

# **EVALUATING THE IMPACT OF ALTERNATIVE MARKETING SCENARIOS FOR WASHINGTON STATE FARMS**

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AREC 04-02

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## **ABSTRACT**

Even though farming only accounts for about 1 percent of the national gross domestic product, it is essential to our nation and our communities. Because of the inputs necessary for farming, changes in the agricultural industry can have broad and sweeping effects on the overall economy. This study examines the effects of changes in different marketing scenarios on the Washington state economy and Washington state farmers.

Household consumption of fruit, including Washington supplied fruit and imports, creates a ripple effect through the economy of about \$500 million. For vegetables, the ripple effect created by household consumption is about \$525 million. We examine the effects of changes in import substitution and direct marketing using a software and database program, IMPLAN, which is based on an input-output model.

If Washington farmers supply more of the fruit and vegetables that Washington households consume, it creates a win-win situation for all industries involved, save the foreign and domestic trade sectors. Because of import substitution, employment increases, the amount of money leaked out of the Washington state economy due to imports decreases, and total output increases.

When Washington farmers capture increases in the marketing and transportation sectors through direct marketing, it is not always a win-win situation. If Washington farmers wholesale, transport, and retail their fruit and vegetables themselves, it shifts those direct marketing margins from current players in the Washington state economy to farmers. Employment on farms increases while employment in the wholesale, transportation, and retail sectors decrease. Total output increases, but value added decreases. All gains and losses must be weighed carefully when deciding whether or not to implement certain policies and programs. This study is useful when looking at various marketing options and programs for Washington state farmers.

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## **Introduction**

As the number of farms across the United States decrease, it becomes increasingly important to develop means to preserve and improve the agriculture industry. Farming plays an important role in the United States. Even though it only accounts for small percentages of national employment and the gross domestic product (GDP), 1 percent or less (Bureau of Economic Analysis, Bureau of Labor and Statistics), it has a significant effect on the national economy because of the relationships it has to other industries. Farming requires many inputs, such as machinery, fertilizer, seed, labor, and financial services. Farming also involves other industries in order to sell its products, such as transportation, wholesaling, or retailing. There are many ways farming impacts the economy, and it is important understand farming in its relationship to the broader economy.

From New York to California, data have been collected and analyzed, reports have been written, and programs have been implemented in attempts to better understand and improve farmers' situations.

## **New York**

A study conducted by a team at Cornell University (Peters, Bills, et al.) addresses three questions. First, how does vegetable production in New York compare with New York vegetable consumption? Second, how are production and consumption of vegetables affected by the recommendations in the U.S. Department of Agriculture (USDA) Food Pyramid? And third, what implications do these comparisons have for New York State agriculture?

In 1999, New Yorkers consumed 2.9 billion pounds of vegetables. New York State agriculture harvested an average of 3.3 billion pounds of vegetables yearly during 1994-1998, but after making adjustments for losses after the harvest and inedible portions, the consumable harvest equivalent is 1.6 billion pounds. The analysis states that New York has the capacity to provide 38 percent of the total quantity of vegetables consumed in the state, which implies that 62 percent of all vegetables consumed in New York must come from outside sources.

Based on consumption data, the diets of New Yorkers mirror national trends. Both nationally and in New York, people fail to meet the recommendations of the USDA Food Guide Pyramid in three major ways. First, people are not eating enough vegetables by about one serving per person per day. Second, people are not eating enough dark green or deep yellow vegetables, dry beans, peas, or lentils. Third, there is not enough diversity in the vegetables eaten. More than three-quarters of all vegetable servings come from ten vegetables.

The study does not attempt to clearly identify potential production opportunities for producers. Instead, it adds new a framework and perspective to marketing discussions and helps identify areas that lack adequate research for understanding and setting goals for in-state vegetable marketing.

## **Minnesota**

A report compiled by Ken Meter and Jon Rosales asserts that as much as \$800 million flows out of Southeast Minnesota's agricultural economy each year. Creating a regional food system is an option they present as a method to reduce these losses.

There are seven counties in Southeast Minnesota, and in 1997, the region's farms brought in \$866 million through sales of crops and livestock. Unfortunately, the region's farmers spent \$947 million to raise the food, which was \$80 million short of what they received to grow those products. Another problem was that many of the inputs were supplied by non-local suppliers, who do not reinvest in the local community. Meter and Rosales assert this resulted in another loss of an estimated \$400 million to imported agricultural inputs. Further, Southeast Minnesota residents spent \$506 million buying food, nearly all of which was supplied by out-of-state producers. Meter and Rosales present three examples of the region attempting to become more self-reliant.

### **Root River Market (Houston)**

When the last grocery store in Houston closed in 1998, no firms took over the business. Instead, a group of nine residents established a locally owned cooperative grocery business. With 350 residents joining the coop for \$100 a share and other investments, the coop was able to open a mid-sized store with an initial fund of \$180,000. The store not only fulfills a vital role in the community, it offers the town the option of healthier food choices.

### **Rebekah's Restaurant (Plainview)**

Paula Wheeler and Diane Lutzke own a café called Rebekah's and buy from 13 local producers, spending more than \$15,000 a year on fresh food. The menu changes to reflect the available harvest throughout the seasons. Wheeler asserts that buying from locals farms, instead of being more difficult, is a way to support local growers as the growers support the restaurant. It allows for a connection with their neighbors.

### **Full Circle Cooperative (Oak Center)**

Not far from Rebekah's Restaurant is a marketing cooperative, Full Circle Cooperative, which delivers organic produce raised by 14 local growers to cooperative food stores in the Twin Cities. Full Circle was a reliable and consistent supplier of organic foods even before mainstream consumers gained an interest in organic foods. An essential part of building a sustainable region of organic food producers is having farmers cooperate with each other.

Meter and Rosales present these as examples of using food to build connections among Southeast Minnesota communities. These connections can foster new business activity, which can enhance flows of money to link and enrich neighbors in the region.

## **California**

In California, many initiatives have been implemented in order to put fresh, healthy food on their tables. Many place emphasis on buying locally produced, often organic foods. One such program is Farm Fresh Choice.

Farm Fresh Choice is a farming cooperative in Hollister, California that sells fresh fruits and vegetables. It gives members access to discounted organic produce and allows them to build relationships with farmers. The idea behind the coop is to help people to learn where their food comes from, which will help them gain a greater appreciation of the effort behind growing that food (Lawson).

Another program in place in California urges consumers to buy locally grown produce. A nonprofit organization, PlacerGROWN, identifies produce as being grown in Placer County, even when it is sold elsewhere. Not only does the program place labels on Placer County produce, it provides promotional services, such as a yearly Farm Trails Guide. The guide maps farms and their products, along with stories of the farmers themselves. The organization has even has a website – [placergrown.org](http://placergrown.org) – that offers information, recipes, upcoming events, restaurants serving Placer County produce, and hopes to offer consumers a way to order products directly from the site (Lawson).

Eastern Washington and North Idaho offer a similar guide to PlacerGROWN's Farm Trails Guide, the Rural Roots Inland Northwest Farm Fresh Buying Guide. It too lists and maps farms and their products, and provides information on community-supported agriculture, organic food, and information on why you might want to buy local products (Rural Roots).

## **Why Evaluate Impacts of Direct Marketing Changes for Washington Farms?**

Why is it important to look at the potential effects of changes in direct marketing scenarios for Washington farmers? Again, the agriculture industry impacts the economy in many ways. Through input demands for fertilizer, seed, machinery, and many other products, input supply industries are affected. The transportation, wholesaling, retailing, and other sectors are also affected when farms sell their products.

If farmers are able to encourage consumers to buy more local produce, what effect will that have on the Washington State economy? How many jobs will be created and in what sectors? If farmers decide to transport their own fruit to a farmer's market, what impact will that have on the transportation sector? How will it affect the farmer's output? How is the Washington State economy affected by trying to improve the position and

sustainability of Washington State farms? We can try to answer these questions by using an economic model of the Washington State economy.

## What is an Input-Output Model?

In its fundamental form, an input-output model is a system of linear equations. Those equations demonstrate how an industry's product is distributed throughout the economy. Input-output models represent flows to and from industries and institutions. They can be used to predict changes in overall economic activity that result from a change in final demand in one or more economic sectors.

One of the basic components of an input-output model is a transactions table. It shows the monetary flows of goods and services in an economic system for a given time period, usually one year. There are five key elements of a transactions table. Intermediate purchases of goods and services are the purchases that industries make in order to complete production of their product. Final demands are purchases for final consumption made by non-producing groups, such as households, government or foreign trade. Final payments are payments for inputs or factors needed to complete the production process that are not included in the intermediate purchases, such as wages or taxes. Total outlays, or expenditures by the industry, and total outputs, or sales by the industry, are column and row sums of the transactions table.

Suppose we have an economic system composed of three industries *A*, *B*, and *C*. A transactions table for the system may resemble Figure 1.

**Figure 1** EXAMPLE INPUT-OUTPUT TRANSACTIONS TABLE

		Consumption (\$ million)				Total Output
		Industry A	Industry B	Industry C	Final Demand	
Production (\$ million)	Industry A	19	3	7	25	54
	Industry B	7	6	1	15	29
	Industry C	9	4	4	15	32
	Final Payment	19	16	20	0	55
	Total Input	54	29	32	55	170

From the transactions table, a direct requirements table may be constructed. A direct requirements table illustrates the purchases by a sector or industry from all other sectors or industries in order to produce \$1 of output. The table provides a production recipe for an industry. The input-output coefficients in the table are found by dividing each flow in an industry's column by the total outlays for that industry. For our example, the direct requirements table for the transactions table in Figure 1 may be found in Figure 2.

**Figure 2** EXAMPLE DIRECT REQUIREMENTS TABLE

		Consumption (\$ million)		
		Industry A	Industry B	Industry C
Production (\$ million)	Industry A	0.352	0.103	0.219
	Industry B	0.130	0.207	0.031
	Industry C	0.167	0.138	0.125
	Final Payment	0.352	0.552	0.625
Total		1	1	1

The input-output coefficients are useful for economic analysis. Using the production recipes of the direct requirements table, we can construct an economic model. What would happen in our economic system if the final demand for Industry *A* next year increased to \$40 million, the final demand for Industry *B* decreased to \$10 million, and the final demand for Industry *C* increased to \$35 million? These changes in demand may have occurred because of changes in consumer preferences, government spending, or a countless other factors. How much total output from each industry would be needed in order to meet the changes in final demands?

In our original transactions table, we observe total output for Industries *A*, *B*, and *C* of 54, 29, and 32, respectively, when final demands were 25, 15, and 15, respectively. Each industry must produce enough to satisfy their own final demands, and must also produce enough to satisfy inputs into the other industries. If final demands change, interindustry demands will also change.

Remember, these tables are based on a system of linear equations, and linear equations can be represented in matrices. The interindustry demands from the transactions table are represented below:

$$Z = \begin{bmatrix} 19 & 3 & 7 \\ 7 & 6 & 1 \\ 9 & 4 & 4 \end{bmatrix}$$

If we create a diagonal matrix from a vector of the total output and multiply it by the above matrix, we are able to obtain the matrix for the input-output coefficients, as seen in the direct requirements table.

$$A = Z(X^{\wedge})^{-1} = \begin{bmatrix} 19 & 3 & 7 \\ 7 & 6 & 1 \\ 9 & 4 & 4 \end{bmatrix} \begin{bmatrix} 1/54 & 0 & 0 \\ 0 & 1/29 & 0 \\ 0 & 0 & 1/32 \end{bmatrix}$$

$$A = \begin{bmatrix} 0.352 & 0.103 & 0.219 \\ 0.130 & 0.207 & 0.031 \\ 0.167 & 0.138 & 0.125 \end{bmatrix}$$

If the previous matrix is to be useful in economic analysis, we must be sure that  $|I - A| \neq 0$ . If it is zero, then the total requirements table or matrix cannot be found.

$$(I - A) = \begin{bmatrix} -0.648 & 0.103 & 0.219 \\ 0.130 & -0.793 & 0.031 \\ 0.167 & 0.138 & -0.875 \end{bmatrix} \quad |I - A| = -0.402 \neq 0$$

Since the determinate of the matrix does not equal zero, we know we can find the total requirements matrix, also known as the Leontief inverse (Miller and Blair).

$$(I - A)^{-1} = \begin{bmatrix} 1.716 & 0.300 & 0.440 \\ 0.295 & 1.320 & 0.121 \\ 0.373 & 0.265 & 1.246 \end{bmatrix}$$

The system of equations may be represented in matrix form as follows:

$$X = AX + Y \quad \text{output} = \text{technical coefficients} * \text{output} + \text{final demand}$$

Rearranging the equations in the following ways:

$$\begin{aligned} X - AX &= Y \\ (I - A)X &= Y \end{aligned}$$

we can arrive at the final equation:

$$X = (I - A)^{-1}Y.$$

An input-output model is based on the assumption that supply is a function of demand; each industry's output depends on final demands. Another assumption that is necessary to an input-output model is that the technical coefficients, or the production recipes of the industry, do not change. Fixed proportions technology means that no matter how much the demands increase or decrease, the proportions of the interindustry demands with respect to the total inputs remains the same.

Using the total requirements table in Figure 3, we are able to determine how much output each industry will be needed to meet the new final demands.

**Figure 3** EXAMPLE TOTAL REQUIREMENTS TABLE

		Consumption (\$ million)		
		Industry A	Industry B	Industry C
Production (\$ million)	Industry A	1.716	0.300	0.440
	Industry B	0.295	1.320	0.121
	Industry C	0.373	0.265	1.246
	Total	2.385	1.886	1.806



farmers in Washington. The climate of Washington is not suitable to grow certain fruits and vegetables, such as pineapple. Fruits and vegetables produced within the state are sold alongside those from neighboring states, or even foreign countries.

In order to measure economic impacts presented in this paper, we constructed a Type I, or households exogenous, input-output model.

**Figure 4** FRUIT MARKETING & TRANSPORTATION MARGINS TABLE

Sector	Description	Value	Margin Value	% Local
16	Fruits	0.483	\$240,876,002	70.7%
433	Railroads and Related Services	0.005	\$2,493,540	72.1%
435	Motor Freight Transport and Warehousing	0.049	\$24,436,695	82.6%
436	Water Transportation	0.012	\$5,984,497	100.0%
437	Air Transportation	0.002	\$997,416	46.2%
438	Pipe Lines, Except Natural Gas	0.000	\$0	9.8%
447	Wholesale Trade	0.212	\$105,726,109	92.0%
448	Building Materials & Gardening	0.001	\$498,708	93.5%
449	General Merchandise Stores	0.006	\$2,992,248	92.6%
450	Food Stores	0.208	\$103,731,281	95.0%
451	Automotive Dealers & Service Stations	0.014	\$6,981,913	95.0%
452	Apparel and Accessory Stores	0.000	\$0	93.5%
453	Furniture & Home Furnishing Stores	0.000	\$0	93.5%
455	Miscellaneous Retail	0.008	\$3,989,665	93.5%
	Total	1	\$498,708,074	

In Figure 4, we can see the \$241 million households spent on fruit in 2000. The last column shows the percent of the good or service provided by Washington industry. Since Washington farmers supplied only 70.7%, the value of fruit supplied by Washington farms was around \$170 million, and the value of domestic and foreign fruit imports was around \$71 million. When Washington households spent \$241 million on fruit, at the farm gate the total consumer value was nearly \$500 million, as can be seen at the bottom of the table. Table 1, Appendix A, shows how that \$500 of retail fruit expenditure by households was distributed throughout the Washington State economy. The key players in this table are the farmers, and the transportation, wholesale, and retail sectors. The transportation sector includes railroads and related services, motor freight transport and warehousing, water and air transportation, which captured roughly \$34 million of the \$500 million effect. Wholesale merchants captured nearly \$106 million, and retail food and food/service station stores captured approximately \$111 million.

In the value column, we can observe the direct requirements for each industry when households spend \$1 on the selected sector, Fruit. Of that dollar, farmers receive 48 cents. Transportation receives roughly 7 cents, wholesaling around 21 cents, and retail trade approximately 23 cents.

Figure 5 provides the same information with respect to vegetables. The percentage of vegetables provided to Washington households by Washington farmers was 60.8%. This

translates into a value of about \$154 million for Washington farmers and \$100 million for domestic and foreign imports. When households spent roughly \$254 million on vegetables, in farm gate value, the total expenditure in consumer prices was about \$525 million. When households spend \$1 on vegetables, of that dollar, farmers receive about 48 cents, transportation receives about 12 cents, wholesaling roughly 15 cents, and retail trade nearly 24 cents.

**Figure 5 VEGETABLE MARKETING & TRANSPORTATION MARGINS TABLE**

Sector	Description	Value	Margin Value	% Local
18	Vegetables	0.484	\$253,962,000	60.8%
433	Railroads and Related Services	0.011	\$5,771,864	72.1%
435	Motor Freight and Transportation	0.105	\$55,095,060	82.6%
436	Water Transportation	0.005	\$2,623,574	100.0%
437	Air Transportation	0.003	\$1,574,145	46.2%
438	Pipe Lines, Except Natural Gas	0.000	\$0	9.8%
447	Wholesale Trade	0.154	\$80,806,092	92.0%
448	Building Materials & Gardening	0.001	\$524,715	93.5%
449	General Merchandise Stores	0.006	\$3,148,289	92.6%
450	Food Stores	0.209	\$109,665,414	95.0%
451	Automotive Dealers & Service Stations	0.014	\$7,346,008	95.0%
452	Apparel & Accessory Stores	0.000	\$0	93.5%
453	Furniture & Home Furnishing Stores	0.000	\$0	93.5%
455	Miscellaneous Retail	0.008	\$4,197,719	93.5%
	Total	1	\$524,714,880	

When Washington imports domestic and foreign fruits and vegetables, the money associated with those imports is a leakage from the Washington state economy. When Washington fruits and vegetables are sold, the local interindustry effects stemming from farm production can be observed and measured. It stands to reason that if the amount of fruit supplied locally could be increased, not only would local farmers receive more money, the ripple effect through the rest of the Washington state economy would also increase.

### ***Import Substitution***

Even small increases in the amount of fruit supplied by farmers in Washington can have effects on both local farmers and the Washington state economy. When we substitute local products for imported products, we are transferring money into the Washington state economy that formerly paid for imports. We will examine the economic impacts of a 5%, 10%, and 100% increase in the percent of fruit supplied by Washington farmers to Washington households. We will use the data in Figure 4 and only adjust the %Local number, holding all else equal. The effects we will look at are the employment, output, and total value added impacts.

## **Current Situation - Fruit**

We will treat 2000 as the base year. Under the base situation, Washington households spend about \$241 million on fruit, which includes local and imported products. As mentioned before, since 70.7% of fruit is provided locally, that results in Washington farmers receiving about \$170 million of that \$241 million.

The sector having the largest indirect ripple effect from household consumption of fruit is wholesale trade with around \$20 million. Indirect effects associated with changes in import substitution for Washington farms largely come from the marketing sectors: transportation, wholesale trade, and retail trade, and the agricultural sector. The total sales from household fruit are about \$603 million. That number includes direct and indirect effects. The direct effect of household purchases of \$500 million generates a ripple effect on the rest of the economy of roughly \$103 million. Refer to Table 1 in Appendix A for a detailed description of the monetary distributions of the direct and indirect effects of household fruit consumption.

Under the base situation, direct employment on farms amounts to around 2,900 jobs. The aggregated retail trade sector includes such sectors as food stores, general merchandise stores, and food/service stores and directly accounted for about 2,300 jobs. The wholesale trade sector directly accounted for about 800 jobs. The sector with the highest number of indirect jobs associated with household consumption of fruit was the agricultural services sector. The total number of jobs, direct and indirect, resulting from Washington household consumption of fruit was about 7,600. The employment multiplier for household consumption of fruit is 1.23. Refer to Table 2 in Appendix A to see more detail about direct, indirect, and total employment.

## **5% Increase - Fruit**

In order to evaluate a 5% increase in the amount of fruit supplied by Washington farmers and a 5% reduction in fruit imports, the only change that needs to be made in the margins table (Figure 4) is the %Local. It needs to be increased from 70.8% to 75.8%, leaving all else equal.<sup>2</sup>

A 5% increase in import substitution directly creates about 200 jobs on farms. In the rest of the economy, the number of jobs indirectly related to a 5% increase in import substitution increases from the base by about 75 jobs. The indirect effect captures the impact of increased Washington fruit production on the rest of the economy. Refer to Tables 1, 2, and 3 in Appendix A to see a detailed layout of the output, employment, and total value added impacts.

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<sup>2</sup> Farms experience about a 7% increase in output and total value added. The value that 70.8% is associated with is about \$240 million. Since total direct output is not changing, the values are merely shifting from imports to locally produced fruit, the 5% increase in locally supplied fruit will have a larger effect.

## **10% Increase - Fruit**

To evaluate a 10% increase in import substitution, 70.8% was increased to 80.8%. The direct effect on farm output increases by about \$24 million. The total indirect effects associated with a 10% increase in imports substitution increase by about \$9.7 million. About 400 direct jobs are created and indirectly, nearly 150. Again, Tables 1, 2, and 3 in Appendix A contain more detailed information.

## **100% Increase - Fruit**

Although somewhat unrealistic, it may be useful to look at a 100% increase in import substitution, or a situation in which Washington farmers supply all fruit that Washington households buy. We can see that even at 100% import substitution, there is still some level of foreign and domestic trade. This represents imports of transportation, wholesaling, and retailing, but not fruit. Do Washington farmers have the capacity to meet the assumed increase in demand? IMPLAN data say yes. In 2000, supply of fruits was \$975 billion and total gross fruit demanded in Washington was about \$260 billion.

The direct output for farms increases by about \$70 million, while the domestic and foreign imports decrease by the same amount. This makes sense since our aim was to transfer money from the import sectors to the local farm sectors. All in all, total output increases by roughly \$27 million. The number of jobs on farms increases by 41.5% and the number of jobs indirectly related increases by 30%.

## **Current Situation – Vegetables**

Under the base situation for vegetables, IMPLAN data indicate that only 60.8% of the roughly \$254 million Washington households spent on vegetables is supplied by Washington farmers. This translates into about \$154 million in direct sales, whereas direct sales for fruits are about \$170 million. As with fruit, the sector having the largest indirect impact is agricultural services with about \$22 million. The number of jobs directly related to Washington household consumption is highest in the retail trade sector with around 2,400 jobs. The agricultural sector comes in second with about 1,155 jobs. In other words, household consumption of vegetables in Washington creates almost twice as many jobs in retail trade as in agriculture. Based on the information in Table 8, household consumption of vegetables has a jobs multiplier of 1.36. Refer to Tables 7, 8, and 9 in Appendix B for a more detailed description of the output, employment, and total value added impacts.

Vegetables have about \$154 million in direct output for farms and 1,155 directly related jobs on the farm. Fruits, however, have roughly \$170 million in direct output for farms and 2,900 directly related jobs on the farm. This indicates that the fruit industry is much more labor intensive than vegetables. If translated into jobs per dollar of output ratio, fruit is higher than vegetables by 56%.

## **5% Increase – Vegetables**

As with the fruit sector, in order to evaluate a 5% increase in import substitution, the only change needed is an increase in %Local from 60.8% to 65.8%, holding all else equal. Farm sales increase by about \$12.7 million. The total indirect sales increase by about \$5.4 million. The number of jobs directly related to a 5% substitution for imports increases farm jobs by close to 100 jobs, and the total number of indirect jobs increases by 100 jobs. As with the fruit sector, the indirect effects are largely related to the marketing sectors, transportation, wholesale trade, and retail trade. The indirect jobs for vegetables increased by more than the fruit sector by about 25 jobs, indicating stronger backward linkage for vegetables as compared to fruit.

## **10% and 100% increases – Vegetables**

Refer to tables 7, 8, and 9 in Appendix B to observe the results of the 10% and 100% increases in import substitution.

## ***Direct Marketing***

While import substitution transferred a leakage of money from imports to the farming sectors, direct marketing transfers money from the transportation and marketing sectors to the farming sectors. The direct marketing scenarios include three key areas: wholesale trade, transportation, and retail trade. For our direct marketing scenarios, we will evaluate the economic impacts of allowing the farmer to capture a larger portion of the marketing and transportation margins through direct marketing.

## **Current Situation – Fruit**

It is not as easy to look at changes in the direct marketing scenario as with import substitution. With import substitution, we only had to change the percentage supplied locally. With direct marketing, other factors must be taken into account. We only want to deal with economic activities associated with local fruit. With this in mind, we developed a new table that represents margins associated with only Washington fruit in all sectors. For each sector, we multiply the original Margin Value by its respective %Local to obtain the percentage of each sector that is related to local services. This will give us a new total direct output, which indicates that we must also recalculate the direct requirements for each industry. We then set %Local to 100%. See the following table in Figure 6.

**Figure 6** RECALCULATED FRUIT MARGINS TABLE

Sector	Description	Value	Margin Value	%Local
16	Fruits	0.417	\$170,299,333	100%
433	Railroads and Related Services	0.004	\$1,797,843	100%
435	Motor Freight Transport and Warehousing	0.049	\$20,184,710	100%
436	Water Transportation	0.015	\$5,984,497	100%
437	Air Transportation	0.001	\$460,806	100%
438	Pipe Lines, Except Natural Gas	0.000	\$0	100%
447	Wholesale Trade	0.238	\$97,268,020	100%
448	Building Materials & Gardening	0.001	\$466,292	100%
449	General Merchandise Stores	0.007	\$2,770,822	100%
450	Food Stores	0.241	\$98,544,717	100%
451	Automotive Dealers & Service Stations	0.016	\$6,632,817	100%
452	Apparel and Accessory Stores	0.000	\$0	100%
453	Furniture & Home Furnishing Stores	0.000	\$0	100%
455	Miscellaneous Retail	0.009	\$3,730,336	100%
		1	\$408,140,194	

Once the impacts have been run, the domestic and foreign imports may be added back into the direct and total output effects and held constant across all direct marketing scenarios. This allows us to obtain a more comparable number to the import substitution scenario. Since fruit imports do not have indirect effects, it is reasonable to deal with only local sectors. In our import substitution scenario, we were shifting leakages of money from imports to the farming sectors. In the direct marketing scenario, we are shifting money from the marketing and transportation sectors to the farming sector.

### 5% Increase – Fruit

A 5% shift in total direct marketing, including transportation, wholesale trade, and retail trade to fruit, increases farms' sales by \$11.8 million dollars, reflecting the increased capture of the consumer dollar through direct marketing. Total sales increase by about \$2.6 million because of the ripple effect on indirectly related industries, such as agricultural services and petroleum products. As with a 5% increase in import substitution, around 200 jobs on farms are directly associated with a 5% increase in direct marketing. However, about 160 jobs were lost in the transportation, wholesale trade, and retail trade sectors. See Tables 4 and 5 in Appendix A for output and employment figures. We are assuming that household fruit consumption remains unchanged with the increased direct marketing.

Total value added actually decreases by about \$1.8 million dollars. The value added per unit of output associated with the farming sector is typically not as high as other sectors, especially marketing sectors like transportation, wholesale trade, and retail trade. With direct marketing, economic activity is diverted from the higher total value added sectors to farming sectors, and it is logical that value added will decrease.

The jobs associated with the marketing sectors are typically higher paying than those on farms. If you transfer jobs from the transportation, wholesale, and retail industries into the farming industry, the money earned overall will be less. See Table 6 in Appendix A for a more detailed view of the value added impacts.

For the 10% and 100% increases in direct marketing, refer to the aforementioned tables. The output for farms continues to increase, both directly and indirectly, while the output for retail trade, wholesale trade, and transportation decrease. Employment continues to increase. Total value added continues to decrease, by about \$36 million at the 100% level.

When observing the differences between the 5%, 10%, and 100% increases in direct marketing as compared to the 5%, 10%, and 100% increases in import substitution, it seems strange to see such a change in the differences at the 100% level. Keep in mind that when evaluating the import substitution scenarios, we are merely increasing the amount of fruit supplied to households in Washington by Washington farmers; we are increasing from 70.7% to 100%. Another way to think of this is to consider that the Fruit Marketing and Transportation Margins Table reflects that when households spend \$1 on fruit, farmers receive 48 cents of that fruit. However, since only 70.7% is supplied locally, farmers are really only receiving about 34 cents of that dollar. We are changing the %Local to reflect the farmer receiving the entire 48 cents.

When evaluating the direct marketing scenarios, we are changing the actual margins each sector receives. Originally, when households buy \$1 of fruit, farmers receive about 48 cents of that dollar with the rest going towards transportation, wholesaling, and retailing. We are changing the margins to reflect the farmer receiving the entire dollar and the other sectors receiving none of it. In the import substitution scenario, the farmer is still receiving 48 cents; in the direct marketing scenario, the farmer is receiving the entire dollar.

Refer to Chart 1 in Appendix A to observe the comparison between import substitution and direct marketing regarding employment for fruit. Refer to Chart 2 for output impacts for fruit, Chart 3 for total value added impacts, and Chart 4 for a look at how direct marketing and import substitution affect farmers.

## **Current Situation – Vegetables**

As with the fruit direct marketing scenario, the margins table for the vegetables sector was recalculated before any impacts were run. See Figure 7 below. Once the impacts were run, the foreign and domestic imports were added to the results to provide a number comparable to the import substitution scenario.

**Figure 7** RECALCULATED VEGETABLE MARGINS TABLE

Sector	Description	Margin	Margin Value	%Local
18	Vegetables	0.386	\$154,408,896	100%
433	Railroads and Related Services	0.010	\$4,161,514	100%
435	Motor Freight and Transportation	0.114	\$45,508,520	100%
436	Water Transportation	0.007	\$2,623,574	100%
437	Air Transportation	0.002	\$727,255	100%
438	Pipe Lines, Except Natural Gas	0.000	\$0	100%
447	Wholesale Trade	0.186	\$74,341,604	100%
448	Building Materials & Gardening	0.001	\$490,608	100%
449	General Merchandise Stores	0.007	\$2,915,316	100%
450	Food Stores	0.260	\$104,182,143	100%
451	Automotive Dealers & Service Stations	0.017	\$6,978,708	100%
452	Apparel & Accessory Stores	0.000	\$0	100%
453	Furniture & Home Furnishing Stores	0.000	\$0	100%
455	Miscellaneous Retail	0.010	\$3,924,867	100%
	Total	1	\$400,263,006	

### **5% Increase – Vegetables**

If farmers capture 5% more of the revenues from household consumption of vegetables in the form of direct marketing, total sales for farms will increase by roughly \$12.5 million. The indirect effect of the increase in direct marketing is an increase of roughly \$2.7 million. Direct employment on farms increases by about 90 jobs, but direct and indirect employment actually decreases by about 7 jobs. As was mentioned before, vegetables are not as labor intensive an industry as are fruits. If we transfer employment from the marketing sectors to the farming sector, in this case (vegetables), we actually lose jobs because the increased employment on farms does not equal what is lost from marketing; it does not increase enough to cover the number of jobs that are lost from transportation, wholesale trade, and retail trade. Total value added also decreases, by about \$1.4 million.

### **10%, and 100% increases – Vegetables**

See Tables 10, 11, and 12 in Appendix B for detailed results of the current situation, 5%, 10%, and 100% increases in direct marketing. Output for farms continues to increase, as does total overall output for the economy. Total employment decreases by nearly 150 jobs at the 100% level, and total value added decreases by about \$2.7 million at the 10% level.

Refer to Chart 5 in Appendix B to compare import substitution and direct marketing effects on employment for vegetables. Refer to Chart 6 for output impacts for vegetables, Chart 7 for total value added impacts, and Chart 8 to observe the differences between direct marketing and import substitution for farmers.

## Summary and Conclusions

Household consumption of fruits and vegetables in 2000 produced a ripple effect in the Washington state economy. Fruit farmers had direct sales of about \$170 million and vegetable farmers had direct sales of about \$154 million. Total sales as a result of household spending on fruits, including direct and indirect effects was about \$602 million. Total sales for vegetables as a result of household spending, including direct and indirect effects, was about \$635 million. Direct farm employment for fruit was about 2,900 jobs and 1,155 for vegetables, indicating that fruit is a more labor-intensive industry. Total employment for fruit was about 7,600 jobs, and total employment for vegetables was about 6,300 jobs.

Import substitution captures leakages from the economy, and efforts are currently being made to identify and encourage consumption of locally grown produce (Office of the Governor). After running various import substitution scenarios, we were able to evaluate their impacts on the Washington state economy. The jobs multiplier for fruit was 1.23 and 1.36 for vegetables. A 5% increase in Washington supplied fruit to households resulted in an increase in direct sales for farms of roughly \$12 million. For vegetables, direct sales for farms increased by about \$12.7 million. A 10% increase in import substitution for fruits resulted in an increase in total employment, including direct and indirect effects, of about 560 jobs. For vegetables, total employment increased by about 390 jobs. When Washington farmers supplied 100% of household fruit consumption, indirect value added increased by about \$15 million. For vegetables, indirect value added increased by roughly \$24 million. In these scenarios, nearly all sectors experience an increase in economic activity. The only sectors to experience a loss are those associated with fruit and vegetable imports.

We were also able to evaluate the impacts of various direct marketing scenarios on the Washington state economy. When fruit farmers capture a 5% increase in the marketing and transportation sectors, direct sales for farms increased by about \$11.8 million. Direct sales for vegetable farmers increased by about \$12.3 million. When fruit farmers increase their direct marketing by 10%, total employment, including direct and indirect effects, increases by about 180 jobs. When vegetable farmers increase their direct marketing by 10%, total employment actually decreases by about 14 jobs. Unlike the import substitution scenarios, some sectors gain while other sectors lose. Instead of shifting money from a leakage from the economy, we are diverting money from one area of current economy contributors to another. This results in both gains and losses. Basically the farm sector gains at the expense of the marketing sector.

Both import substitution and direct marketing scenarios are intended to better the farm economy. When looking at the value to the farmer, both are close competitors. However, it may be more feasible for farmers to implement an increase in their direct marketing strategies, such as transporting their product to a market themselves, or attending farmer's markets to capture the retail trade margins.

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**APPENDIX A: FRUIT**

**Table 1: Output Impact - Fruit - Import Substitution**

**Direct\***

Industry		Current	5% Increase	10% Increase	100% Increase
1	Farms (AGG)	169,621,596	181,695,028	193,695,878	240,019,216
448	Retail Trade (AGG)	111,078,386	111,078,386	111,078,386	111,078,386
447	Wholesale Trade	97,196,684	97,196,684	97,196,684	97,196,684
28001	Domestic Trade (AGG)	73,568,876	64,368,650	55,223,733	19,924,313
384	Transportation (AGG)	28,234,018	28,234,018	28,234,018	28,234,018
25001	Foreign Trade (AGG)	17,102,623	14,188,523	11,291,940	111,118
513	Miscellaneous (AGG)	1,811,133	1,852,027	1,892,675	2,049,578
	<b>Total</b>	<b>498,613,316</b>	<b>498,613,316</b>	<b>498,613,315</b>	<b>498,613,313</b>

**Indirect\***

Industry		Current	5% Increase	10% Increase	100% Increase
447	Wholesale Trade	20,029,568	21,178,319	22,320,164	26,727,699
26	Ag Services (AGG)	16,364,527	17,524,291	18,677,082	23,126,864
210	Petroleum products (AGG)	11,573,771	12,212,535	12,847,459	15,298,271
384	Transportation (AGG)	10,075,469	10,335,874	10,594,713	11,593,832
469	Business services (AGG)	9,537,009	9,667,835	9,797,875	10,299,829
461	Real estate (AGG)	6,662,369	6,905,176	7,146,524	8,078,127
513	Miscellaneous (AGG)	4,859,114	4,976,949	5,094,075	5,546,184
506	Professional services (AGG)	4,233,713	4,293,884	4,353,694	4,584,558
48	Construction (AGG)	3,950,908	4,122,396	4,292,853	4,950,820
443	Utilities (AGG)	3,748,760	3,919,788	4,089,788	4,745,988
133	Wood products (AGG)	3,664,204	3,721,763	3,778,977	3,999,822
441	Communications (AGG)	3,396,854	3,616,893	3,835,610	4,679,857
456	Banking	3,038,712	3,110,482	3,181,820	3,457,185
161	Pulp and paper (AGG)	2,776,981	2,947,814	3,117,619	3,773,068
1	Farms (AGG)	2,227,375	2,384,716	2,541,099	3,144,754
174	Printing and publishing (AGG)	1,824,882	1,841,328	1,857,675	1,920,775
186	Chemicals and allied (AGG)	1,587,232	1,638,806	1,690,069	1,887,946
	<b>Total</b>	<b>109,551,448</b>	<b>114,398,848</b>	<b>119,217,097</b>	<b>137,815,578</b>

**Total\***

Industry		Current	5% Increase	10% Increase	100% Increase
1	Farms (AGG)	171,848,982	184,079,751	196,236,977	243,163,976
447	Wholesale Trade	117,226,253	118,375,003	119,516,849	123,924,384
448	Retail Trade (AGG)	112,040,754	112,056,742	112,072,640	112,134,011
28001	Domestic Trade (AGG)	73,568,876	64,368,650	55,223,733	19,924,313
384	Transportation (AGG)	38,309,486	38,569,892	38,828,733	39,827,852
26	Ag Services (AGG)	16,364,527	17,524,291	18,677,082	23,126,864
25001	Foreign Trade (AGG)	17,102,623	14,188,523	11,291,940	111,118
210	Petroleum products (AGG)	11,573,771	12,212,535	12,847,459	15,298,271
469	Business services (AGG)	9,537,009	9,667,835	9,797,875	10,299,829
461	Real estate (AGG)	6,670,247	6,828,976	6,986,750	7,595,762
513	Miscellaneous (AGG)	6,662,369	6,905,176	7,146,524	8,078,127
506	Professional services (AGG)	4,233,713	4,293,884	4,353,694	4,584,558
48	Construction (AGG)	3,950,908	4,122,396	4,292,853	4,950,820
443	Utilities (AGG)	3,748,760	3,919,788	4,089,788	4,745,988
133	Wood products (AGG)	3,664,204	3,721,763	3,778,977	3,999,822
441	Communications (AGG)	3,396,854	3,616,893	3,835,610	4,679,857
456	Banking	3,038,712	3,110,482	3,181,820	3,457,185
	<b>Total</b>	<b>602,938,046</b>	<b>607,562,581</b>	<b>612,159,305</b>	<b>629,902,737</b>

\*2000 Dollars

**Table 2: Employment Impact: Fruit - Import Substitution****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	2,907.9	3,114.9	3,320.6	4,114.8
448 Retail Trade (AGG)	2,271.4	2,271.4	2,271.4	2,271.4
447 Wholesale Trade	808.1	808.1	808.1	808.1
384 Transportation (AGG)	214.5	214.5	214.5	214.5
513 Miscellaneous (AGG)	7.6	7.6	7.6	7.6
Total	6,209.5	6,416.4	6,622.2	7,416.3

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	649.3	695.3	741.1	917.9
447 Wholesale Trade	166.5	176.1	185.6	222.2
469 Business services (AGG)	125.3	126.9	128.6	134.8
384 Transportation (AGG)	86.9	89.0	91.1	99.3
506 Professional services (AGG)	67.8	68.8	69.8	73.4
48 Construction (AGG)	52.2	54.5	56.8	65.5
133 Wood products (AGG)	38.4	40.9	43.4	53.0
457 Credit Agencies	39.0	40.3	41.6	46.4
461 Real estate (AGG)	38.4	39.8	41.2	46.6
513 Miscellaneous (AGG)	38.1	38.9	39.6	42.6
1 Farms (AGG)	31.1	33.3	35.5	43.9
448 Retail Trade (AGG)	19.3	19.7	20.0	21.3
174 Printing and publishing (AGG)	16.2	16.3	16.4	17.0
463 Hotels and Lodging Places	15.0	15.2	15.5	16.5
456 Banking	13.1	13.5	13.8	15.0
124 Apparel (AGG)	12.6	13.4	14.3	17.5
161 Pulp and paper (AGG)	12.4	13.2	14.0	16.9
Total	1,421.7	1,495.2	1,568.2	1,850.0

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	2,939.0	3,148.2	3,356.1	4,158.7
448 Retail Trade (AGG)	2,290.7	2,291.0	2,291.3	2,292.6
447 Wholesale Trade	974.7	984.2	993.7	1,030.4
26 Ag Services (AGG)	649.3	695.3	741.1	917.9
384 Transportation (AGG)	301.4	303.5	305.6	313.8
469 Business services (AGG)	125.3	126.9	128.6	134.8
506 Professional services (AGG)	67.8	68.8	69.8	73.4
48 Construction (AGG)	52.2	54.5	56.8	65.5
513 Miscellaneous (AGG)	45.6	46.4	47.2	50.2
133 Wood products (AGG)	38.4	40.9	43.4	53.0
457 Credit Agencies	39.0	40.3	41.6	46.4
461 Real estate (AGG)	38.4	39.8	41.2	46.6
174 Printing and publishing (AGG)	16.2	16.3	16.4	17.0
463 Hotels and Lodging Places	15.0	15.2	15.5	16.5
456 Banking	13.1	13.5	13.8	15.0
124 Apparel (AGG)	12.6	13.4	14.3	17.5
161 Pulp and paper (AGG)	12.4	13.2	14.0	16.9
Total	7,631.2	7,911.6	8,190.4	9,266.4

\*Number of jobs

**Table 3: Total Value Added Impact - Fruit -- Import Substitution****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	99,157,438	99,157,438	99,157,438	99,157,438
1 Farms (AGG)	82,796,978	88,690,359	94,548,318	117,160,046
447 Wholesale Trade	67,206,429	67,206,429	67,206,429	67,206,429
384 Transportation (AGG)	12,501,407	12,501,407	12,501,407	12,501,407
513 Miscellaneous (AGG)	338,624	338,624	338,624	338,624
Total	262,000,876	267,894,257	273,752,216	296,363,944

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
447 Wholesale Trade	13,849,400	14,643,701	15,433,227	18,480,807
26 Ag Services (AGG)	10,129,746	10,847,622	11,561,183	14,315,530
469 Business services (AGG)	6,328,530	6,415,817	6,502,579	6,837,483
384 Transportation (AGG)	4,816,948	4,937,328	5,056,983	5,518,854
461 Real estate (AGG)	4,739,151	4,911,868	5,083,546	5,746,224
48 Construction (AGG)	2,753,481	2,873,461	2,992,719	3,453,057
513 Miscellaneous (AGG)	2,620,704	2,681,652	2,742,235	2,976,084
506 Professional services (AGG)	2,617,636	2,654,606	2,691,353	2,833,199
456 Banking	2,012,285	2,059,812	2,107,053	2,289,404
441 Communications (AGG)	2,025,417	2,058,018	2,090,423	2,215,505
443 Utilities (AGG)	1,814,322	1,893,704	1,972,609	2,277,181
133 Wood products (AGG)	1,583,438	1,686,997	1,789,935	2,187,272
210 Petroleum products (AGG)	1,443,022	1,522,641	1,601,781	1,907,262
1 Farms (AGG)	1,061,343	1,136,313	1,210,826	1,498,456
457 Credit Agencies	904,937	934,341	963,568	1,076,384
174 Printing and publishing (AGG)	856,877	864,530	872,138	901,503
161 Pulp and paper (AGG)	808,995	858,751	908,208	1,099,114
Total	60,366,230	62,981,160	65,580,365	75,613,320

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	99,817,280	99,828,019	99,838,716	99,879,984
1 Farms (AGG)	83,858,325	89,826,673	95,759,144	118,658,502
447 Wholesale Trade	81,055,826	81,850,127	82,639,658	85,687,236
384 Transportation (AGG)	17,318,355	17,438,734	17,558,390	18,020,261
26 Ag Services (AGG)	10,129,746	10,847,622	11,561,183	14,315,530
469 Business services (AGG)	6,328,530	6,415,817	6,502,579	6,837,483
461 Real estate (AGG)	4,739,151	4,911,868	5,083,546	5,746,224
513 Miscellaneous (AGG)	2,959,327	3,020,276	3,080,859	3,314,708
48 Construction (AGG)	2,753,481	2,873,461	2,992,719	3,453,057
506 Professional services (AGG)	2,617,636	2,654,606	2,691,353	2,833,199
456 Banking	2,012,285	2,059,812	2,107,053	2,289,404
441 Communications (AGG)	2,025,417	2,058,018	2,090,423	2,215,505
443 Utilities (AGG)	1,814,322	1,893,704	1,972,609	2,277,181
133 Wood products (AGG)	1,583,438	1,686,997	1,789,935	2,187,272
210 Petroleum products (AGG)	1,443,022	1,522,641	1,601,781	1,907,262
457 Credit Agencies	904,937	934,341	963,568	1,076,384
174 Printing and publishing (AGG)	856,877	864,530	872,138	901,503
Total	322,217,954	330,687,243	339,105,653	371,600,695

\*2000 Dollars

**Table 4: Output Impact - Fruit -- Direct Marketing**

**Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	169,711,664	181,546,080	193,380,528	406,685,152
448 Retail Trade (AGG)	111,049,896	105,511,608	99,932,784	0
447 Wholesale Trade	97,241,328	92,385,384	87,529,432	0
28001 Domestic Trade (AGG)	73,568,876	73,568,876	73,568,876	73,568,876
384 Transportation (AGG)	28,248,428	26,830,026	25,411,536	0
25001 Foreign Trade (AGG)	17,102,623	17,102,623	17,102,623	17,102,623
518 Miscellaneous (AGG)	1,811,327	1,789,511	1,767,527	1,377,492
<b>Total</b>	<b>498,734,142</b>	<b>498,734,108</b>	<b>498,693,306</b>	<b>498,734,143</b>

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
447 Wholesale Trade	20,039,920	20,970,888	21,902,112	38,694,940
26 Ag Services (AGG)	16,373,194	17,506,450	18,639,708	39,065,836
210 Petroleum products (AGG)	11,579,232	12,075,830	12,571,057	21,516,336
384 Transportation (AGG)	10,081,756	10,011,989	9,945,133	8,771,533
469 Business services (AGG)	9,540,544	9,283,012	9,026,145	4,406,795
461 Real estate (AGG)	6,665,036	6,739,725	6,814,955	8,178,793
518 Miscellaneous (AGG)	4,861,232	4,815,788	4,770,621	5,346,674
506 Professional services (AGG)	4,236,349	4,123,637	4,014,128	2,026,821
48 Construction (AGG)	3,952,412	4,043,709	4,135,077	5,776,463
443 Utilities (AGG)	3,750,531	3,850,589	3,950,625	5,760,963
133 Wood products (AGG)	3,398,624	3,599,039	3,799,458	7,411,871
441 Communications (AGG)	3,665,579	3,578,880	3,492,264	1,938,862
456 Banking	3,039,928	3,008,391	2,977,330	2,417,504
161 Pulp and paper (AGG)	2,778,404	2,926,998	3,075,600	5,754,364
1 Farms (AGG)	2,228,571	2,381,921	2,535,290	5,299,625
174 Printing and publishing (AGG)	1,825,507	1,761,563	1,698,009	553,972
457 Credit Agencies	1,588,108	1,595,082	1,602,401	1,737,215
<b>Total</b>	<b>109,604,926</b>	<b>112,273,488</b>	<b>114,949,912</b>	<b>164,658,564</b>

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	171,940,240	183,928,000	195,915,824	411,984,768
447 Wholesale Trade	117,281,248	113,356,272	109,431,544	38,694,940
448 Retail Trade (AGG)	112,012,576	106,453,064	100,852,904	538,761
28001 Domestic Trade (AGG)	73,568,876	73,568,876	73,568,876	73,568,876
384 Transportation (AGG)	38,330,184	36,842,016	35,356,668	8,771,533
25001 Foreign Trade (AGG)	17,102,623	17,102,623	17,102,623	17,102,623
26 Ag Services (AGG)	16,373,194	17,506,450	18,639,708	39,065,836
210 Petroleum products (AGG)	11,579,232	12,075,830	12,571,057	21,516,336
469 Business services (AGG)	9,540,544	9,283,012	9,026,145	4,406,795
461 Real estate (AGG)	6,665,036	6,739,725	6,814,955	8,178,793
518 Miscellaneous (AGG)	6,672,559	6,605,299	6,538,148	5,346,674
506 Professional services (AGG)	4,236,349	4,123,637	4,014,128	2,026,821
48 Construction (AGG)	3,952,412	4,043,709	4,135,077	5,776,463
443 Utilities (AGG)	3,750,531	3,850,589	3,950,625	5,760,963
133 Wood products (AGG)	3,398,624	3,599,039	3,799,458	7,411,871
441 Communications (AGG)	3,665,579	3,578,880	3,492,264	1,938,862
456 Banking	3,039,928	3,008,391	2,977,330	2,417,504
<b>Total</b>	<b>603,109,734</b>	<b>605,665,409</b>	<b>608,187,332</b>	<b>654,508,416</b>

\*2000 Dollars

**Table 5: Employment Impact - Fruit -- Direct Marketing****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	2,909.5	3,112.3	3,315.2	6,972.0
448 Retail Trade (AGG)	2,270.6	2,157.7	2,043.5	0
447 Wholesale Trade	808.5	768.1	727.8	0
384 Transportation (AGG)	214.5	203.9	193.0	0
518 Miscellaneous (AGG)	7.6	7.2	6.8	0
<b>Total</b>	<b>6,210.6</b>	<b>6,249.2</b>	<b>6,286.3</b>	<b>6,972.0</b>

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	649.6	694.7	739.8	1,552.1
447 Wholesale Trade	166.6	174.4	182.1	321.7
469 Business services (AGG)	125.4	121.8	118.3	55.0
384 Transportation (AGG)	86.9	86.1	85.3	71.5
506 Professional services (AGG)	67.9	66.1	64.3	32.3
48 Construction (AGG)	52.3	53.5	54.7	76.7
133 Wood products (AGG)	38.4	40.7	43.0	84.8
457 Credit Agencies	39.1	39.2	39.4	42.7
461 Real estate (AGG)	38.5	38.9	39.3	47.2
518 Miscellaneous (AGG)	38.1	37.5	36.9	26.3
1 Farms (AGG)	31.1	33.3	35.4	74.0
448 Retail Trade (AGG)	19.3	18.9	18.5	11.1
174 Printing and publishing (AGG)	16.2	15.6	15.0	4.9
463 Hotels and Lodging Places	15.0	14.7	14.4	9.0
124 Apparel (AGG)	12.6	13.4	14.2	28.6
161 Pulp and paper (AGG)	12.4	13.1	13.8	25.8
456 Banking	13.1	13.0	12.9	10.5
<b>Total</b>	<b>1,422.4</b>	<b>1,474.8</b>	<b>1,527.3</b>	<b>2,474.3</b>

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	2,940.6	3,145.6	3,350.6	7,046.1
448 Retail Trade (AGG)	2,289.9	2,176.6	2,062.0	11.1
447 Wholesale Trade	975.1	942.5	909.9	321.7
26 Ag Services (AGG)	649.6	694.7	739.8	1,552.1
384 Transportation (AGG)	301.5	290.0	278.3	71.5
469 Business services (AGG)	125.4	121.8	118.3	55.0
506 Professional services (AGG)	67.9	66.1	64.3	32.3
48 Construction (AGG)	52.3	53.5	54.7	76.7
518 Miscellaneous (AGG)	45.7	44.7	43.7	26.3
133 Wood products (AGG)	38.4	40.7	43.0	84.8
457 Credit Agencies	39.1	39.2	39.4	42.7
461 Real estate (AGG)	38.5	38.9	39.3	47.2
174 Printing and publishing (AGG)	16.2	15.6	15.0	4.9
463 Hotels and Lodging Places	15.0	14.7	14.4	9.0
124 Apparel (AGG)	12.6	13.4	14.2	28.6
161 Pulp and paper (AGG)	12.4	13.1	13.8	25.8
456 Banking	13.1	13.0	12.9	10.5
<b>Total</b>	<b>7,633.1</b>	<b>7,724.1</b>	<b>7,813.6</b>	<b>9,446.3</b>

\*Number of jobs

**Table 6: Total Value Added Impact - Fruit -- Direct Marketing****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	82,840,936	88,617,656	94,394,392	198,514,528
448 Retail Trade (AGG)	99,130,472	94,191,664	89,211,208	0
447 Wholesale Trade	67,237,296	63,879,664	60,522,028	0
384 Transportation (AGG)	12,504,655	11,883,079	11,251,928	0
518 Miscellaneous (AGG)	338,615	321,639	304,636	0
Total	262,051,974	258,893,702	255,684,192	198,514,528

**Indirect\***

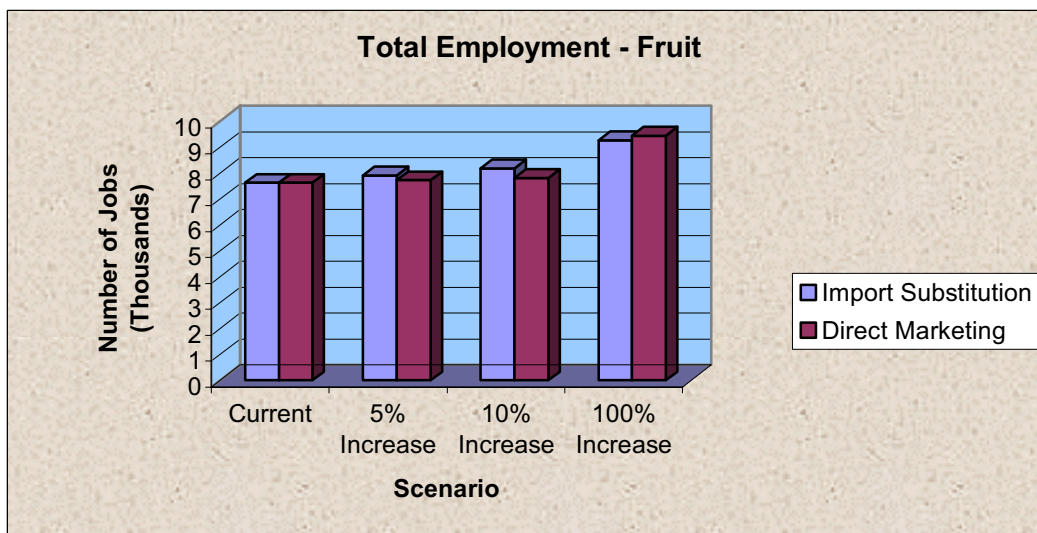
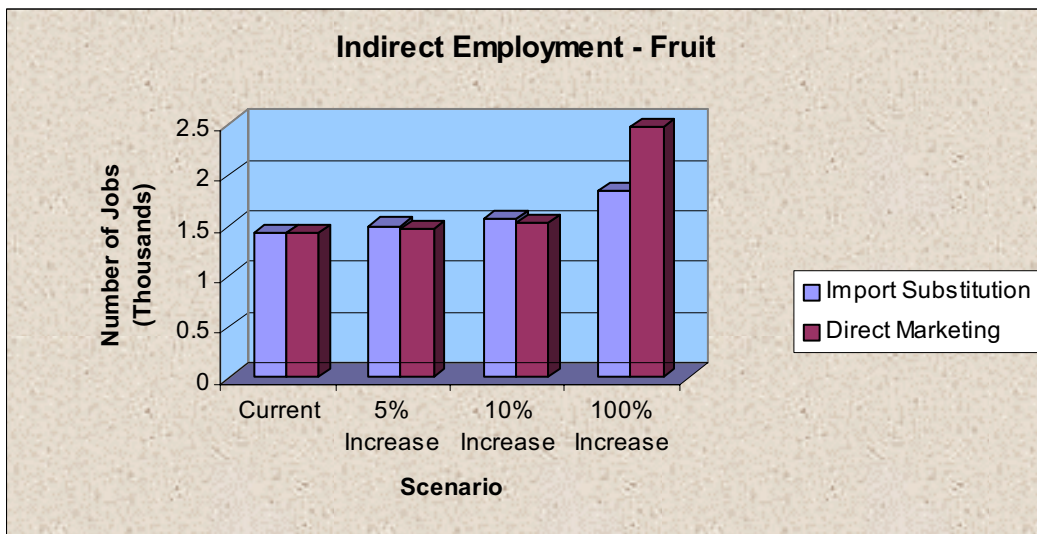
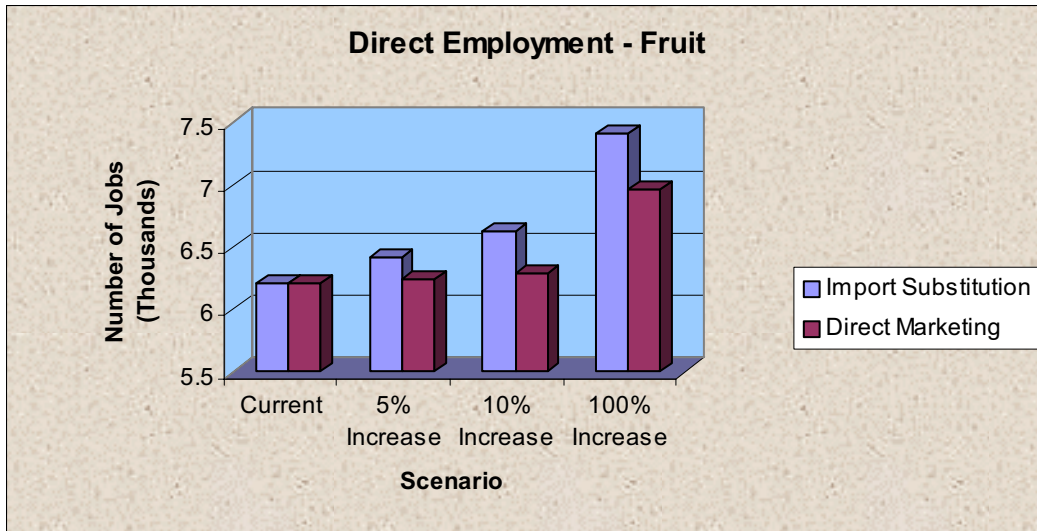
Industry	Current	5% Increase	10% Increase	100% Increase
447 Wholesale Trade	13,856,557	14,500,273	15,144,166	26,755,528
26 Ag Services (AGG)	10,135,111	10,836,560	11,538,013	24,181,160
469 Business services (AGG)	6,330,910	6,160,908	5,991,216	2,940,205
461 Real estate (AGG)	4,741,048	4,794,177	4,847,691	5,817,831
384 Transportation (AGG)	4,819,794	4,779,826	4,740,748	4,054,891
48 Construction (AGG)	2,754,530	2,818,948	2,883,414	4,041,429
518 Miscellaneous (AGG)	2,621,854	2,592,967	2,564,209	2,053,024
506 Professional services (AGG)	2,619,224	2,549,218	2,481,075	1,245,302
456 Banking	2,013,090	1,992,205	1,971,637	1,600,911
441 Communications (AGG)	2,026,183	1,979,595	1,933,029	1,098,137
443 Utilities (AGG)	1,815,176	1,857,854	1,900,546	2,673,920
133 Wood products (AGG)	1,584,265	1,679,351	1,774,439	3,488,333
210 Petroleum products (AGG)	1,443,703	1,505,580	1,567,289	2,681,904
1 Farms (AGG)	1,061,913	1,134,979	1,208,055	2,525,170
457 Credit Agencies	905,436	909,412	913,585	990,447
161 Pulp and paper (AGG)	809,409	852,680	895,953	1,676,012
174 Printing and publishing (AGG)	857,167	827,023	797,065	257,806
Total	60,395,368	61,771,556	63,152,127	88,082,008

**Total\***

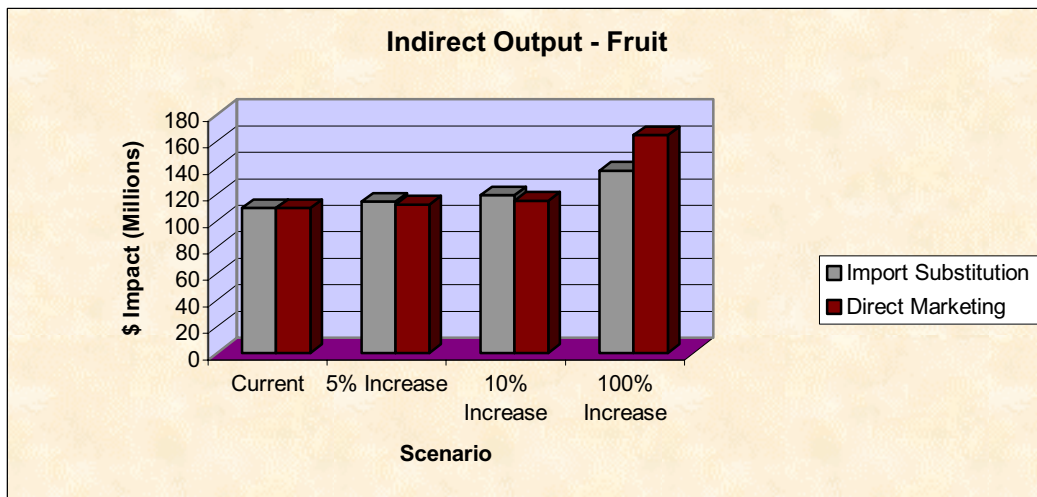
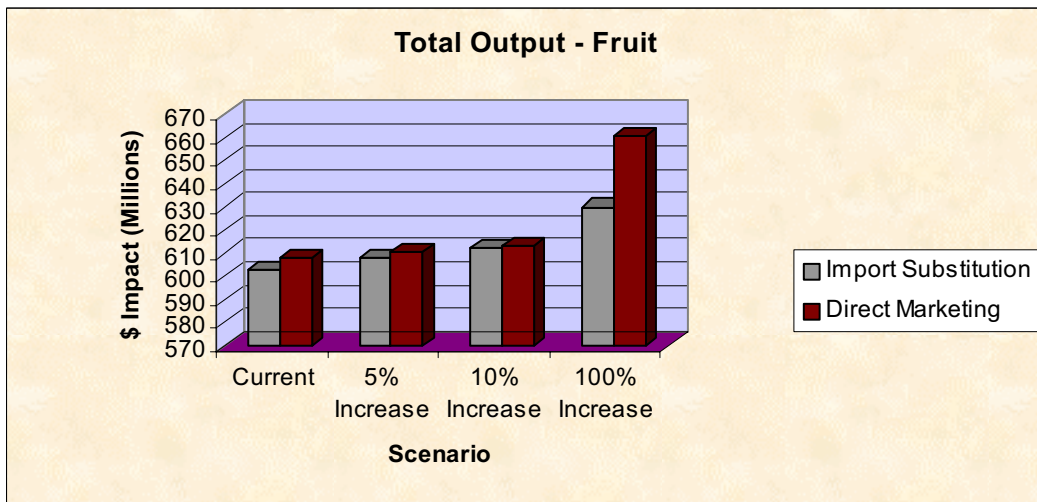
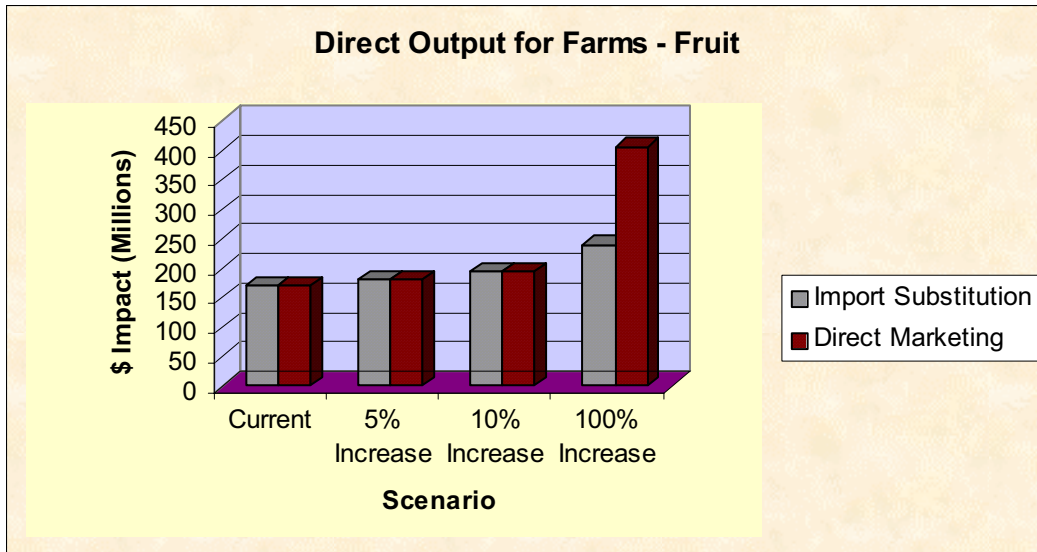
Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	83,902,848	89,752,632	95,602,448	201,039,696
448 Retail Trade (AGG)	99,790,528	94,836,792	89,841,368	362,300
447 Wholesale Trade	81,093,856	78,379,936	75,666,192	26,755,528
384 Transportation (AGG)	17,324,448	16,662,905	15,992,675	4,054,891
26 Ag Services (AGG)	10,135,111	10,836,560	11,538,013	24,181,160
469 Business services (AGG)	6,330,910	6,160,908	5,991,216	2,940,205
461 Real estate (AGG)	4,741,048	4,794,177	4,847,691	5,817,831
518 Miscellaneous (AGG)	2,960,469	2,914,606	2,868,845	2,053,024
48 Construction (AGG)	2,754,530	2,818,948	2,883,414	4,041,429
506 Professional services (AGG)	2,619,224	2,549,218	2,481,075	1,245,302
456 Banking	2,013,090	1,992,205	1,971,637	1,600,911
441 Communications (AGG)	2,026,183	1,979,595	1,933,029	1,098,137
443 Utilities (AGG)	1,815,176	1,857,854	1,900,546	2,673,920
133 Wood products (AGG)	1,584,265	1,679,351	1,774,439	3,488,333
210 Petroleum products (AGG)	1,443,703	1,505,580	1,567,289	2,681,904
457 Credit Agencies	905,436	909,412	913,585	990,447
161 Pulp and paper (AGG)	809,409	852,680	895,953	1,676,012
Total	322,250,233	320,483,359	318,669,413	286,701,028

\*2000 Dollars

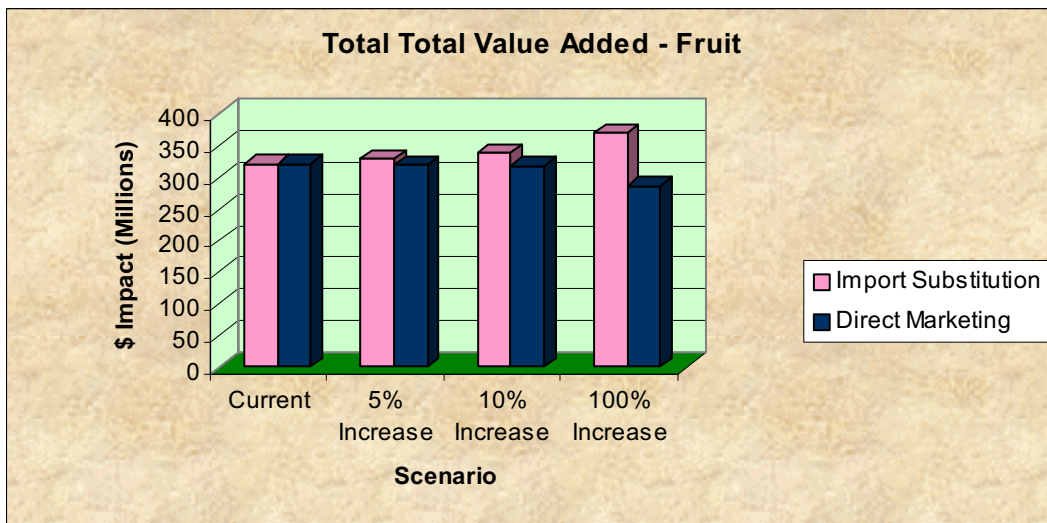
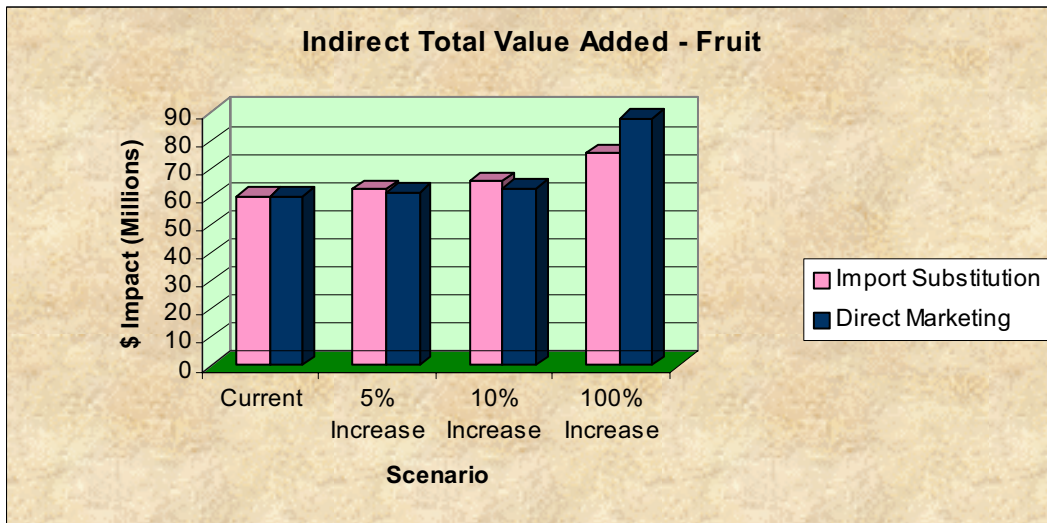
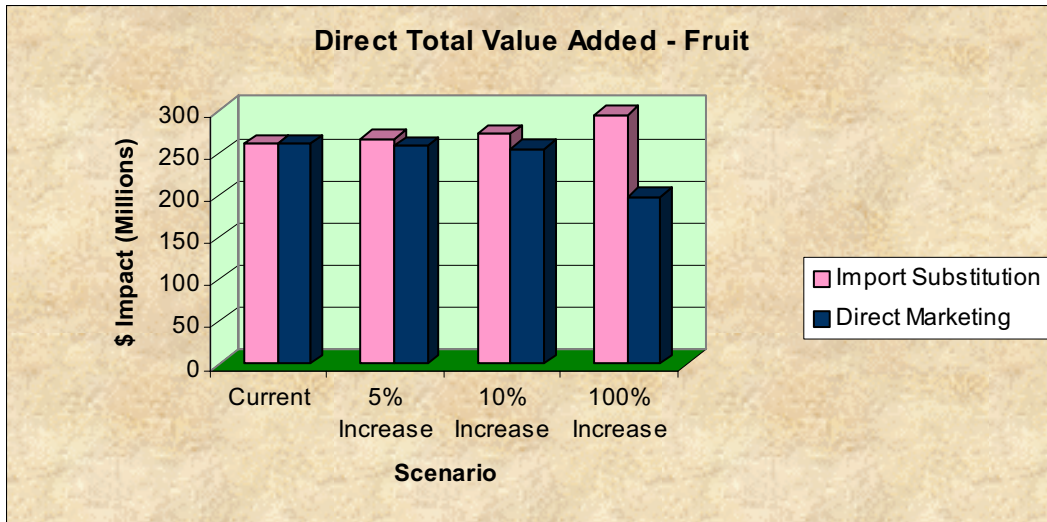
**Chart 1: Import Substitution vs. Direct Marketing for Employment -- Fruit**



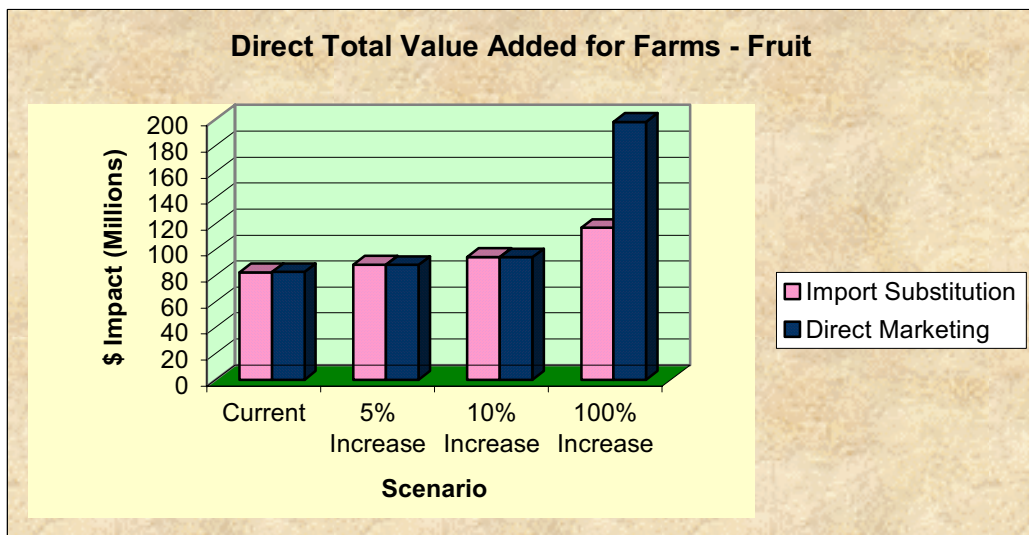
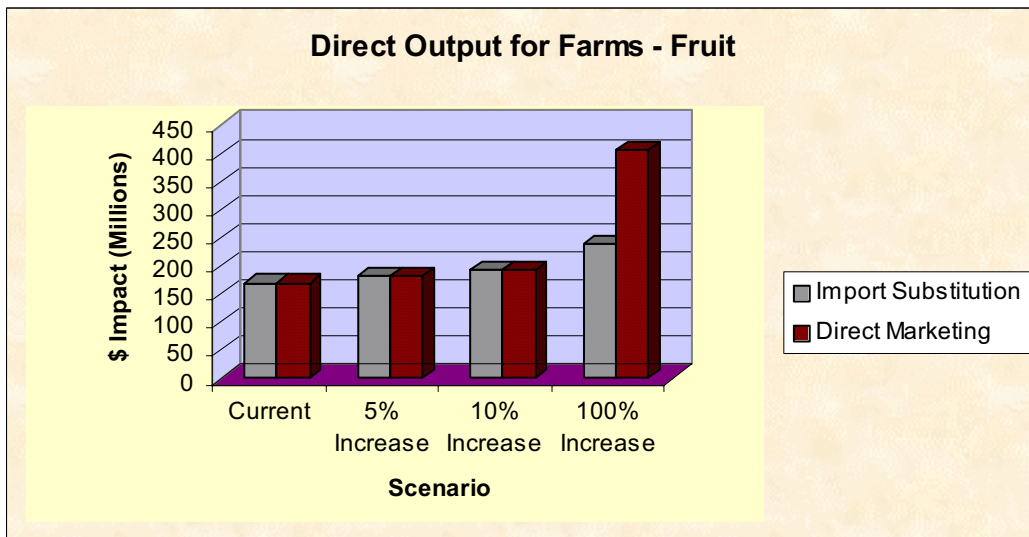
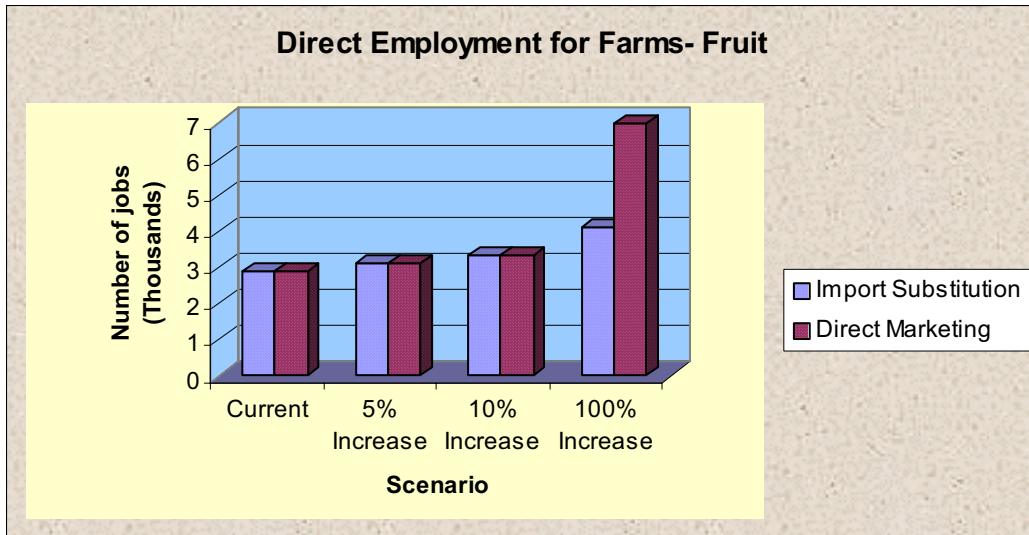
**Chart 2: Import Substitution vs. Direct Marketing for Output -- Fruit**



**Chart 3: Import Substitution vs. Direct Marketing for Total Value Added -- Fruit**



**Chart 4: Import Substitution vs. Direct Marketing for Farms -- Fruit**



## **APPENDIX B: VEGETABLES**

**TABLE 7: OUTPUT IMPACT - VEGETABLES -- IMPORT SUBSTITUTION****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	154,358,032	167,078,128	179,773,696	253,915,840
448 Retail Trade (AGG)	117,380,392	117,380,392	117,380,392	117,380,392
28001 Domestic Trade (AGG)	110,264,472	99,332,528	88,421,664	24,702,206
447 Wholesale Trade	74,297,040	74,297,040	74,297,040	74,297,040
384 Transportation (AGG)	52,912,944	52,912,944	52,912,944	52,912,944
25001 Foreign Trade (AGG)	14,234,343	12,444,370	10,657,847	224,555
518 Miscellaneous (AGG)	1,238,289	1,240,109	1,241,925	1,252,532
Total	524,685,512	524,685,511	524,685,508	524,685,509

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	21,803,120	23,594,282	25,381,992	35,822,212
447 Wholesale Trade	15,994,256	16,949,608	17,903,120	23,471,624
384 Transportation (AGG)	14,543,158	14,834,465	15,125,212	16,823,172
469 Business services (AGG)	9,192,784	9,346,625	9,500,169	10,396,867
461 Real estate (AGG)	8,474,424	8,896,861	9,318,484	11,780,763
210 Petroleum products (AGG)	6,642,353	6,843,660	7,044,579	8,217,948
518 Miscellaneous (AGG)	5,895,128	6,043,213	6,191,012	7,054,158
161 Pulp and paper (AGG)	4,621,032	4,975,093	5,328,472	7,392,202
48 Construction (AGG)	4,589,318	4,818,967	5,048,172	6,386,734
506 Professional services (AGG)	3,935,874	4,006,591	4,077,171	4,489,362
443 Utilities (AGG)	3,828,673	3,989,416	4,149,848	5,086,774
441 Communications (AGG)	3,732,321	3,800,748	3,869,044	4,267,890
1 Farms (AGG)	3,245,879	3,511,992	3,777,604	5,328,788
456 Banking	3,130,833	3,215,174	3,299,351	3,790,950
457 Credit Agencies	2,205,091	2,282,536	2,359,831	2,811,236
174 Printing and publishing (AGG)	1,646,877	1,663,094	1,679,280	1,773,803
124 Apparel (AGG)	1,120,304	1,209,176	1,297,877	1,815,890
Total	114,601,424	119,981,499	125,351,217	156,710,371

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	157,603,904	170,590,112	183,551,296	259,244,624
448 Retail Trade (AGG)	118,449,144	118,466,768	118,484,352	118,587,056
28001 Domestic Trade (AGG)	110,264,472	99,332,528	88,421,664	24,702,206
447 Wholesale Trade	90,291,296	91,246,648	92,200,160	97,768,664
384 Transportation (AGG)	67,456,104	67,747,408	68,038,152	69,736,112
26 Ag Services (AGG)	21,803,120	23,594,282	25,381,992	35,822,212
25001 Foreign Trade (AGG)	14,234,343	12,444,370	10,657,847	224,555
469 Business services (AGG)	9,192,784	9,346,625	9,500,169	10,396,867
461 Real estate (AGG)	8,474,424	8,896,861	9,318,484	11,780,763
518 Miscellaneous (AGG)	7,133,417	7,283,321	7,432,937	8,306,690
210 Petroleum products (AGG)	6,642,353	6,843,660	7,044,579	8,217,948
161 Pulp and paper (AGG)	4,621,032	4,975,093	5,328,472	7,392,202
48 Construction (AGG)	4,589,318	4,818,967	5,048,172	6,386,734
506 Professional services (AGG)	3,935,874	4,006,591	4,077,171	4,489,362
443 Utilities (AGG)	3,828,673	3,989,416	4,149,848	5,086,774
441 Communications (AGG)	3,732,321	3,800,748	3,869,044	4,267,890
456 Banking	3,130,833	3,215,174	3,299,351	3,790,950
Total	635,383,411	640,598,570	645,803,689	676,201,606

\*2000 Dollars

**Table 8: Employment Impact - Vegetables -- Import Substitution****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	2,400.4	2,400.4	2,400.4	2,400.4
1 Farms (AGG)	1,155.2	1,250.4	1,345.4	1,900.2
447 Wholesale Trade	617.7	617.7	617.7	617.7
384 Transportation (AGG)	442.2	442.2	442.2	442.2
518 Miscellaneous (AGG)	7.6	7.6	7.6	7.6
Total	4,623.1	4,718.3	4,813.3	5,368.1

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	865.4	936.6	1,007.6	1,422.4
447 Wholesale Trade	133.0	140.9	148.9	195.2
384 Transportation (AGG)	132.0	134.5	137.0	151.3
469 Business services (AGG)	124.1	126.0	127.9	138.9
506 Professional services (AGG)	63.7	64.9	66.0	72.7
48 Construction (AGG)	60.6	63.7	66.7	84.4
457 Credit Agencies	54.2	56.1	58.1	69.2
461 Real estate (AGG)	48.9	51.3	53.8	68.0
518 Miscellaneous (AGG)	48.1	49.1	50.1	56.2
1 Farms (AGG)	41.4	44.8	48.1	67.9
161 Pulp and paper (AGG)	20.7	22.3	23.9	33.1
448 Retail Trade (AGG)	21.3	21.6	22.0	24.1
463 Hotels and Lodging Places	16.3	16.6	16.9	18.8
124 Apparel (AGG)	15.1	16.3	17.5	24.5
174 Printing and publishing (AGG)	14.6	14.7	14.9	15.7
456 Banking	13.5	13.9	14.3	16.4
441 Communications (AGG)	11.4	11.6	11.8	12.9
Total	1,684.4	1,785.0	1,885.4	2,471.7

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	2,421.7	2,422.0	2,422.4	2,424.5
1 Farms (AGG)	1,196.5	1,295.1	1,393.5	1,968.1
26 Ag Services (AGG)	865.4	936.6	1,007.6	1,422.4
447 Wholesale Trade	750.7	758.7	766.6	812.9
384 Transportation (AGG)	574.2	576.7	579.1	593.5
469 Business services (AGG)	124.1	126.0	127.9	138.9
506 Professional services (AGG)	63.7	64.9	66.0	72.7
48 Construction (AGG)	60.6	63.7	66.7	84.4
518 Miscellaneous (AGG)	55.7	56.7	57.7	63.8
457 Credit Agencies	54.2	56.1	58.1	69.2
461 Real estate (AGG)	48.9	51.3	53.8	68.0
161 Pulp and paper (AGG)	20.7	22.3	23.9	33.1
463 Hotels and Lodging Places	16.3	16.6	16.9	18.8
124 Apparel (AGG)	15.1	16.3	17.5	24.5
174 Printing and publishing (AGG)	14.6	14.7	14.9	15.7
456 Banking	13.5	13.9	14.3	16.4
441 Communications (AGG)	11.4	11.6	11.8	12.9
Total	6,307.5	6,503.3	6,698.7	7,839.9

\*Number of jobs

**Table 9: Total Value Added Impact - Vegetables -- Import Substitution****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	104,791,408	104,791,408	104,791,408	104,791,408
1 Farms (AGG)	76,050,416	82,317,488	88,572,472	125,101,600
447 Wholesale Trade	51,372,520	51,372,520	51,372,520	51,372,520
384 Transportation (AGG)	24,105,368	24,105,368	24,105,368	24,105,368
518 Miscellaneous (AGG)	320,335	320,335	320,335	320,335
Total	256,640,047	262,907,119	269,162,103	305,691,231

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	13,496,125	14,604,827	15,711,391	22,173,724
447 Wholesale Trade	11,059,192	11,719,768	12,379,072	16,229,401
384 Transportation (AGG)	7,027,440	7,162,203	7,296,709	8,082,218
461 Real estate (AGG)	6,028,123	6,328,615	6,628,529	8,380,025
469 Business services (AGG)	6,116,565	6,216,921	6,317,083	6,902,029
48 Construction (AGG)	3,195,917	3,356,108	3,515,990	4,449,700
518 Miscellaneous (AGG)	3,223,986	3,302,351	3,380,565	3,837,335
506 Professional services (AGG)	2,447,930	2,492,116	2,536,218	2,793,770
456 Banking	2,073,289	2,129,141	2,184,885	2,510,429
441 Communications (AGG)	2,075,179	2,114,115	2,152,976	2,379,924
443 Utilities (AGG)	1,977,863	2,059,297	2,140,574	2,615,233
1 Farms (AGG)	1,483,405	1,605,005	1,726,375	2,435,186
161 Pulp and paper (AGG)	1,345,877	1,448,984	1,551,892	2,152,874
457 Credit Agencies	1,257,200	1,301,354	1,345,422	1,602,784
210 Petroleum products (AGG)	833,076	858,665	884,205	1,033,359
174 Printing and publishing (AGG)	773,946	781,500	789,039	833,069
494 Legal Services	756,600	773,640	790,646	889,964
Total	65,171,712	68,254,608	71,331,570	89,301,023

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	105,530,040	105,542,056	105,554,032	105,624,024
1 Farms (AGG)	77,533,816	83,922,488	90,298,848	127,536,784
447 Wholesale Trade	62,431,712	63,092,288	63,751,592	67,601,920
384 Transportation (AGG)	31,132,808	31,267,570	31,402,076	32,187,586
26 Ag Services (AGG)	13,496,125	14,604,827	15,711,391	22,173,724
461 Real estate (AGG)	6,028,123	6,328,615	6,628,529	8,380,025
469 Business services (AGG)	6,116,565	6,216,921	6,317,083	6,902,029
518 Miscellaneous (AGG)	3,544,321	3,622,686	3,700,901	4,157,671
48 Construction (AGG)	3,195,917	3,356,108	3,515,990	4,449,700
506 Professional services (AGG)	2,447,930	2,492,116	2,536,218	2,793,770
456 Banking	2,073,289	2,129,141	2,184,885	2,510,429
441 Communications (AGG)	2,075,179	2,114,115	2,152,976	2,379,924
443 Utilities (AGG)	1,977,863	2,059,297	2,140,574	2,615,233
161 Pulp and paper (AGG)	1,345,877	1,448,984	1,551,892	2,152,874
457 Credit Agencies	1,257,200	1,301,354	1,345,422	1,602,784
210 Petroleum products (AGG)	833,076	858,665	884,205	1,033,359
174 Printing and publishing (AGG)	773,946	781,500	789,039	833,069
Total	321,793,786	331,138,730	340,465,651	394,934,903

\*Dollars

**Table 10: Output Impact - Vegetables -- Direct Marketing****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	154,395,104	166,680,528	178,965,936	400,183,328
448 Retail Trade (AGG)	117,366,864	111,538,176	105,669,800	0
28001 Domestic Trade (AGG)	110,264,472	110,264,472	110,264,472	110,264,472
447 Wholesale Trade	74,324,680	70,602,440	66,920,228	0
384 Transportation (AGG)	52,915,408	50,240,504	47,604,476	0
25001 Foreign Trade (AGG)	14,234,343	14,234,343	14,234,343	14,234,343
518 Miscellaneous (AGG)	1,238,525	1,178,940	1,120,172	57,250
Total	524,739,396	524,739,403	524,779,427	524,739,393

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	21,808,346	23,534,936	25,261,534	56,351,252
447 Wholesale Trade	15,997,528	16,699,464	17,403,044	30,056,090
384 Transportation (AGG)	14,544,605	14,269,824	14,001,850	9,164,757
469 Business services (AGG)	9,194,480	8,976,132	8,760,641	4,839,942
461 Real estate (AGG)	8,475,807	8,716,525	8,957,777	13,290,187
210 Petroleum products (AGG)	6,642,555	6,626,331	6,611,251	6,333,275
518 Miscellaneous (AGG)	5,895,469	5,833,373	5,771,896	4,658,845
161 Pulp and paper (AGG)	4,622,137	4,947,867	5,273,709	11,139,014
48 Construction (AGG)	4,590,139	4,722,215	4,854,685	7,224,905
506 Professional services (AGG)	3,937,843	3,849,988	3,766,016	2,224,805
443 Utilities (AGG)	3,829,005	3,890,241	3,951,697	5,057,072
441 Communications (AGG)	3,732,773	3,653,642	3,575,249	2,152,778
1 Farms (AGG)	3,246,647	3,502,858	3,759,058	8,372,476
456 Banking	3,131,389	3,107,369	3,084,116	2,653,409
457 Credit Agencies	2,205,371	2,216,506	2,228,176	2,436,465
174 Printing and publishing (AGG)	1,647,191	1,590,259	1,533,860	510,192
124 Apparel (AGG)	1,120,609	1,204,289	1,288,067	2,795,984
Total	114,621,892	117,341,817	120,082,625	169,261,446

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
1 Farms (AGG)	157,641,744	170,183,376	182,724,992	408,555,808
448 Retail Trade (AGG)	118,360,984	112,508,520	106,616,472	554,299
28001 Domestic Trade (AGG)	110,264,472	110,264,472	110,264,472	110,264,472
447 Wholesale Trade	90,322,208	87,301,904	84,323,272	30,056,090
384 Transportation (AGG)	67,460,016	64,510,328	61,606,328	9,164,757
26 Ag Services (AGG)	21,808,346	23,534,936	25,261,534	56,351,252
25001 Foreign Trade (AGG)	14,234,343	14,234,343	14,234,343	14,234,343
469 Business services (AGG)	9,194,480	8,976,132	8,760,641	4,839,942
461 Real estate (AGG)	8,475,807	8,716,525	8,957,777	13,290,187
518 Miscellaneous (AGG)	7,133,993	7,012,313	6,892,068	4,716,095
210 Petroleum products (AGG)	6,642,555	6,626,331	6,611,251	6,333,275
161 Pulp and paper (AGG)	4,622,137	4,947,867	5,273,709	11,139,014
48 Construction (AGG)	4,590,139	4,722,215	4,854,685	7,224,905
506 Professional services (AGG)	3,937,843	3,849,988	3,766,016	2,224,805
443 Utilities (AGG)	3,829,005	3,890,241	3,951,697	5,057,072
441 Communications (AGG)	3,732,773	3,653,642	3,575,249	2,152,778
456 Banking	3,131,389	3,107,369	3,084,116	2,653,409
Total	635,382,233	638,040,499	640,758,621	688,812,501

\*2000 Dollars

**Table 11: Employment Impact - Vegetables -- Direct Marketing****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	2,400.3	2,280.8	2,160.9	0
1 Farms (AGG)	1,155.4	1,247.4	1,339.3	2,994.7
447 Wholesale Trade	618.0	587.0	556.4	0
384 Transportation (AGG)	442.1	419.9	397.7	0
518 Miscellaneous (AGG)	7.6	7.2	6.8	0
Total	4,623.4	4,542.2	4,461.2	2,994.7

**Indirect\***

Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	865.6	934.3	1,002.9	2,239.0
447 Wholesale Trade	133.0	138.8	144.7	249.9
384 Transportation (AGG)	132.1	129.3	126.5	77.4
469 Business services (AGG)	124.1	120.9	117.7	59.4
48 Construction (AGG)	60.6	62.4	64.2	95.6
506 Professional services (AGG)	63.7	62.3	61.0	36.4
457 Credit Agencies	54.3	54.5	54.8	59.9
461 Real estate (AGG)	48.9	50.3	51.7	76.7
518 Miscellaneous (AGG)	48.1	47.3	46.5	32.5
1 Farms (AGG)	41.4	44.6	47.9	106.7
161 Pulp and paper (AGG)	20.7	22.2	23.6	49.9
448 Retail Trade (AGG)	20.0	19.5	19.1	11.2
124 Apparel (AGG)	15.1	16.3	17.4	37.9
463 Hotels and Lodging Places	16.3	16.0	15.7	13.2
174 Printing and publishing (AGG)	14.6	14.1	13.6	4.5
456 Banking	13.5	13.4	13.3	11.5
441 Communications (AGG)	11.4	11.2	10.9	6.0
Total	1,683.5	1,757.4	1,831.5	3,167.7

**Total\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	2,420.3	2,300.3	2,179.9	11.2
1 Farms (AGG)	1,196.8	1,292.0	1,387.2	3,101.4
26 Ag Services (AGG)	865.6	934.3	1,002.9	2,239.0
447 Wholesale Trade	751.0	725.9	701.1	249.9
384 Transportation (AGG)	574.2	549.1	524.3	77.4
469 Business services (AGG)	124.1	120.9	117.7	59.4
48 Construction (AGG)	60.6	62.4	64.2	95.6
506 Professional services (AGG)	63.7	62.3	61.0	36.4
457 Credit Agencies	54.3	54.5	54.8	59.9
518 Miscellaneous (AGG)	55.7	54.5	53.4	32.5
461 Real estate (AGG)	48.9	50.3	51.7	76.7
161 Pulp and paper (AGG)	20.7	22.2	23.6	49.9
124 Apparel (AGG)	15.1	16.3	17.4	37.9
463 Hotels and Lodging Places	16.3	16.0	15.7	10.3
174 Printing and publishing (AGG)	14.6	14.1	13.6	4.5
456 Banking	13.5	13.4	13.3	11.5
441 Communications (AGG)	11.4	11.2	10.9	6.0
Total	6,306.8	6,299.6	6,292.6	6,159.5

\*Number of jobs

**Table 12: Total Value Added Impact - Vegetables -- Direct Marketing****Direct\***

Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	104,781,120	99,575,184	94,335,880	0
1 Farms (AGG)	76,068,688	82,121,608	88,174,536	197,166,512
447 Wholesale Trade	51,391,632	48,817,896	46,271,840	0
384 Transportation (AGG)	24,104,162	22,888,034	21,686,476	0
518 Miscellaneous (AGG)	320,446	304,150	288,240	0
Total	256,666,048	253,706,872	250,756,972	197,166,512

**Indirect\***

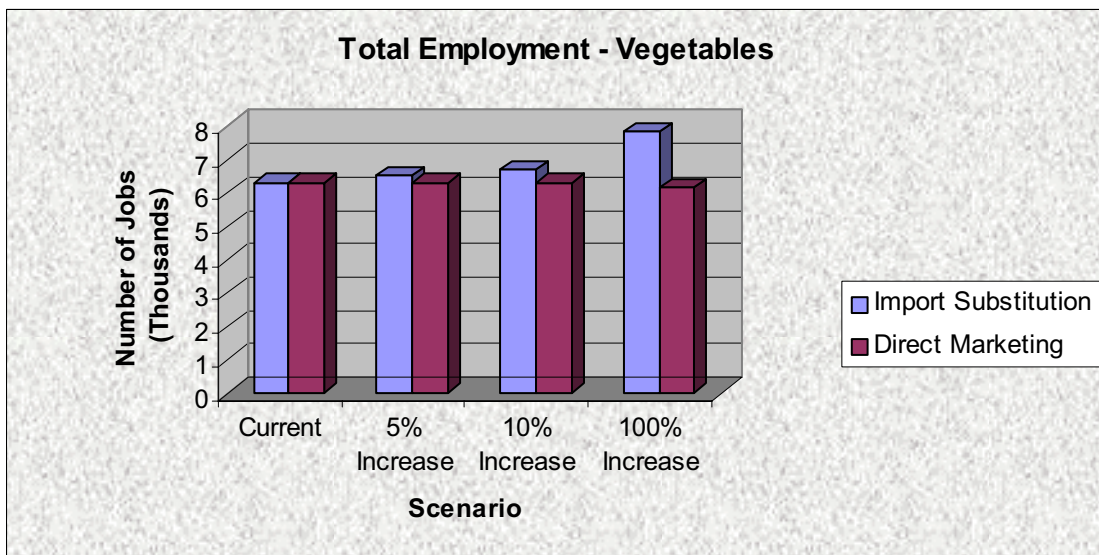
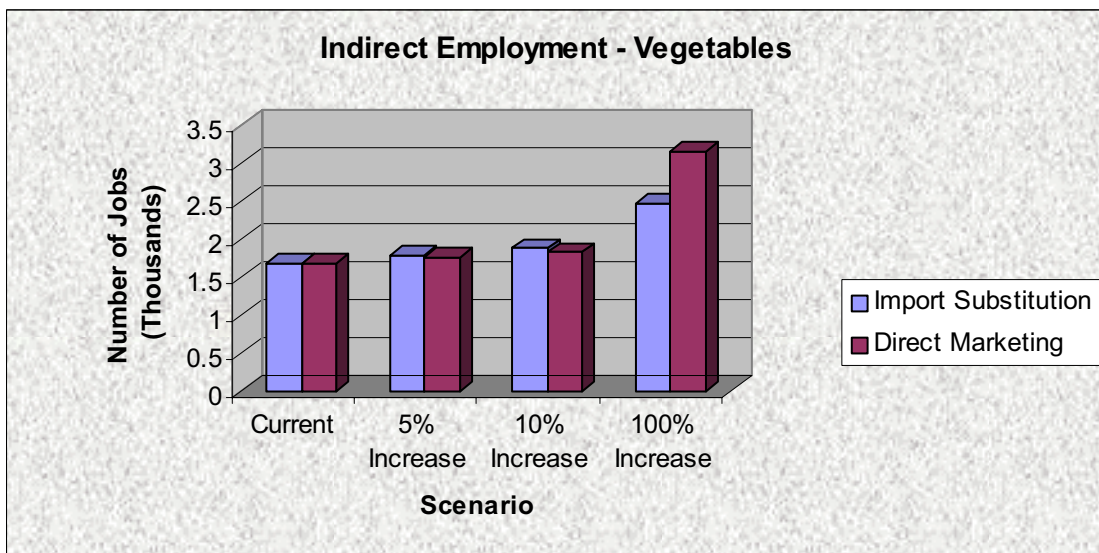
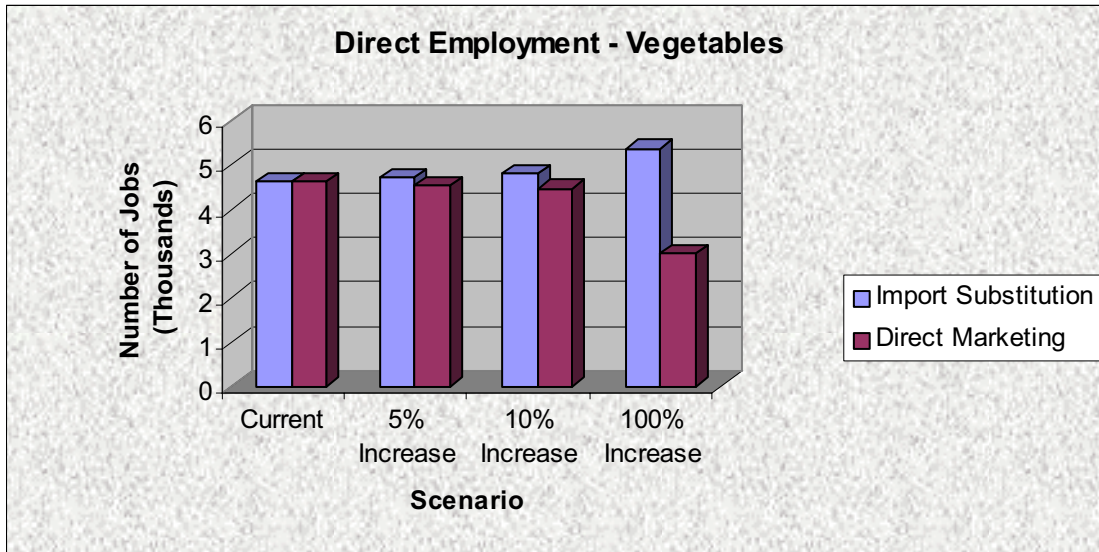
Industry	Current	5% Increase	10% Increase	100% Increase
26 Ag Services (AGG)	13,499,359	14,568,076	15,636,796	34,880,540
447 Wholesale Trade	11,061,454	11,546,807	12,033,295	20,782,216
384 Transportation (AGG)	7,027,987	6,885,891	6,746,927	4,239,796
461 Real estate (AGG)	6,029,107	6,200,337	6,371,947	9,453,725
469 Business services (AGG)	6,117,699	5,969,168	5,822,644	3,157,255
48 Construction (AGG)	3,196,488	3,288,894	3,381,568	5,039,716
518 Miscellaneous (AGG)	3,224,152	3,186,081	3,148,328	2,465,424
506 Professional services (AGG)	2,449,094	2,394,874	2,342,930	1,390,140
456 Banking	2,073,657	2,057,751	2,042,352	1,757,131
441 Communications (AGG)	2,075,425	2,032,829	1,990,633	1,224,952
443 Utilities (AGG)	1,978,014	2,007,140	2,036,349	2,561,978
1 Farms (AGG)	1,483,756	1,600,821	1,717,880	3,825,788
161 Pulp and paper (AGG)	1,346,199	1,441,046	1,535,926	3,243,812
457 Credit Agencies	1,257,359	1,263,708	1,270,361	1,389,114
210 Petroleum products (AGG)	833,104	831,608	830,254	805,057
174 Printing and publishing (AGG)	774,092	747,232	720,621	237,653
494 Legal Services	756,716	745,609	734,715	536,068
Total	65,183,660	66,767,870	68,363,525	96,990,365

**Total\***

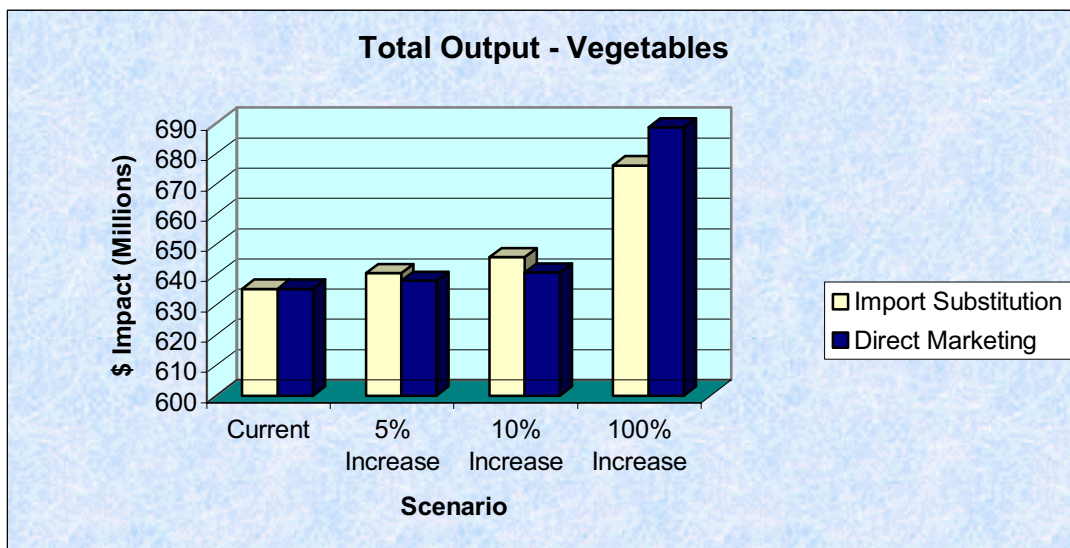
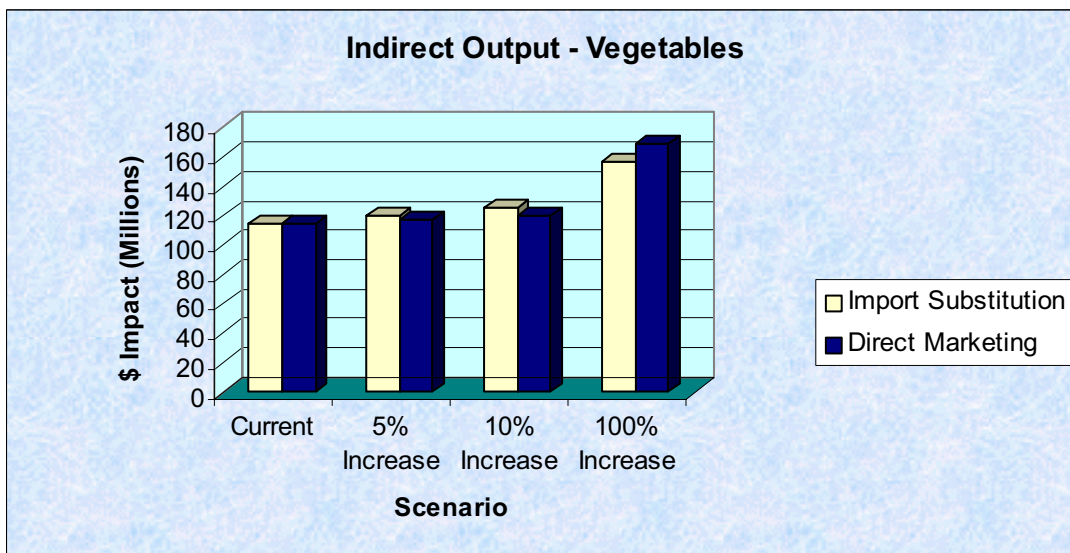
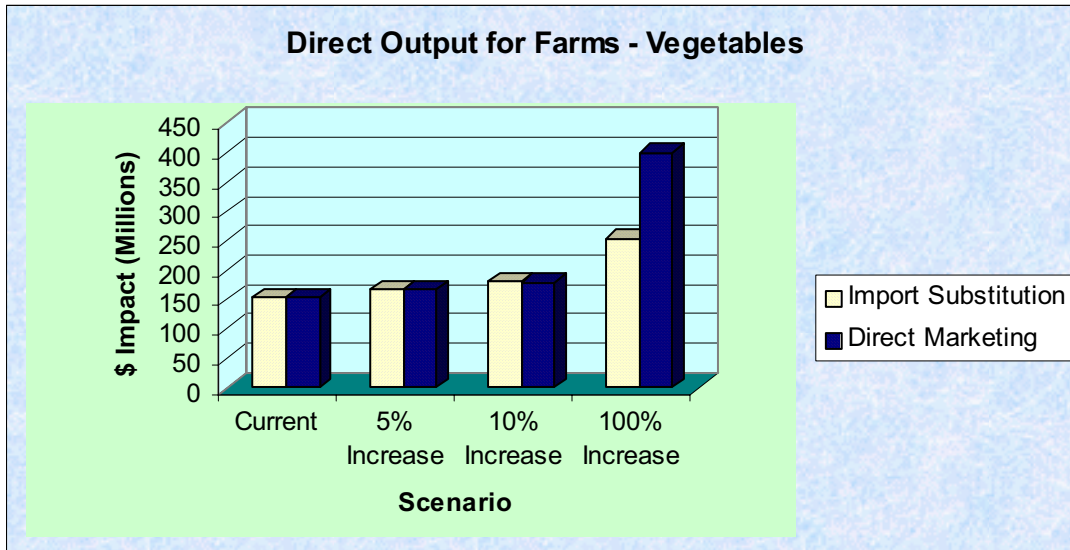
Industry	Current	5% Increase	10% Increase	100% Increase
448 Retail Trade (AGG)	105,462,216	100,239,728	94,983,952	377,751
1 Farms (AGG)	77,552,440	83,722,432	89,892,416	200,992,304
447 Wholesale Trade	62,453,088	60,364,704	58,305,136	20,782,216
384 Transportation (AGG)	31,132,148	29,773,924	28,433,402	4,239,796
26 Ag Services (AGG)	13,499,359	14,568,076	15,636,796	34,880,540
461 Real estate (AGG)	6,029,107	6,200,337	6,371,947	9,453,725
469 Business services (AGG)	6,117,699	5,969,168	5,822,644	3,157,255
518 Miscellaneous (AGG)	3,544,598	3,490,231	3,436,568	2,465,424
48 Construction (AGG)	3,196,488	3,288,894	3,381,568	5,039,716
506 Professional services (AGG)	2,449,094	2,394,874	2,342,930	1,390,140
456 Banking	2,073,657	2,057,751	2,042,352	1,757,131
441 Communications (AGG)	2,075,425	2,032,829	1,990,633	1,224,952
443 Utilities (AGG)	1,978,014	2,007,140	2,036,349	2,561,978
161 Pulp and paper (AGG)	1,346,199	1,441,046	1,535,926	3,243,812
457 Credit Agencies	1,257,359	1,263,708	1,270,361	1,389,114
210 Petroleum products (AGG)	833,104	831,608	830,254	805,057
174 Printing and publishing (AGG)	774,092	747,232	720,621	237,653
Total	321,774,086	320,393,680	319,033,855	293,998,564

\*Dollars

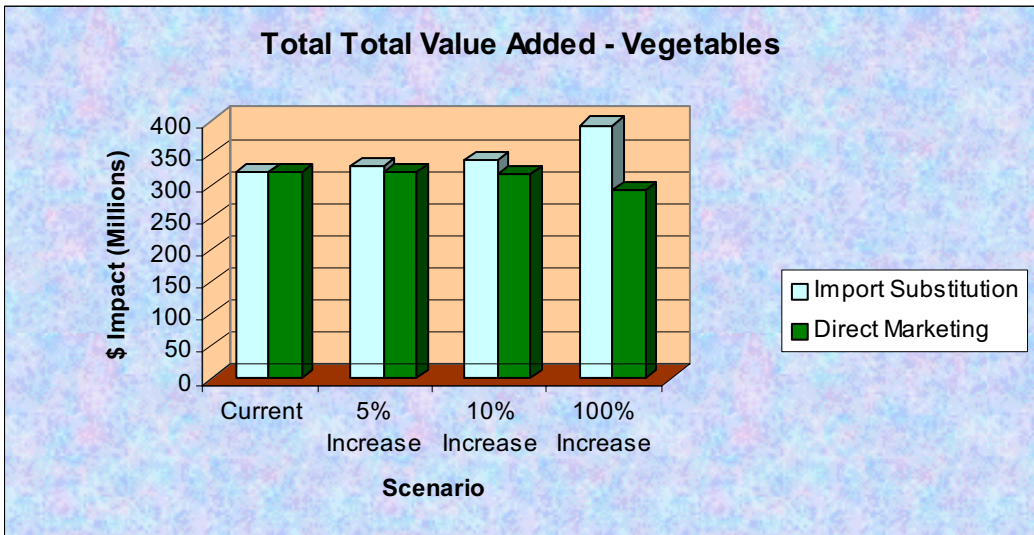
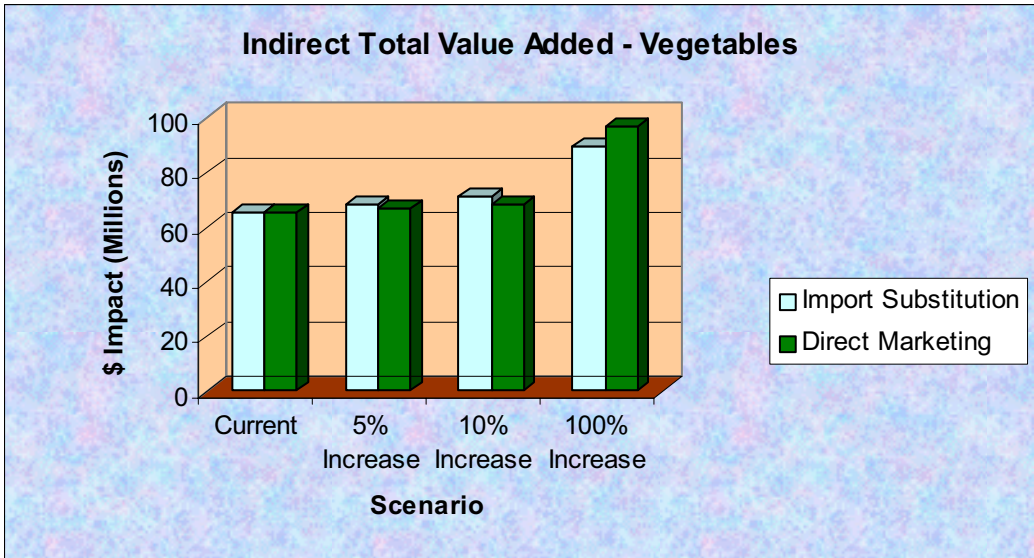
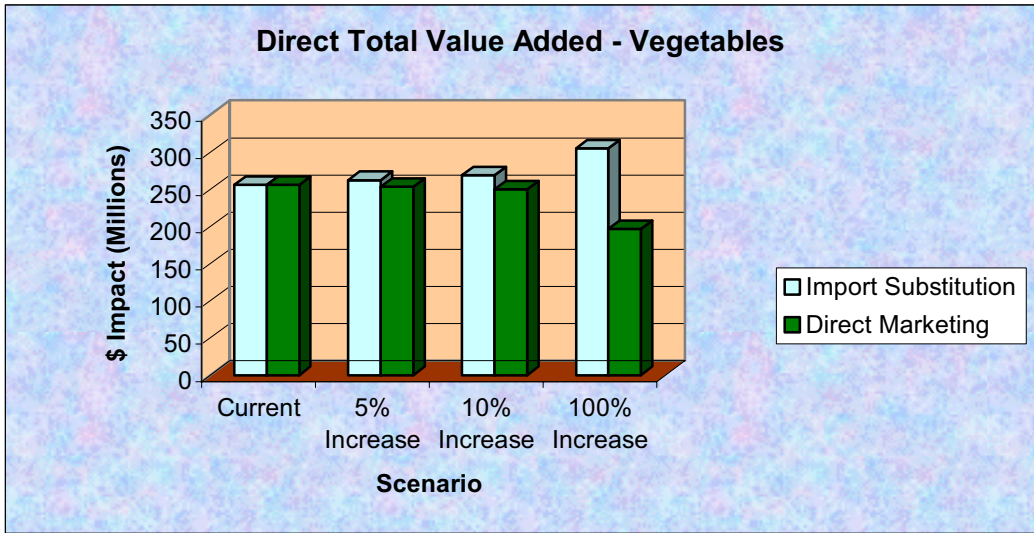
**Chart 5: Import Substitution vs. Direct Marketing for Employment -- Vegetables**



**Chart 6: Import Substitution vs. Direct Marketing for Output -- Vegetables**



**Chart 7: Import Substitution vs. Direct Marketing for Total Value Added -- Vegetables**



**Chart 8: Import Substitution vs. Direct Marketing for Farms -- Vegetables**

