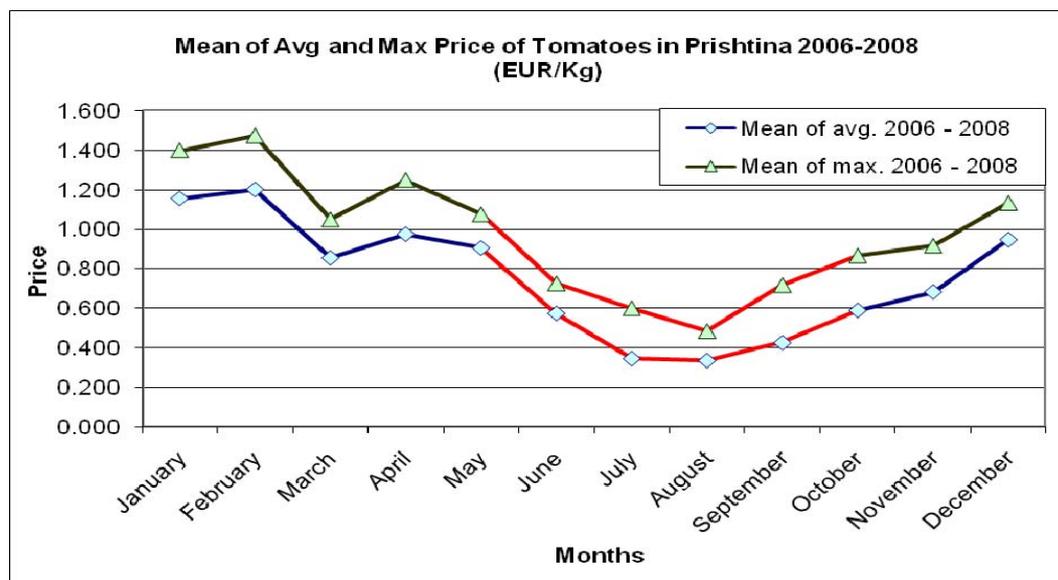
### Annex I: Pristina Wholesale Market Price Analysis

The following annex includes three years of market history data for tomatoes, peppers, cucumbers, cabbage and melons in the Pristina Wholesale Market. The data was collected by the Swiss/Danish Inter-Cooperation Project.

The red lines in the following graphs indicate the market period in which Vegco will be selling produce.

The Mean of the WT Average column (in the tables) is the selling price used by the Vegco financial model for each of the following products. The model also includes a 10% sales commission to the wholesale agent handling the product in the city market so the actual revenue provided to Vegco is 10% less than the Mean of the Wt. Average.

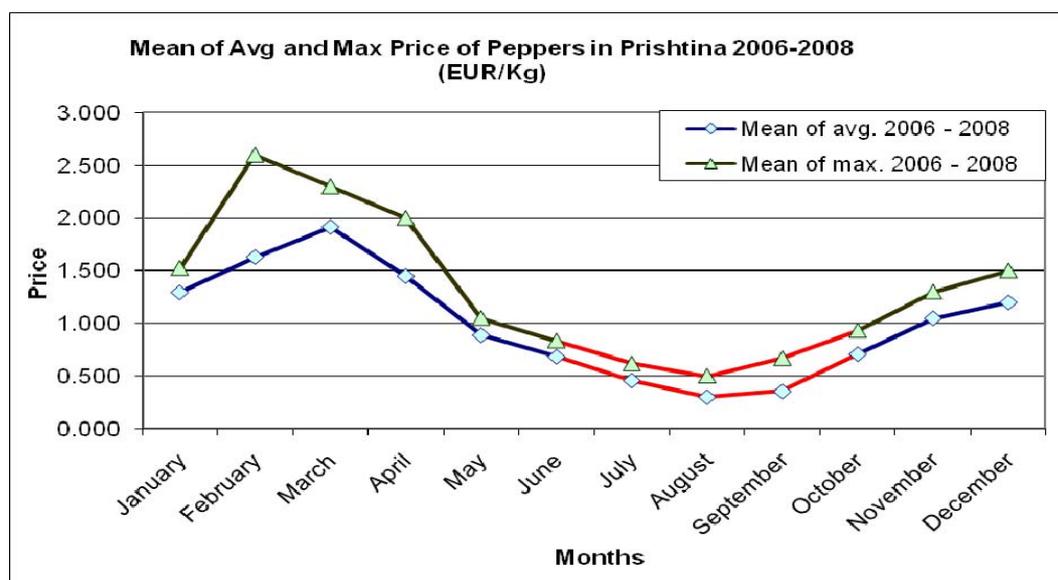
**Tomato: Prishtina Wholesale Market Price History**



**Tomato: Prishtina Wholesale Price Data Table with Weighted Average Calculations**

Tomatoes	Average Monthly Price			Mean of avg. 2006 - 2008	Percent (%)	Maximum Monthly Price			Mean of max. 2006 - 2008	Percent (%)	Mean of the Wt. Average
	Avg 2006	Avg 2007	Avg 2008			Avg Max 2006	Avg Max 2007	Avg Max 2008			
January		1.21	1.1	1.155			1.50	1.30	1.400		
February		1.35	1.05	1.200			1.70	1.25	1.475		
March		0.87	0.84	0.855			1.10	1	1.050		
April		0.94	1.01	0.975			1.10	1.4	1.250		
May		0.73	1.08	0.905			0.9	1.25	1.075		
June		0.57	0.58	0.575	17		0.65	0.80	0.725	17	
July	0.35	0.35	0.34	0.347	24	0.7	0.45	0.65	0.600	24	
August	0.29	0.48	0.24	0.337	24	0.5	0.65	0.30	0.483	24	
September	0.3	0.69	0.29	0.427	24	0.45	1.1	0.6	0.717	24	
October	0.41	0.63	0.73	0.590	11	0.55	1	1.05	0.867	11	
November	0.66	0.71	0.68	0.683		0.9	1.00	0.85	0.917		
December	0.88	1.11	0.85	0.947		1.10	1.20	1.10	1.133		
Average for June-October				0.455			Average for June-October		0.678		
Weighted Average					0.429	Weighted Average				0.651	0.540

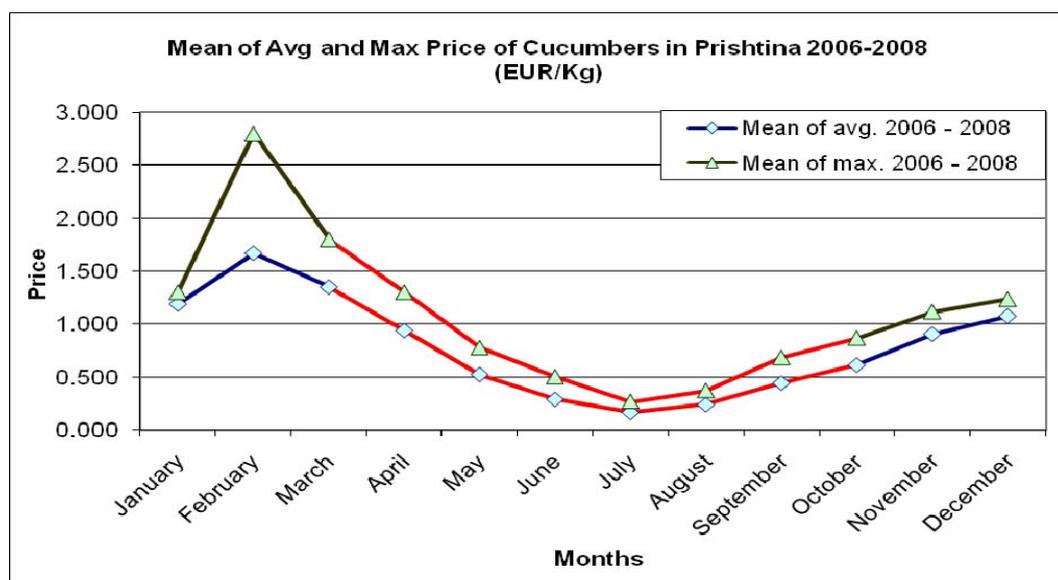
**Pepper: Pristina Wholesale Market Price History**



**Pepper: Pristina Wholesale Price Data Table with Weighted Average Calculations**

Pepper	Average Monthly Price			Mean of avg. 2006 - 2008	Percent (%)	Maximum Monthly Price			Mean of max. 2006 - 2008	Percent (%)	Mean of the Wt. Average
	Avg 2006	Avg 2007	Avg 2008			Avg Max 2006	Avg Max 2007	Avg Max 2008			
January		1.3	1.29	1.295			1.50	1.55	1.525		
February		1.63	1.63	1.630			2.70	2.50	2.600		
March		1.89	1.94	1.915			2.30	2.30	2.300		
April		1.24	1.66	1.450			2.00	2.00	2.000		
May		0.88	0.9	0.890			1.10	1.00	1.050		
June		0.65	0.72	0.685			0.80	0.87	0.835		
July	0.43	0.39	0.56	0.460	22	0.6	0.55	0.70	0.617	22	
August	0.18	0.41	0.32	0.303	33	0.45	0.65	0.40	0.500	33	
September	0.31	0.35	0.41	0.357	32	0.55	0.60	0.85	0.667	32	
October	0.56	0.76	0.81	0.710	13	0.80	0.9	1.10	0.933	13	
November	0.97	1.26	0.92	1.050		1.2	1.50	1.20	1.300		
December	1.01	1.5	1.09	1.200		1.10	2.1	1.30	1.500		
	Average for July-October			0.458		Average for July-October			0.679		
	Weighted Average				0.408	Weighted Average				0.635	0.522

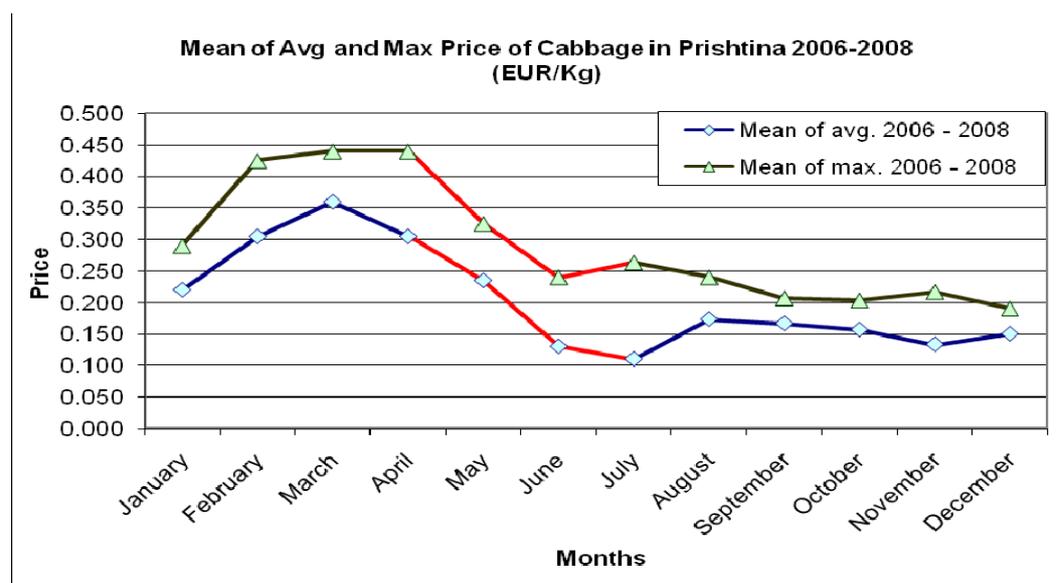
**Cucumber: Pristina Wholesale Market Price History**



**Cucumber: Pristina Wholesale Price Data Table with Weighted Average Calculations**

Cucumbers	Average Monthly Price			Mean of avg. 2006 - 2008	Percent (%)	Maximum Monthly Price			Mean of max. 2006 - 2008	Percent (%)	Mean of the Wt. Average
	Avg 2006	Avg 2007	Avg 2008			Avg Max 2006	Avg Max 2007	Avg Max 2008			
January		1.10	1.28	1.190			1.30	1.80	1.300		
February		1.79	1.55	1.670			2.80	1.80	2.800		
March		1.45	1.25	1.350			1.80	1.80	1.800		
April		0.91	0.97	0.940	13		1.20	1.40	1.300	13	
May		0.53	0.52	0.525	16		0.90	0.65	0.775	16	
June		0.26	0.32	0.290	16		0.40	0.60	0.500	16	
July	0.18	0.14	0.18	0.167	16	0.30	0.20	0.30	0.267	16	
August	0.23	0.29	0.20	0.240	16	0.38	0.40	0.33	0.370	16	
September	0.48	0.46	0.39	0.443	13	0.75	0.70	0.60	0.683	13	
October	0.41	0.63	0.80	0.613	10	0.60	0.80	1.20	0.867	10	
November	0.97	0.93	0.82	0.907		1.20	1.00	1.15	1.117		
December	1.01	1.16	1.06	1.077		1.20	1.30	1.20	1.233		
		Average April - October		0.533			Average April - October		0.735		
		Weighted Average					Weighted Average			0.650	0.544

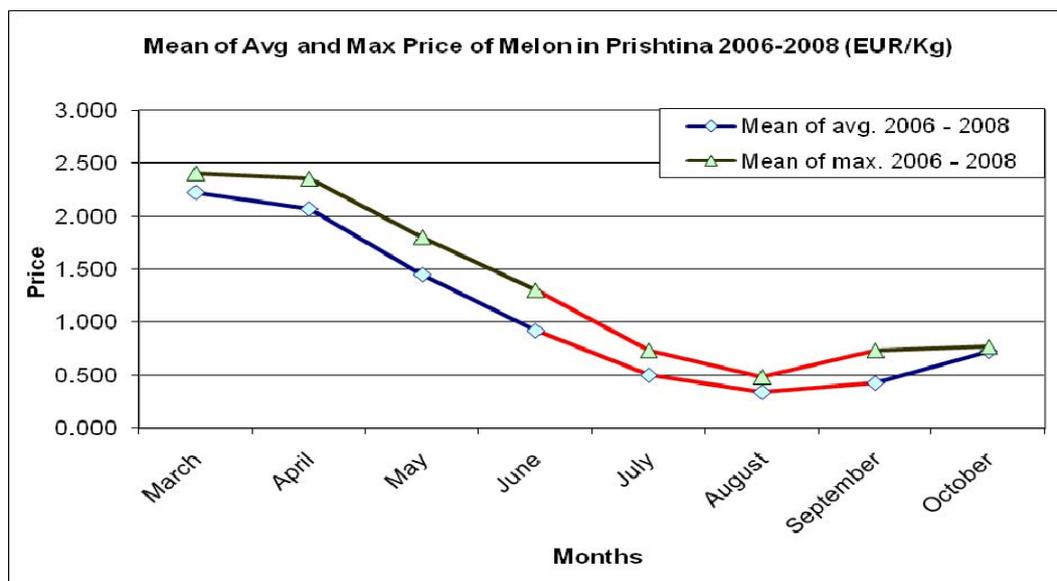
**Cabbage: Pristina Wholesale Market Price History**



**Cabbage: Pristina Wholesale Price Data Table with Weighted Average Calculations**

Cabbage	Average Monthly Price			Mean of avg. 2006 - 2008	Percent (%)	Maximum Monthly Price			Mean of max. 2006 - 2008	Percent (%)	Mean of the Wt. Average	
	Avg 2006	Avg 2007	Avg 2008			Mean Max 2006	Mean Max 2007	Mean Max 2008				
January		0.1	0.34	0.220			0.15	0.43	0.290			
February		0.23	0.38	0.305			0.4	0.45	0.425			
March		0.13	0.59	0.360			0.18	0.70	0.440			
April		0.11	0.5	0.305			0.18	0.7	0.440			
May		0.13	0.34	0.235	34		0.25	0.40	0.325	34		
June		0.06	0.2	0.130	58		0.1	0.38	0.240	58		
July	0.1	0.15	0.08	0.110	8	0.5	0.19	0.1	0.263	8		
August	0.03	0.44	0.05	0.173		0.06	0.60	0.06	0.240			
September	0.09	0.35	0.06	0.167		0.17	0.35	0.1	0.207			
October	0.1	0.31	0.06	0.157		0.18	0.35	0.08	0.203			
November	0.11	0.22	0.07	0.133		0.15	0.4	0.1	0.217			
December	0.11	0.25	0.09	0.150		0.15	0.3	0.12	0.190			
Average for May-June				0.183		Average for May-June				0.283		
Weighted Average					0.164	Weighted Average					0.271	0.217

**Melon: Pristina Wholesale Market Price History**



**Melon: Pristina Wholesale Price Data Table with Weighted Average Calculations**

Melons	Average Monthly Price			Mean of avg. 2006 - 2008	Percent (%)	Maximum Monthly Price			Mean of max. 2006 - 2008	Percent (%)	Mean of the Wt. Average	
	Avg 2006	Avg 2007	Avg 2008			Avg 2006	Avg 2007	Avg 2008				
January				na					na			
February				na					na			
March		2.35	2.1	2.225			2.5	2.3	2.400			
April		2.2	1.94	2.070			2.50	2.20	2.350			
May			1.45	1.450				1.80	1.800			
June		0.88	0.96	0.920			1.20	1.40	1.300			
July	0.38	0.67	0.45	0.500	30	0.7	0.8	0.7	0.733	30		
August	0.28	0.41	0.33	0.340	40	0.5	0.50	0.45	0.483	40		
September	0.38	0.51	0.39	0.427	30	0.6	0.90	0.7	0.733	30		
October	0.6	0.9	0.68	0.727		0.6	0.9	0.8	0.767			
November				na					na			
December				na					na			
Average July - September				0.422		Average July - September				0.650		
Weighted Average					0.414	Weighted Average					0.633	0.524



**USAID**  
NGA POPULLI AMERIKAN  
OD AMERIČKOG NARODA

**KOSOVO**

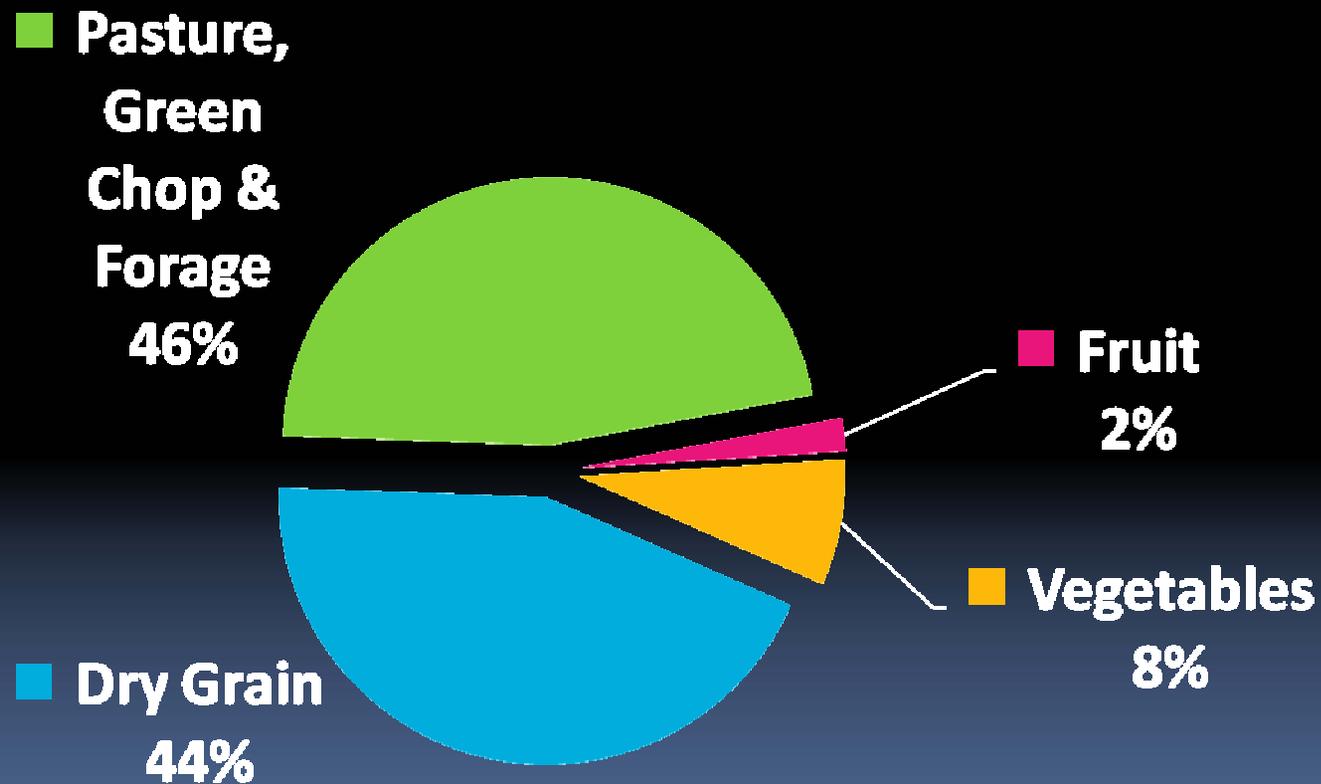
## USAID KOSOVO PRIVATE ENTERPRISE PROGRAM (KPEP)

Vegco Business Model:  
A Vegetable Packing, Cooling & Sales  
Enterprise

# Assignment Objective:

- Create a business model for a vegetable collection center
- Develop a financial model for the business
- Determine required investment levels
- Develop a floor plan
- Develop an operational plan

# Structure of the Kosovo Crop Sector, HA:



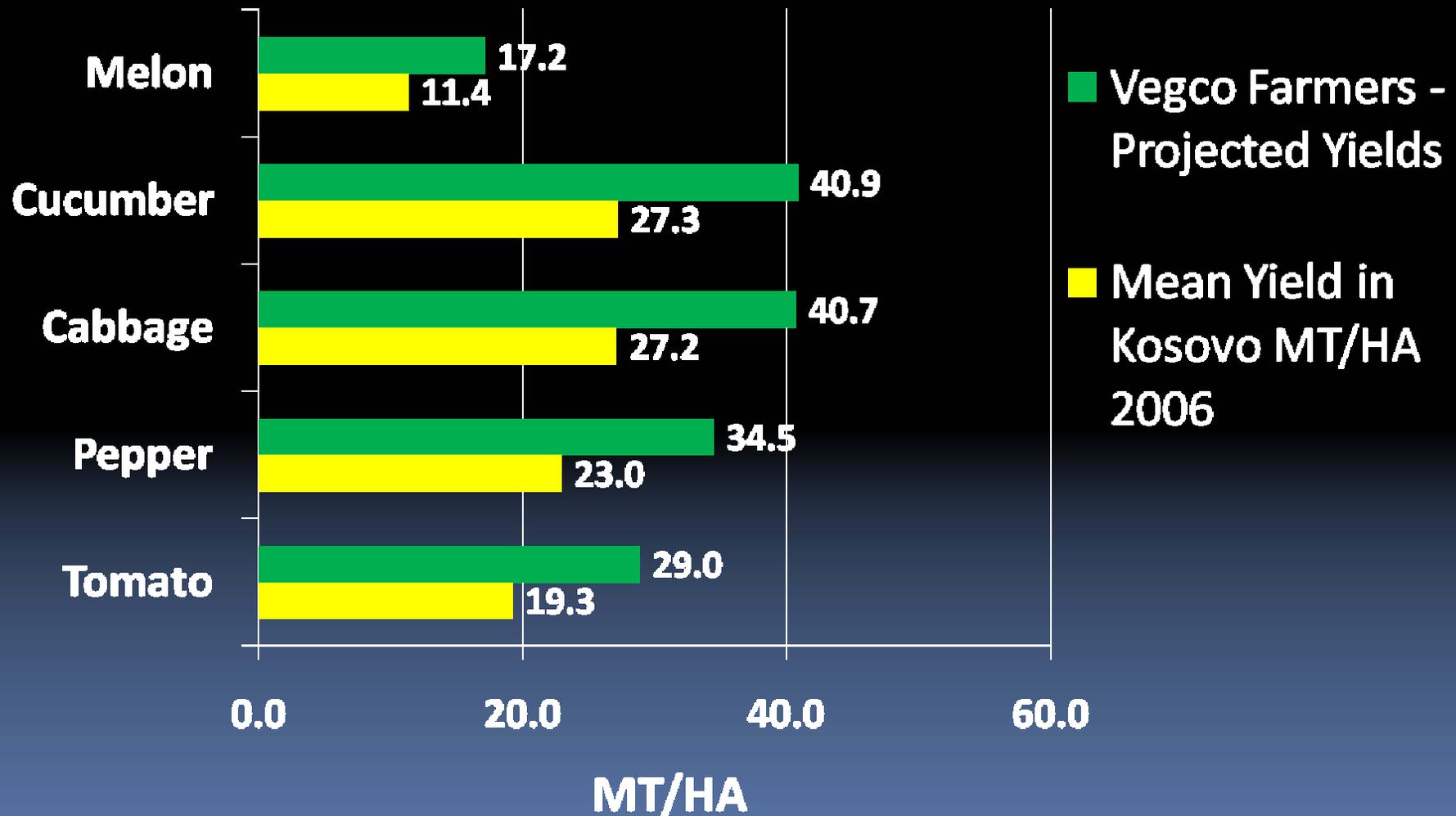
# Vegco Business Model Basics:

- Location: Prizren Region
- Suppliers: 180 farmer (+/-)
- Contracts with farmers for weekly delivery volumes at market price
- Buys vegetables x-plant loading dock
- Sorts, packs, cools & ships to market
- Sales to super markets & wholesalers

# Ownership, Management & Labor:

- Private Ownership (Pvt. Ltd or other)
- Registered as a Corporation (10% tax rate)
- Management & Labor:
  - General Manager / Sales Manager
  - Supply Manager
  - Packing Operations Manager
  - Accountant
  - Office Assistant
  - 23+ Seasonal Workers

# Kosovo Mean Crop Yields & Projected Vegco Farmer Crop Yield



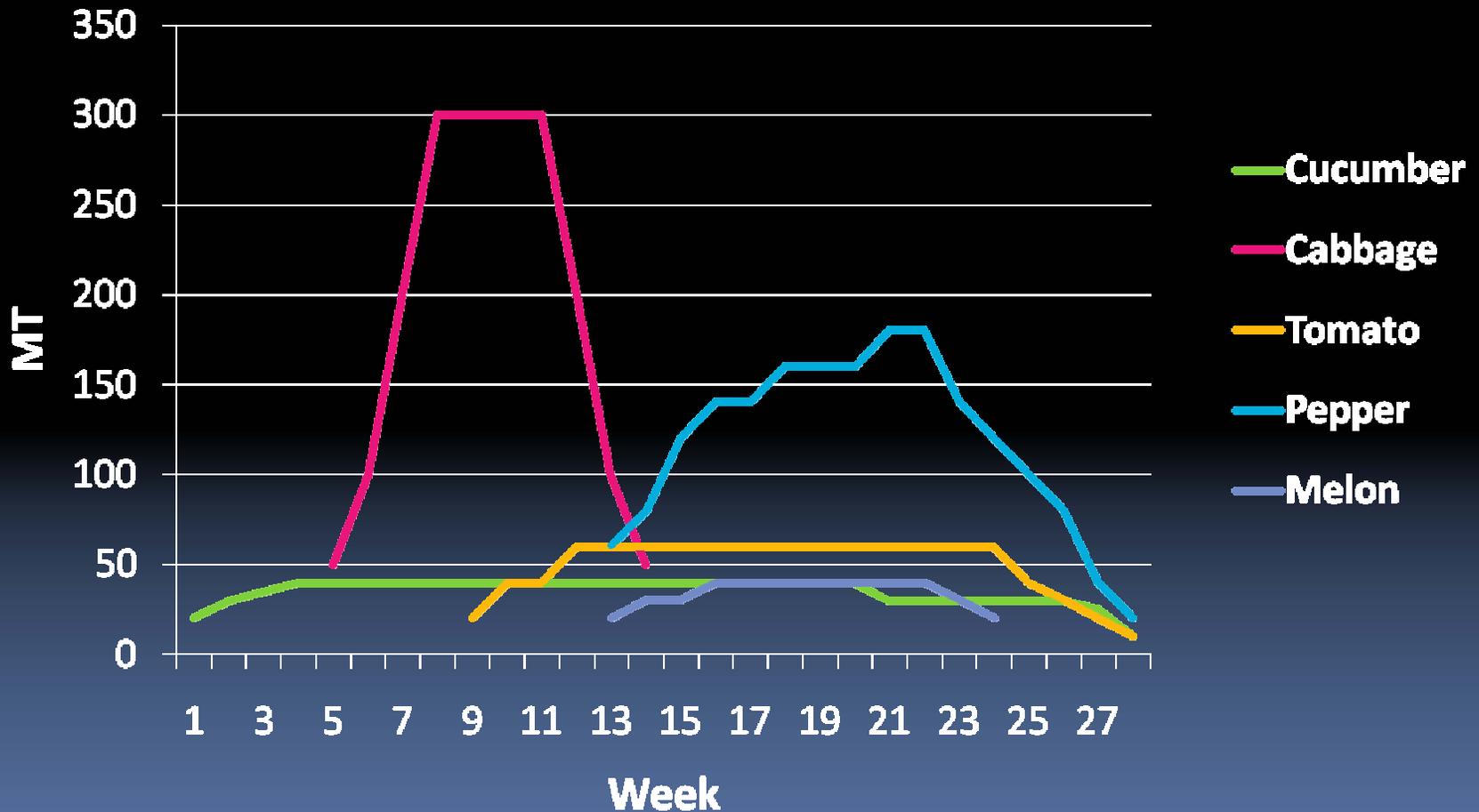
# Volume & Purchase Price Assumptions:

6150 MT Purchased x-packing house

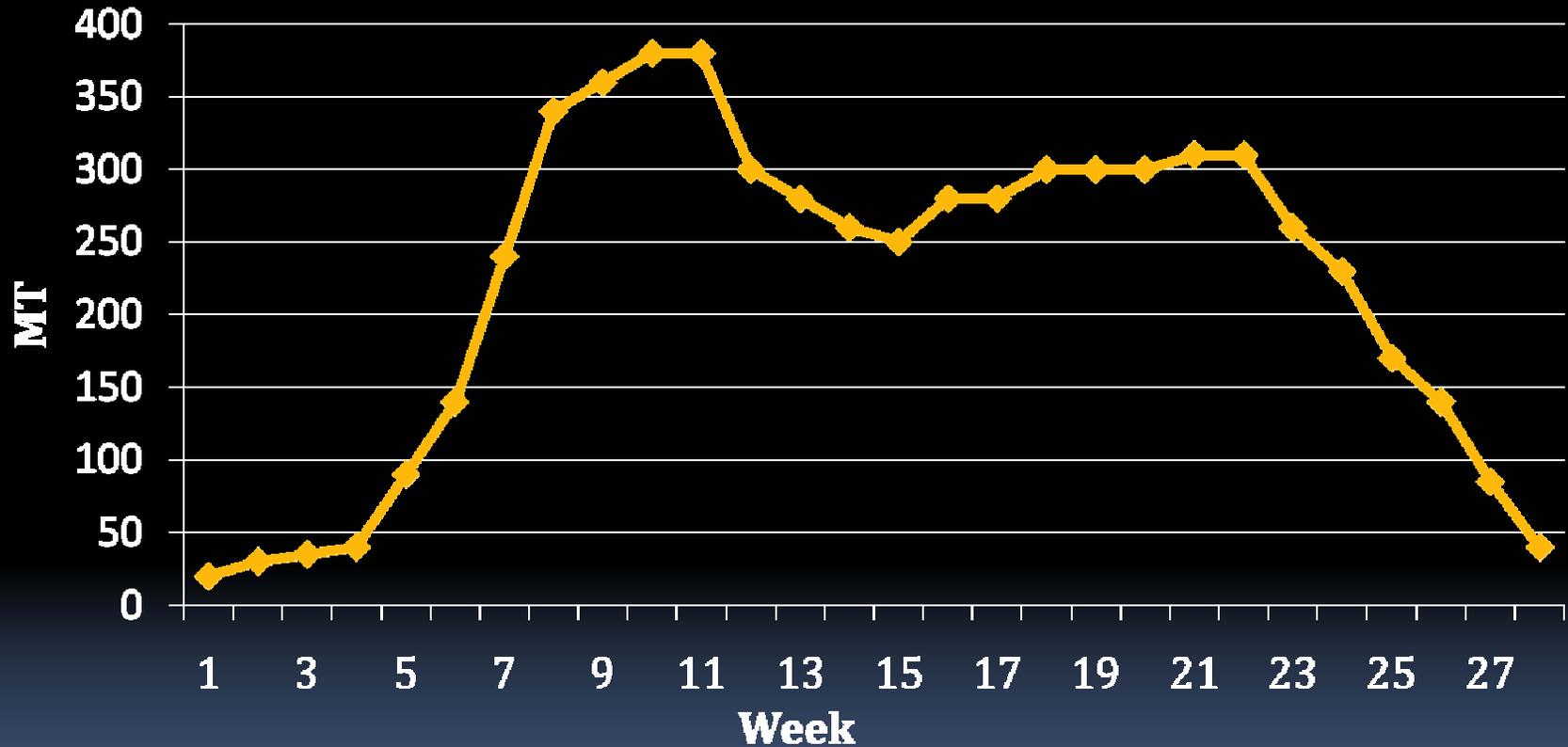
- Cucumber – 980 MT @ .20 EUR/ KG
- Cabbage – 1900 MT @ .10 EUR/ KG
- Tomato – 980 MT @ .20 EUR/ KG
- Pepper – 1880 MT @ .20 EUR/ KG
- Melon – 410 @ .30 EUR / KG

# Vegco Seasonal Volume Throughput:

## Raw Product Purchased X- Packing House

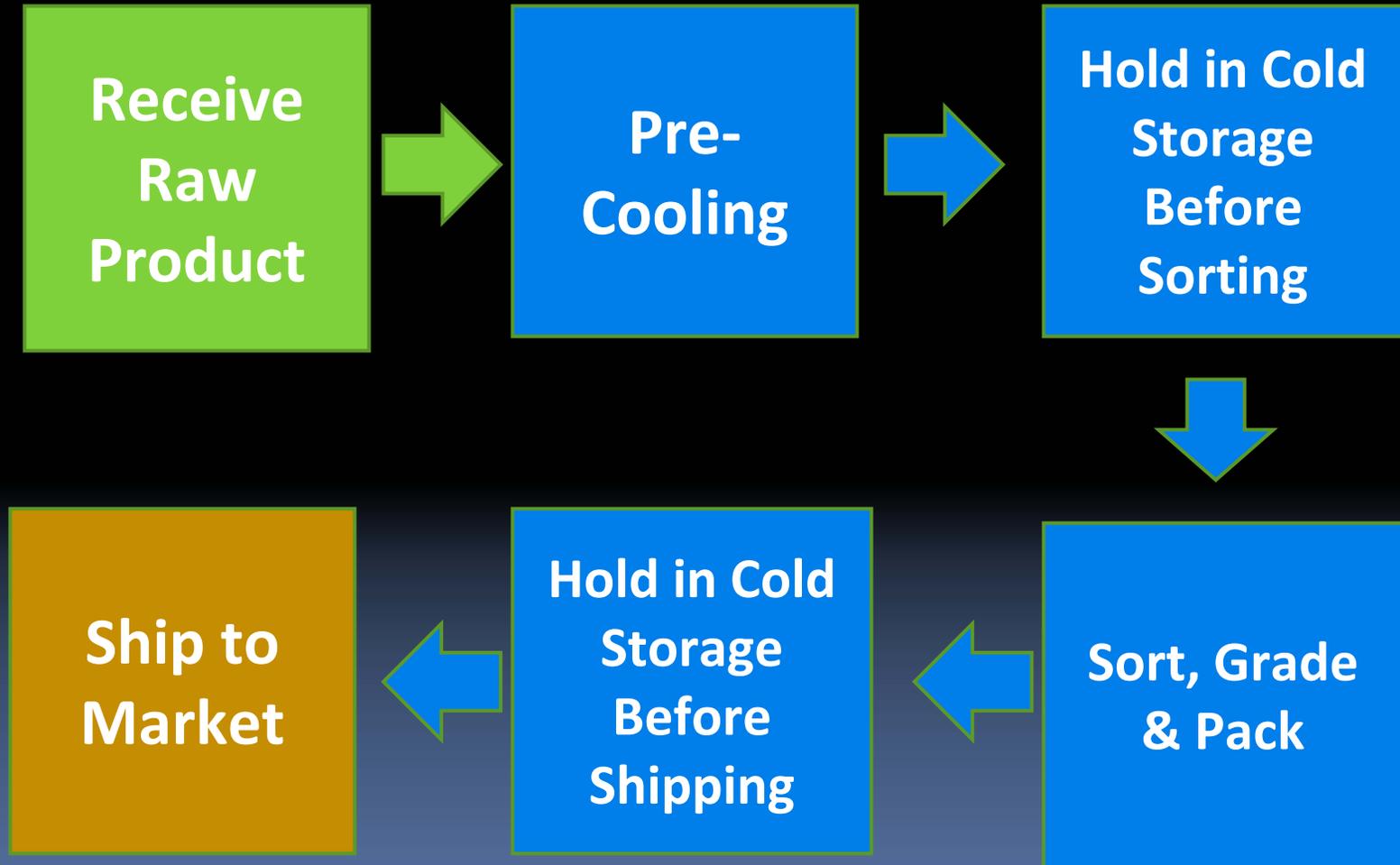


# Vegco Aggregated Weekly Volume:

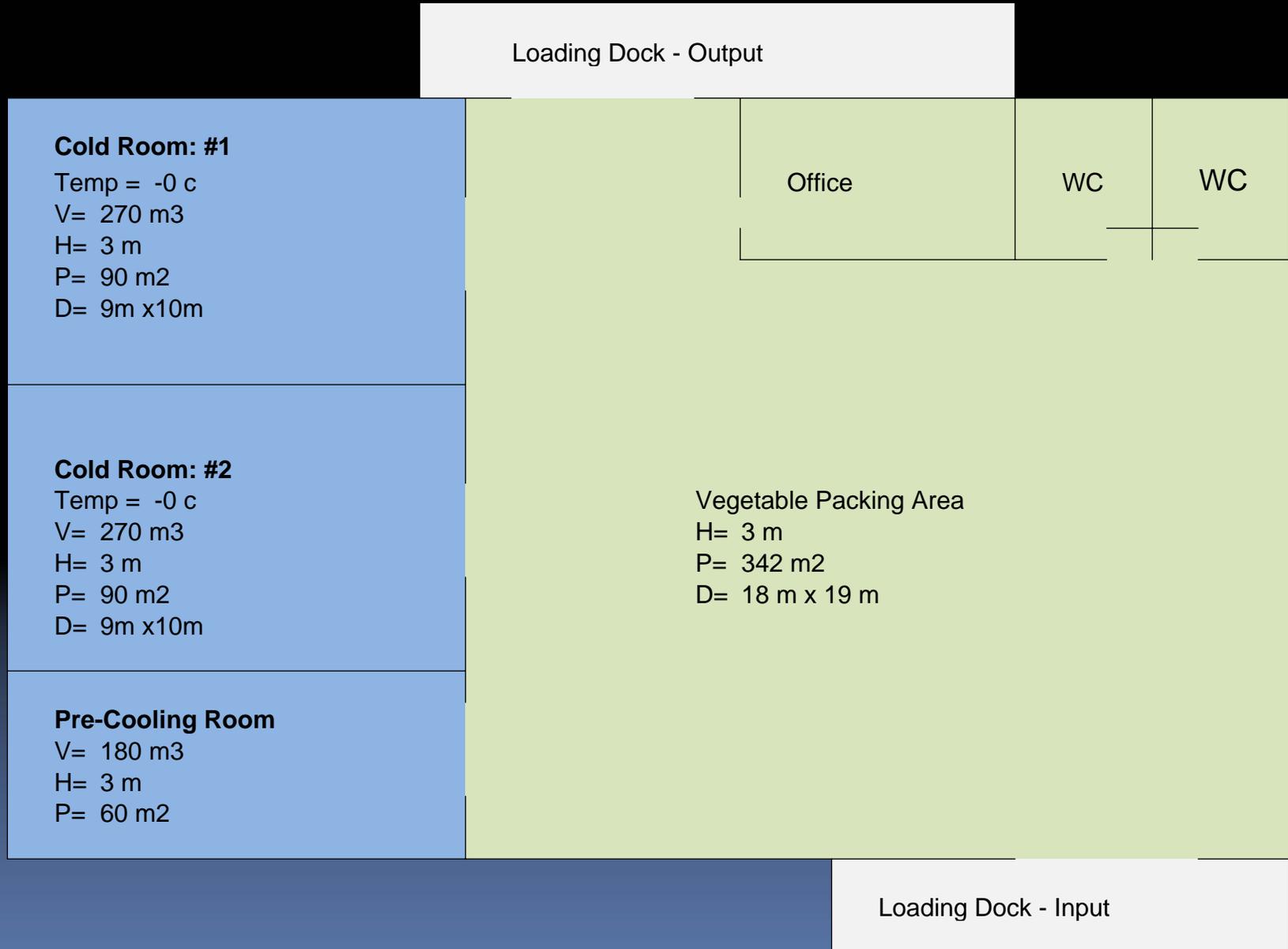


Vegco buy 6150 MT of vegetables over a 28 week season (April to October)

# Cooling & Packing System Flow:

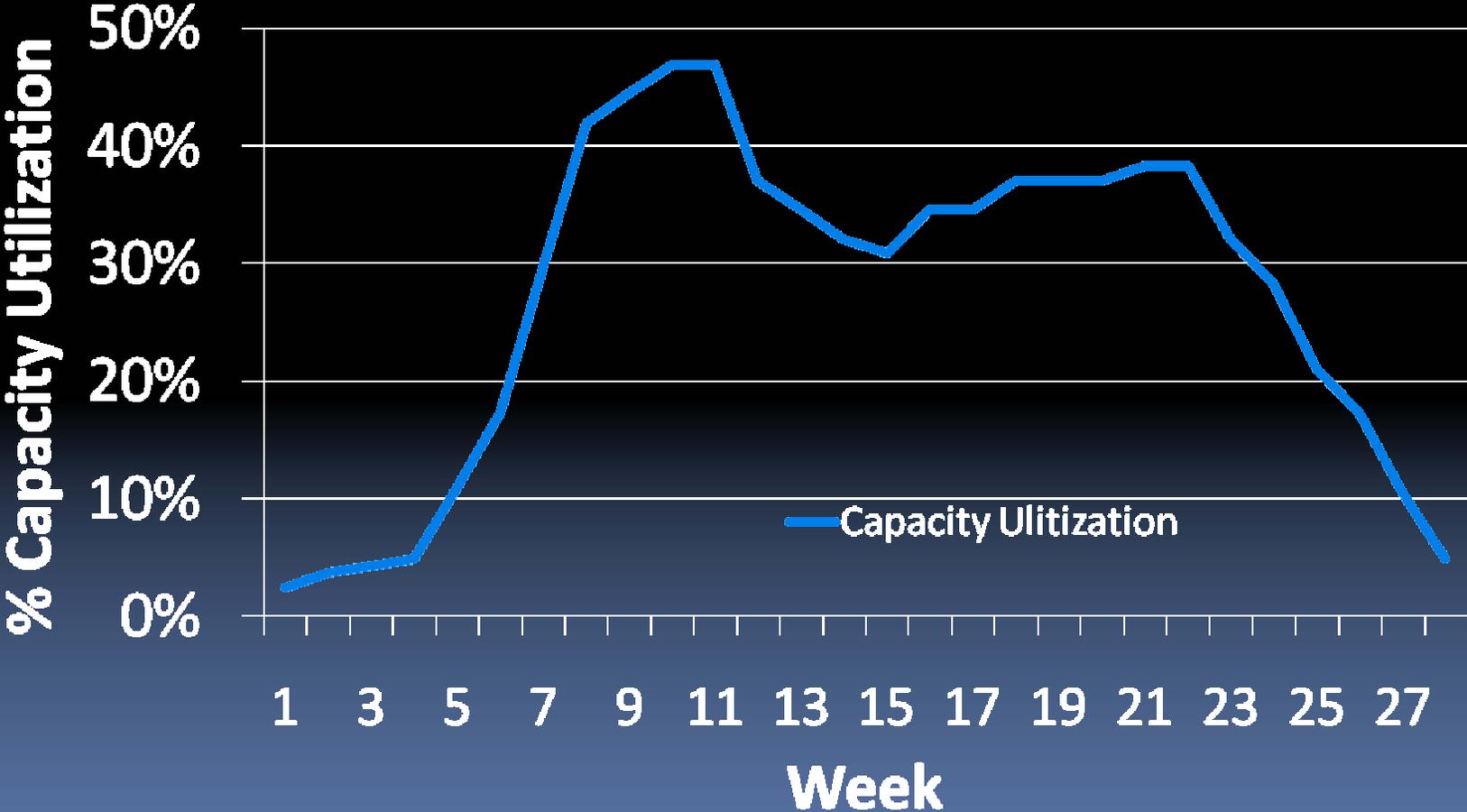


# Vegco Facility: Floor plan (24x28 = 672 m<sup>2</sup>)



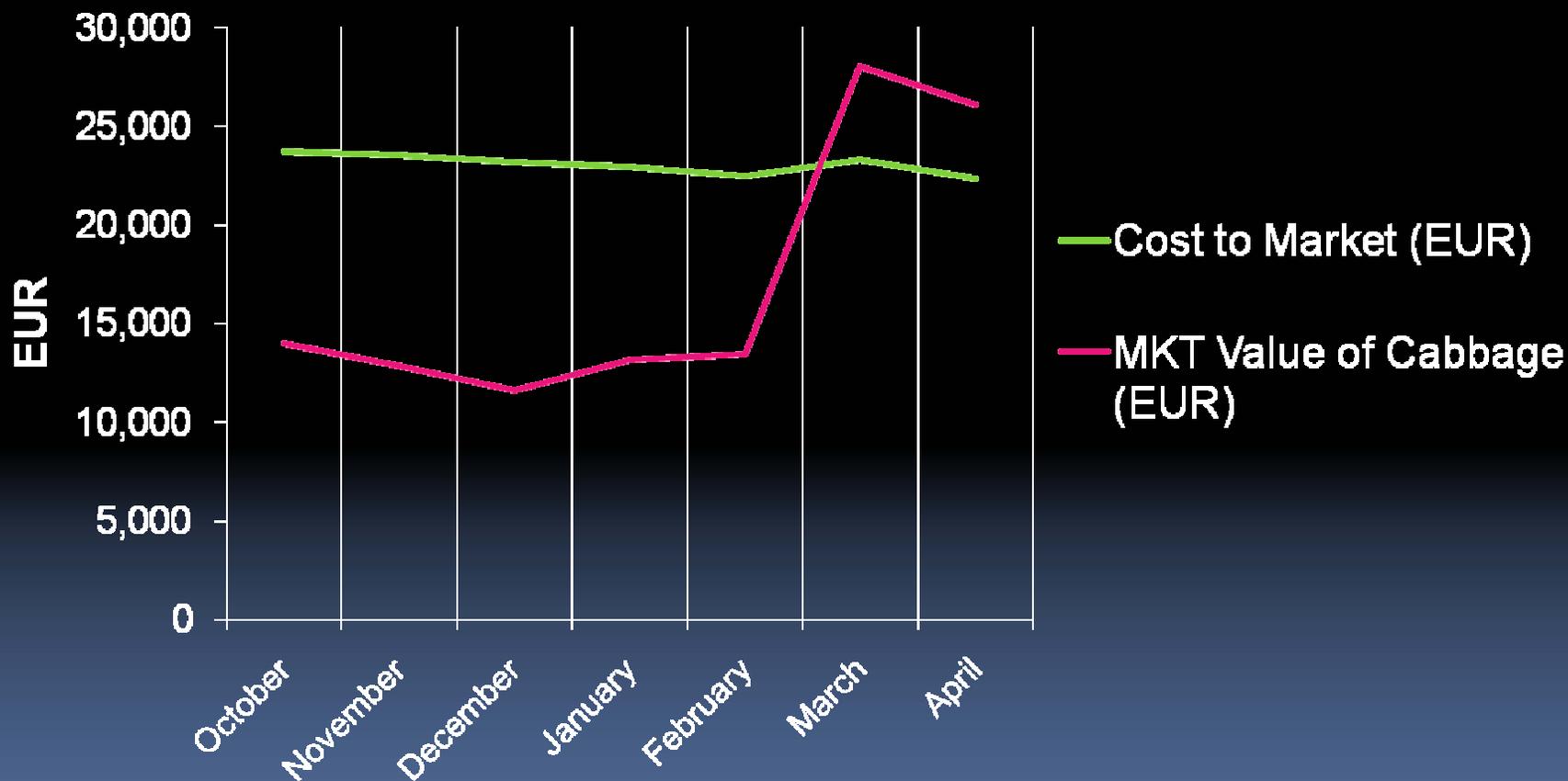
# Cold Storage Utilization

## With No Daily Carryover

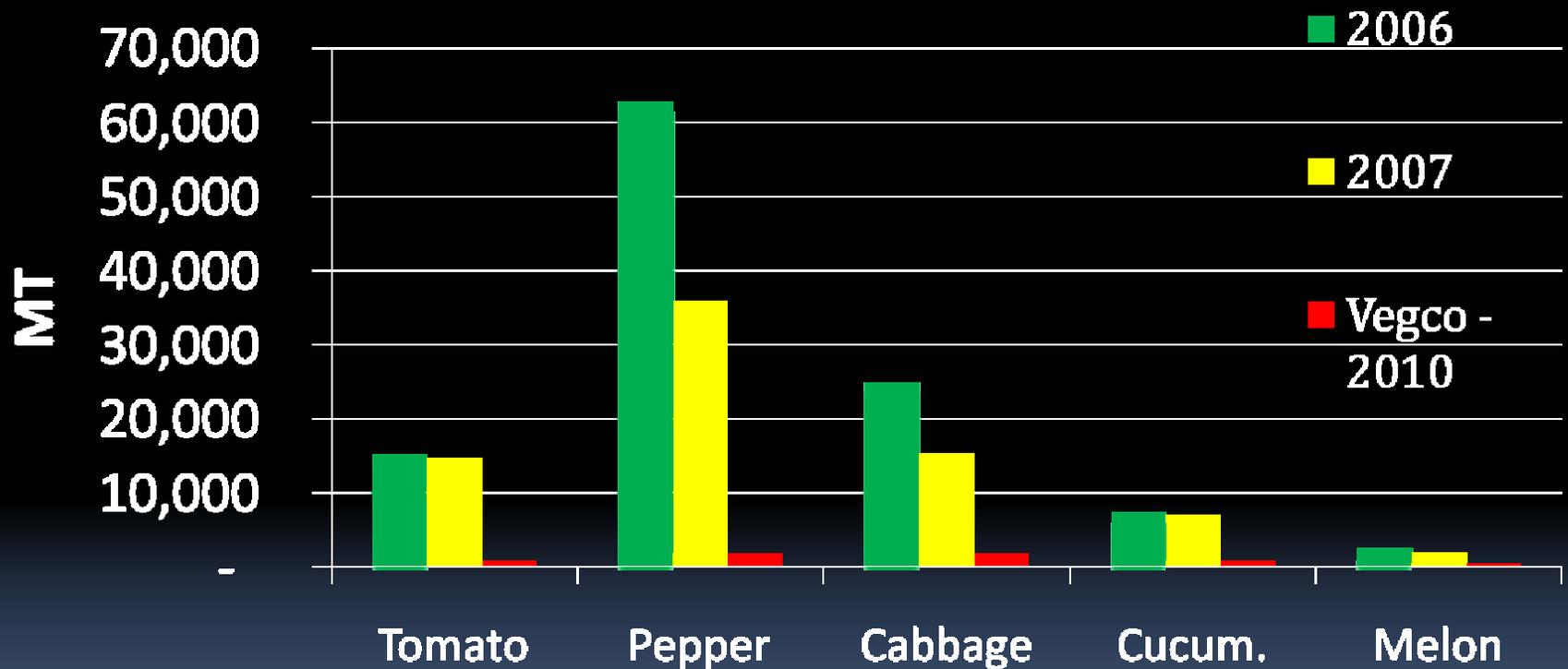


# The Economics of Long Term Storage:

**The Economics of Cabbage Storage in Kosovo**  
Model for Storage & Sales of 100 MT Cabbage



# Vegco as % of Total Kosovo Production:



Vego's share of total Kosovo output: Tomato 7%, Pepper 4%, Cabbage 9%, Cucumber 13% & Melon 17%

# Sales Strategy & Markets:

- Produce a consistent high quality pack
- Provide product all season & use plastic tunnels to extent early & late season
- Sales to supermarkets & selected wholesale traders as commission agents



← Tomatoes & Plums in Wood Crates

Old School Bulk Pack Peppers →



# Trader's Cold Storage at Pristina Wholesale Market



Boxed/ Palletized  
Imported Fruit &  
Veg at Pristina  
Wholesale Market

# Pristina Wholesale Price History:

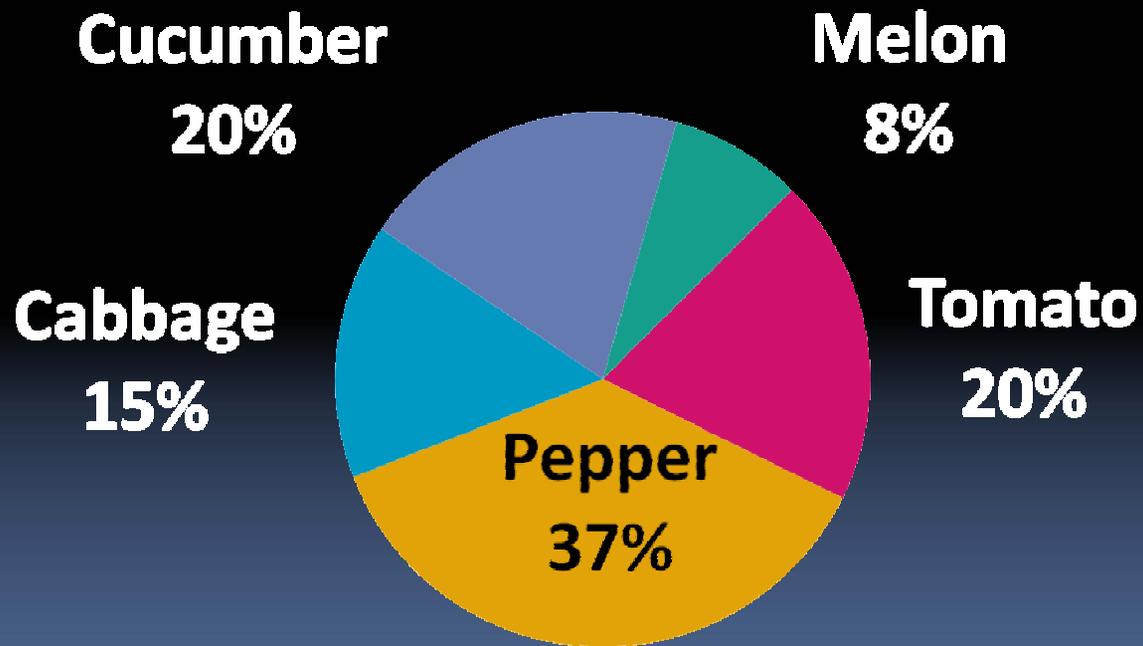
Source: Inter Cooperation / Swiss & Danish Gov.

	<u>Mean High</u> <u>Price/KG</u>	<u>Mean of</u> <u>High &amp;</u> <u>Ave</u> <u>Price/KG</u>	<u>Mean of</u> <u>the</u> <u>Mean/KG</u>
<b>Tomato</b>	0.651	0.540	0.429
<b>Pepper</b>	0.635	0.522	0.408
<b>Cabbage</b>	0.271	0.217	0.164
<b>Cucumber</b>	0.650	0.544	0.437
<b>Melon</b>	0.633	0.524	0.414

The Vegco model uses the mid level price set (at left) less 10% wholesaler commission

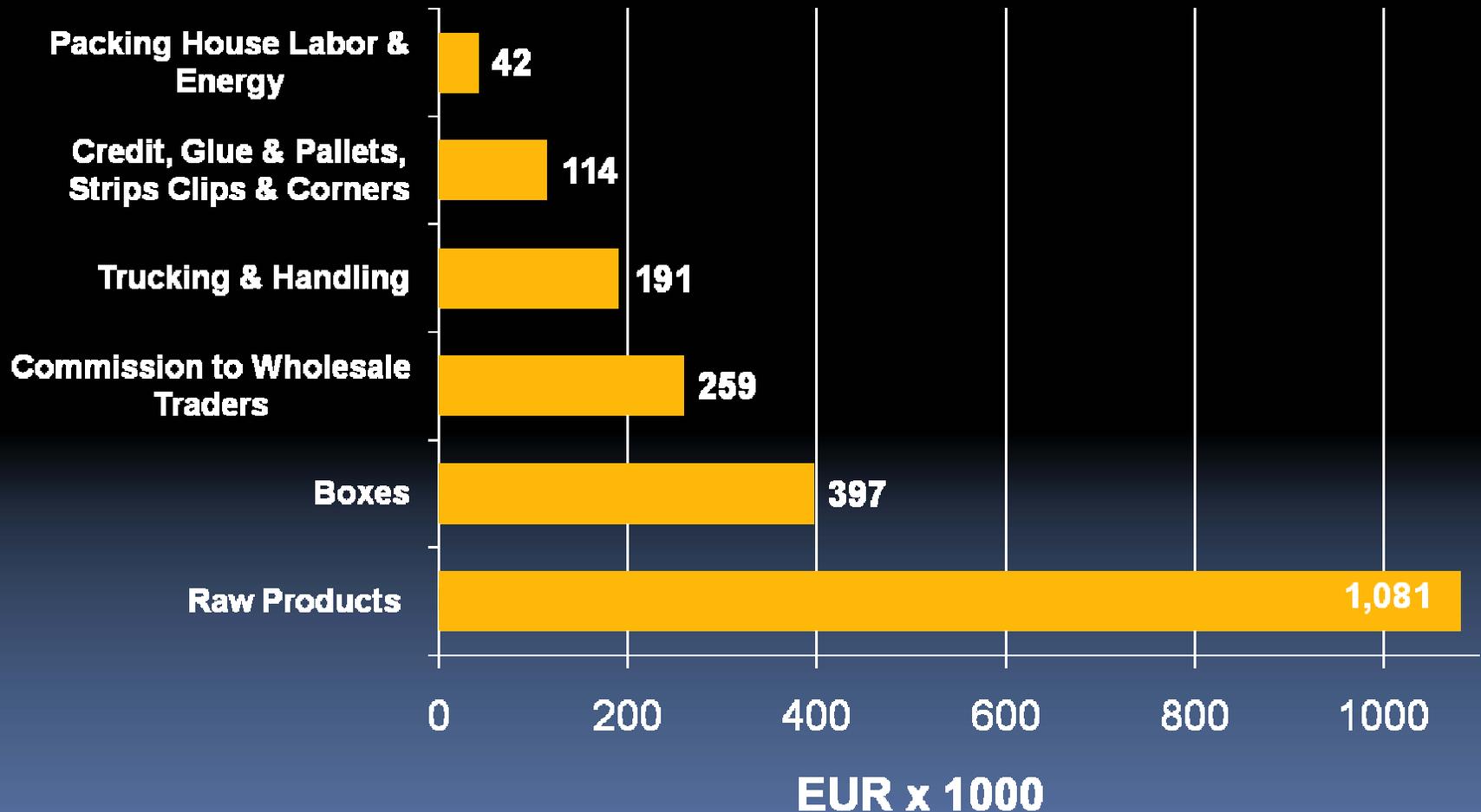
# Gross Revenue by Product

Total Annual Sales 2.59 Million EUR



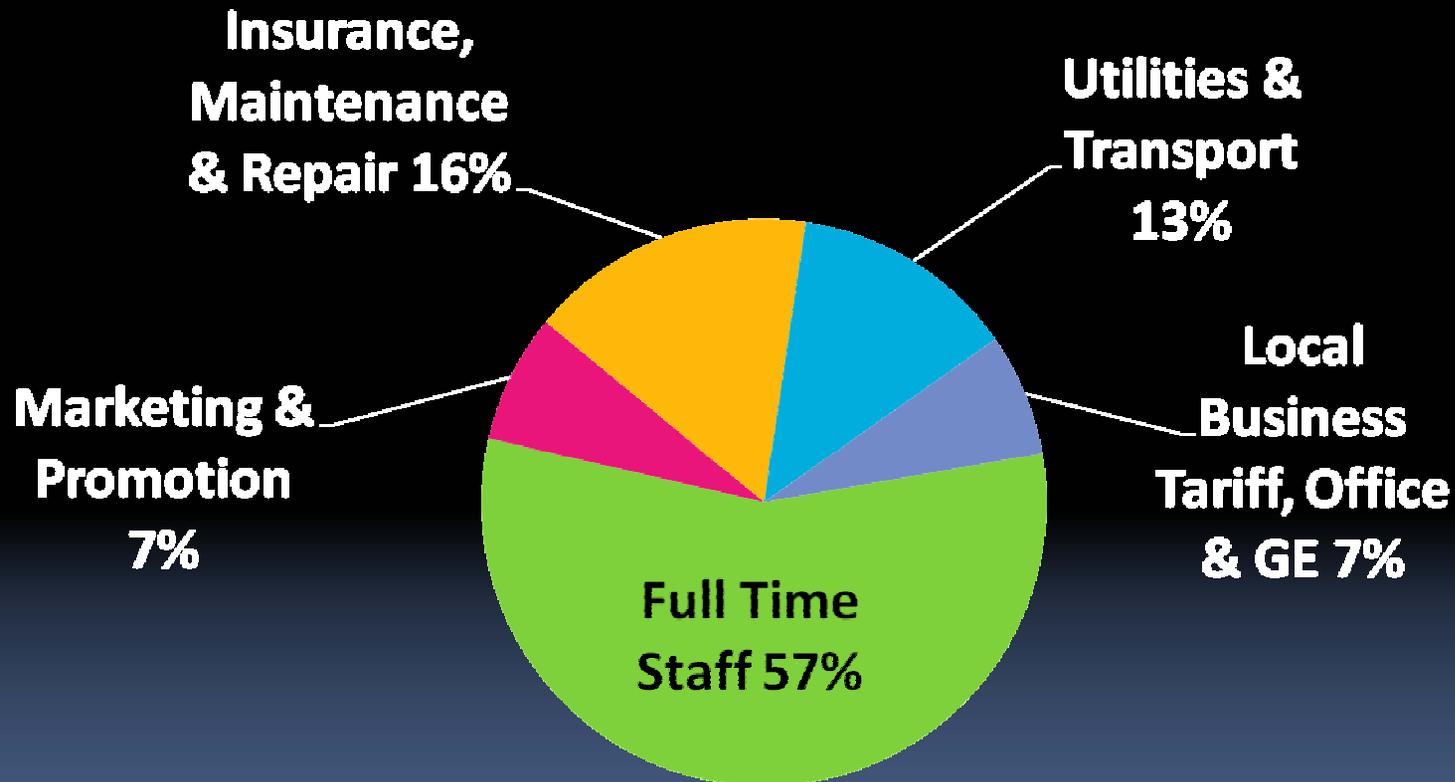
# Variable Cost Structure:

Wholesale Cost for Vegetables Processing & Retail



# Overhead Cost:

Total Overhead 107,000 EUR

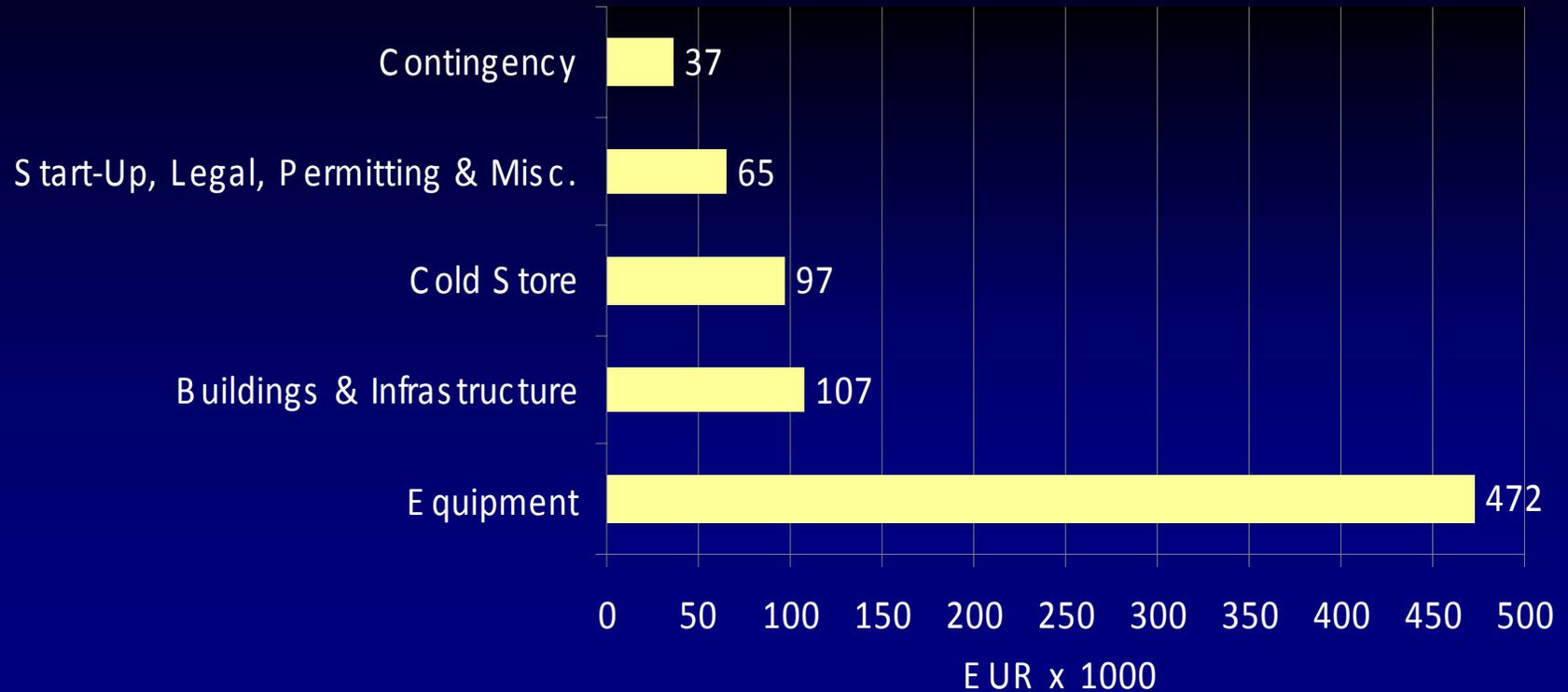


# Cost & Income: (Rounded EUR)

<u>Gross Sales After Losses</u>	<u>2,590,000</u>
• Variable Costs	2,083,000
• Overhead Costs	107,000
• <u>Depreciation</u>	<u>30,000</u>
Total Cost & Depreciation	2,220,000
Pre-tax Income	370,000
<u>Tax on Income (10%)</u>	<u>37,000</u>
After Tax income	333,000

# Fixed Capital Investment Structure:

Fixed Capital Investment Structure



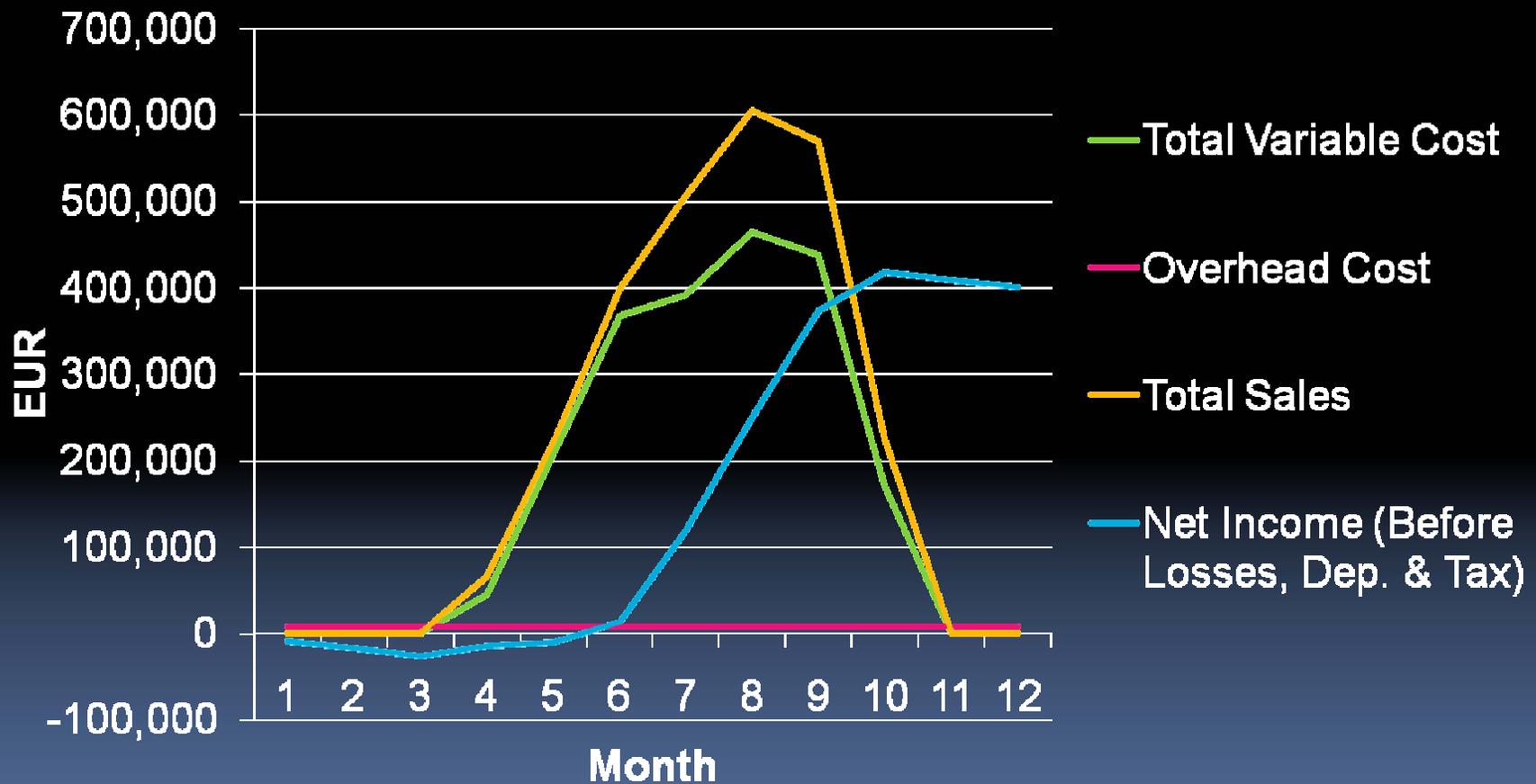
# Investment & Return: (Rounded EUR)

## Investment

•Fixed Capital	778,000
• <u>Working Capital</u>	<u>365,000</u>
Total Project Costs	1,143,000

ROI : 29% (based on mid-range selling price)

# Vegco Cash Flow Model:



# Cost, Selling Price & Margin per Box

<b>Product</b>	<b><u>Unit Cost</u></b>	<b><u>Losses</u></b>	<b><u>Selling Price</u></b>	<b><u>Net Margin</u></b>
<b>Tomato,</b> 6 KG /Box	1.95	0.06	3.240	1.24
<b>Pepper</b> 7 KG/Box	2.69	0.08	3.654	0.88
<b>Cabbage</b> 10KG/Box	2.23	0.07	2.170	(0.13)
<b>Cucumber</b> 10 KG/Box	3.27	0.10	5.440	2.08
<b>Melon</b> 20 KG/Box	7.15	0.21	10.480	3.11

Rounded Data

# Risk Analysis:

## Key Areas of Risk Include

- Raw Product Supply Chain
- Operations & Sales Management
- Market Competition & Price

# Conclusion

- Based on farm-gate price data provided by farmers and published wholesales price data it appears that a vegetable packing business start-up in southwest Kosovo could be profitable.
- Investors need to do their own independent research before implementing this project.
- KPEP staff can use the Vego financial model as a tool to assist in further research and analysis of this business opportunity

*Thank You*

*Question & Answers*