Full Length Research Paper

Determination of seasonal price variations for some food crops in Iran at Karaj zone to achieve Sustainable Agriculture

Behzad Sani[1]* and Hossein Aliabadi Farahani[2]

[1]Islamic Azad University, Shahr-e Qods Branch, Tehran, Iran.
[2]Islamic Azad University, Takestan Branch, Iran.

Iran is one of the largest Asian countries with arid and semi-arid weather, but can produce most food crops due to special geographical position. In order to determine seasonal prices (SPV) variations in some food crops, this study was carried out at Karaj city of Iran in 2009. In this experiment, four groups of food products were used. The first group includes tree fruits (orange, apple and pomegranate), the second includes the kitchen garden fruits (watermelon, melon and cantaloupe), the third includes greenhouse fruits (banana, strawberry and pineapple) and the fourth group includes vegetables (tomato, potato and onion). Each of the above products price was determined in each season (spring, summer, autumn and winter) and were compared with one another by statistical graphs. The results showed that price variations were high in tree fruits, vegetables and kitchen garden fruits than the greenhouse fruits and demand of these products was very dependent on price variations. In the seasons, increase in product demand results to decrease in product price, while reduction in the product's demand results to increase in product price; but greenhouse fruits prices were constant during the year and there were also constant demand for these products in all seasons. The results showed that the greenhouses production and processing food products can keep constant prices of food products throughout the year and remove the destructive role of brokers.

Key words: Seasonal price variations, food crops, sustainable agriculture.

INTRODUCTION

Agricultural commodities have historically exhibited seasonal price movements that are tied to the annual nature of the crop cycle. Crop prices in the cash and future markets are usually the lowest when it is close to harvest time due to supply pressure (Deaton and Laroque, 1992). Conversely, they are usually the highest when it is close to the end of the marketing year when supplies are less abundant (Black, 1997). Seasonal price movements will vary, however, depending on supply and demand funda-

mentals. In particular, deviations of actual from expected supplies can have a pronounced impact on seasonal price patterns. During a "small" crop year, the new crop supply falls significantly below what the market expected at the time of planting. During a "large" crop year, thenew crop exceeds earlier market expectations. Different seasonal indexes are relevant in these different situations (Chambers and Barley, 1999). The seasonal variation in the production of some farm products and the corresponding changes in prices have been studied by Taylor and published in Bulletin 209 of was to evaluate the seasonal variation in prices of some the University of Wisconsin Agricultural Experiment Station. By the

*Corresponding author. E-mail: dr.b.sani@gmail.com.

Table 1. The prices of some food crops at the beginning of January 2009.

Tree fruits			Kitchen garden fruits			Greenhouse fruits			Vegetables		
Orange (1 kg)	Apple (1 kg)	Pomegranate (1 kg)	Watermelon (1 kg)	Melon (1 kg)	Cantaloupe (1 kg)	Banana (1 kg)	Strawberry (1 kg)	Pineapple (1 kg)	Tomato (1 kg)	Potato (1 kg)	Onion (1 kg)
0.75 $	1.5 $	0.6 $	1.2 $	1.7 $	1 $	1.3 $	3.5 $	2.5 $	1.2 $	0.6 $	0.8 $
The total of some food crops prices at the beginning of January 2009											
2.85 $			3.9 $			7.3 $			2.6 $		

courtesy of Professor Taylor, the study was able to reproduce with the diagrams the following passages.

The facts here given illustrate interestingly the nature and limits of elasticity of demand for these articles, the problem of time-value in perishable foods and the influence of cold-storage in equalizing prices throughout the year (Halcrow, 1981). Fresh fruit and vegetables feature on household shopping lists throughout the year. The nutritional value of fresh fruit and vegetables is explained in the Ministry of Health guidelines, which recommend that five or more servings of these should be eaten each day (Levin et al., 1989). People who eat five or more servings of fruit and vegetables a day have a wide selection to choose from throughout the year. While consumers have to contend with seasonal price increases, fortunately, these tend to occur at different times of the year for different types of fruit and vegetables (Monroe, 1990). Therefore, the objective of this study was to evaluate the seasonal variation in prices of some food crops in Iran at Karaj zone.

MATERIALS AND METHODS

In order to determine seasonal variation in prices of some food crops, this study was carried out at the Iran, Karaj zone in 2009. In this experiment, four groups of food products were used. The first group includes tree fruits (orange, apple and pomegranate), the second includes the kitchen garden fruits (watermelon, melon and cantaloupe), the third includes greenhouse fruits (banana, strawberry and pineapple) and the fourth group includes vegetables (tomato, potato and onion). Each of the above products price was determined in each season (spring, summer, autumn and winter) and the total of food crops prices was also determined, while the statistical graphs were compared together. Finally, data were subjected to repeated measure analysis and the graphs were obtained by Excel software.

RESULTS AND DISCUSSION

Firstly, the prices of orange, apple, pomegranate, watermelon, melon, cantaloupe, banana, strawberry, pineapple, tomato, potato and onion were determined in the beginning of winter season (at the beginning of January 2009). The data are shown in Table 1 and are compared together in Figure 1.

In the next stage, the prices of orange, apple, pomegranate, watermelon, melon, cantaloupe, banana, strawberry, pineapple, tomato, potato and onion were determined in the beginning of spring season (at the beginning of April 2009) and the data are shown in (Table 2 and Figure 2).

Also, the prices of orange, apple, pomegranate, watermelon, melon, cantaloupe, banana, strawberry, pineapple, tomato, potato and onion were determined in the beginning of summer season (at the beginning of July 2009) and the data are shown in (Table 3 and Figure 3).

Finally, the prices of orange, apple, pomegranate, watermelon, melon, cantaloupe, banana, strawberry, pineapple, tomato, potato and onion were determined in the beginning of autumn season (at the beginning of October 2009) and the data are shown in (Table 4 and Figure 4).

The final results showed that tree fruits prices variations were very much higher than the kitchen garden fruits, greenhouse fruits and vegetables, while the kitchen garden fruits prices variations were very much higher than the vegetables and greenhouse fruits. Also, the vegetables prices variations were very much higher than the greenhouse fruits, but the greenhouse fruits prices variations were constant in all seasons and had the lowest variations during the year (Table 5 and Figure 5).

The results of this study showed that the tree fruits had high price variations than the other groups. This is due to the product's perishable nature and maintenance costs. Introduction of appropriate solution for price controls can help in stabilizing the demand, because the prices are bound to change the demand.
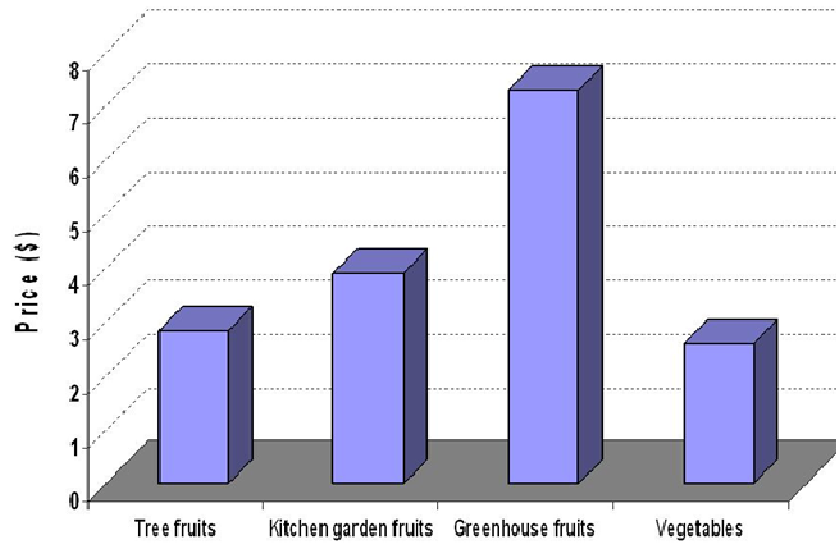
Figure 1. The total of some food crops prices at the beginning of January, 2009.

Table 2. The prices of some food crops at the beginning of April 2009.

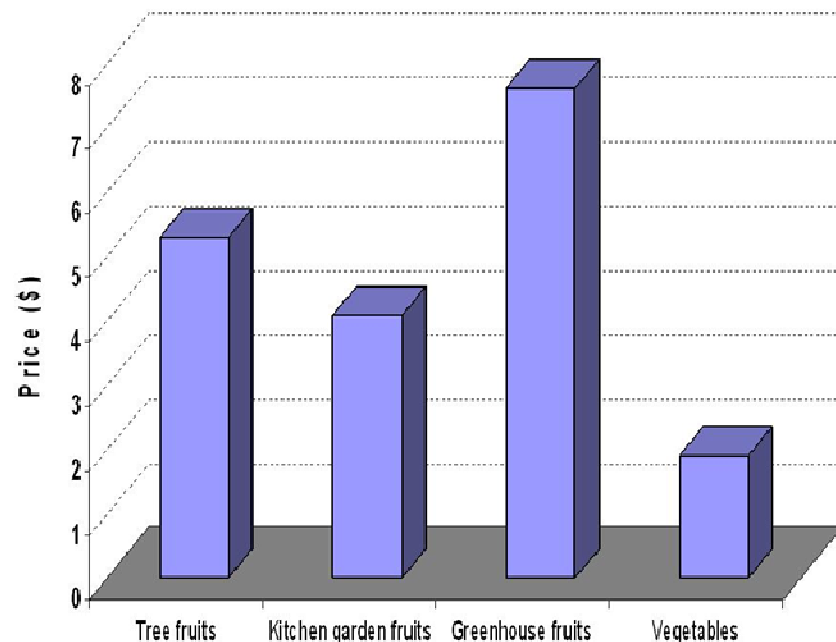| Tree fruits			Kitchen garden fruits			Greenhouse fruits			Vegetables		
Orange (1 kg)	Apple (1 kg)	Pome-granate (1 kg)	Watermelon (1 kg)	Melon (1 kg)	Cantaloupe (1 kg)	Banana (1 kg)	Straw-berry (1 kg)	Pineapple (1 kg)	Tomato (1 kg)	Potato (1 kg)	Onion (1 kg)
1.6 $	1.2 $	2.5 $	1.4 $	1.8 $	0.9 $	1.35 $	3.76 $	2.5 $	0.8 $	0.5 $	0.6 $
The total of some food crops prices at the beginning of April 2009											
5.3 $			4.1 $			7.61 $			1.9 $		

Figure 2. The total of some food crops prices at the beginning of April, 2009.

Table 3. The prices of some food crops at the beginning of July, 2009.

Tree fruits			Kitchen garden fruits			Greenhouse fruits			Vegetables		
Orange (1 kg)	Apple (1 kg)	Pome granate (1 kg)	Watermelon (1 kg)	Melon (1 kg)	Cantaloupe (1 kg)	Banana (1 kg)	Straw-berry (1 kg)	Pineapple (1 kg)	Tomato (1 kg)	Potato (1 kg)	Onion (1 kg)
2.5 $	1.2 $	4.5 $	0.6 $	0.7 $	0.6 $	1.2 $	3.4 $	2.47 $	0.3 $	0.4 $	0.6 $

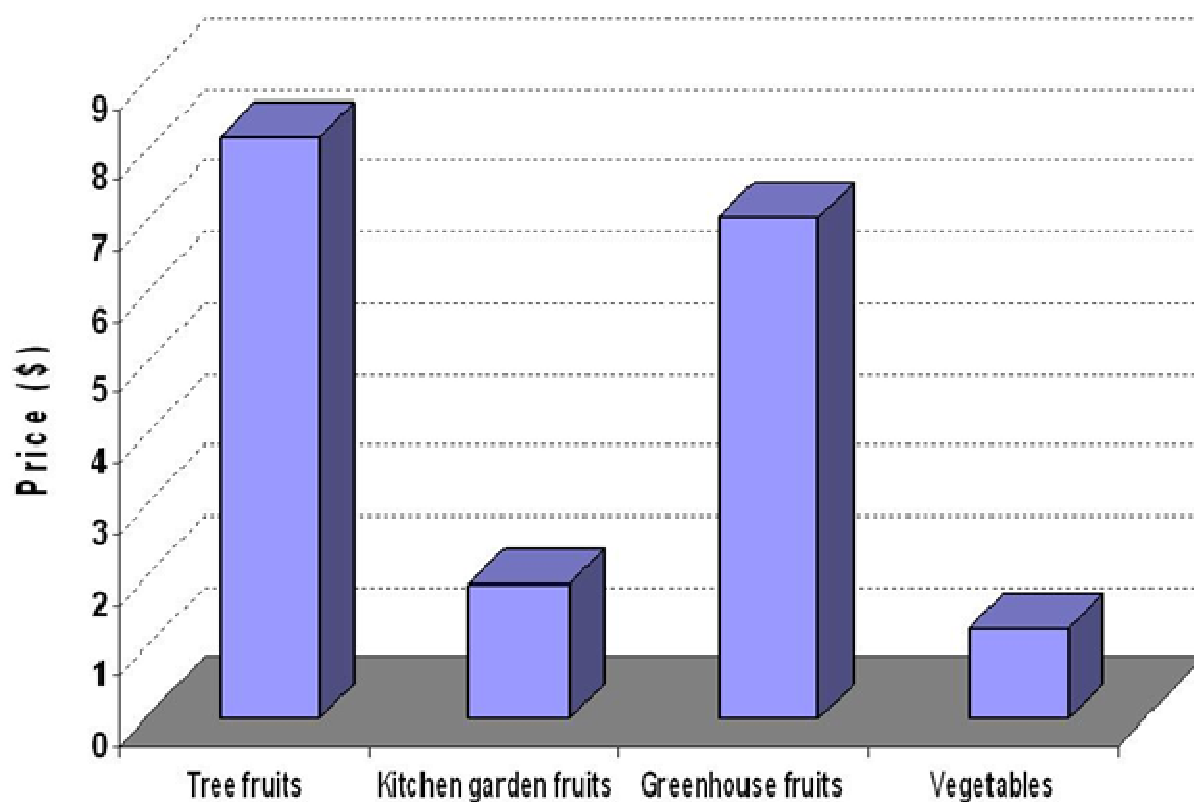| The total of some food crops prices at the beginning of July 2009			
8.2 $	1.9 $	7.07 $	1.3 $

Figure 3. The total of some food crops prices at the beginning of July, 2009.

Table 4. The prices of some food crops at the beginning of October, 2009.

Tree fruits			Kitchen garden fruits			Greenhouse fruits			Vegetables		
Orange (1 kg)	Apple (1 kg)	Pome-granate (1 kg)	Watermelon (1 kg)	Melon (1 kg)	Cantaloupe (1 kg)	Banana (1 kg)	Straw-berry (1 kg)	Pineapple (1 kg)	Tomato (1 kg)	Potato (1 kg)	Onion (1 kg)
1.4 $	0.8 $	1.2 $	0.8 $	0.9 $	0.8 $	1.35 $	3.42 $	2.48 $	1.2 $	0.8 $	0.9 $

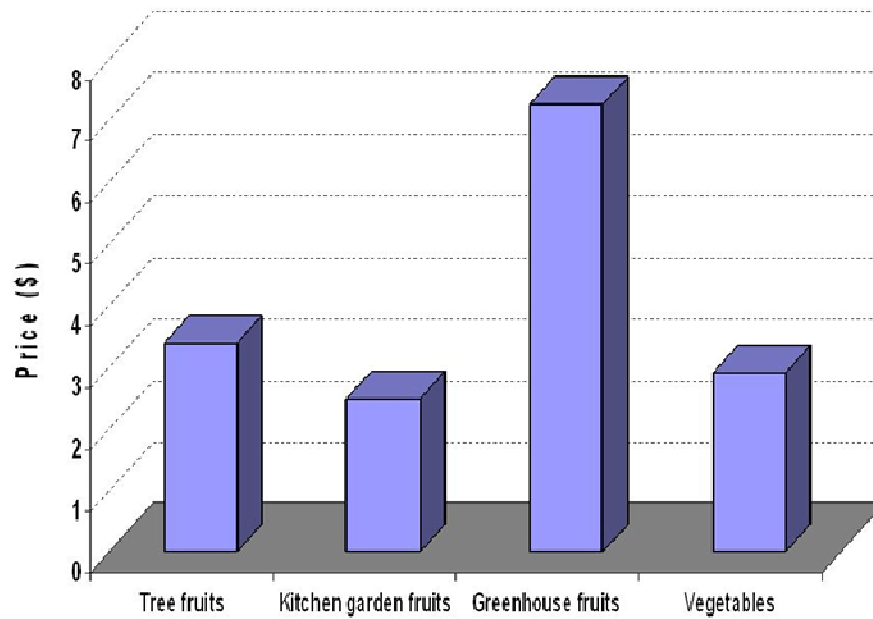| The total of some food crops prices at the beginning of October 2009			
3.4 $	2.5 $	7.25 $	2.9 $

Figure 4. The total of some food crops prices at the beginning of October, 2009.

Table 5. The seasonal variation in prices of some food crops in 2009.

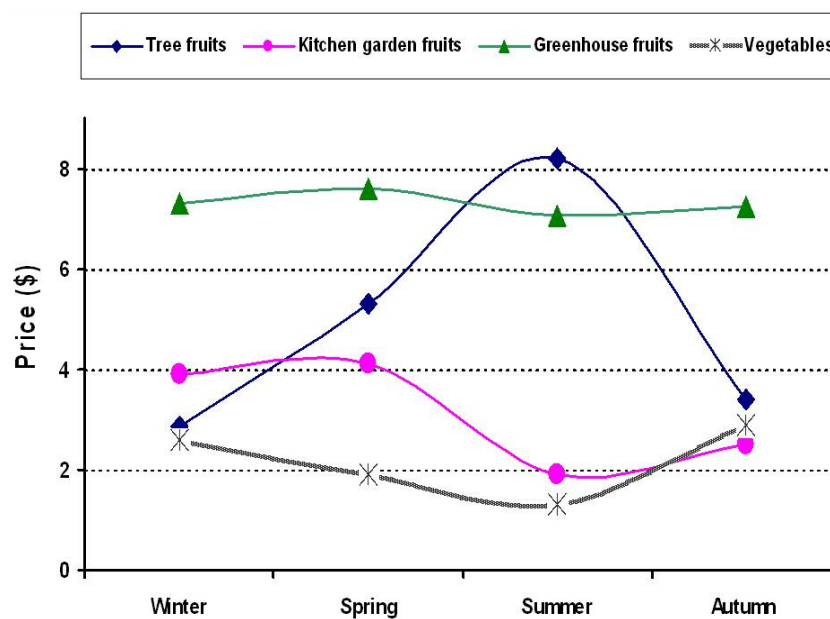|	Tree fruits	Kitchen garden fruits	Greenhouse fruits	Vegetables
Winter	2.85	3.9	7.3	2.6
Spring	5.3	4.1	7.61	1.9
Summer	8.2	1.9	7.07	1.3
Autumn	3.4	2.5	7.25	2.9

Figure 5. The seasonal variation in prices of some food crops in 2009.

Conclusion

The greenhouses production and processing food products can keep constant prices of food products during the year and remove the destructive role of brokers. Consequently, the study's findings may suggest agricultural economics researchers to consider carefully on estimation of prices in different seasons.

REFERENCES

black (1997). Business statistics, contemporary decision making, 2nd Ed., West Publishing Company.

Chambers MJ, Barley RE (1999). A statistical analysis of wheat price fluctuations in England: 1685-1850, J. Agric. Econ., 50(3): 564-588.
Deaton AS, Laroque G (1992). On the behavior of commodity prices, Rev. Econ. Stud., 59: 1-23.
Halcrow HG (1981). Economics of agriculture, McGraw-Hill International Student Editions.
Levin RI, Rubin DS, Stinson JP, Garoner RES (1989). Quantitative approaches to management, 7th Ed., McGraw-Hill Editions.
Monroe K (1990). Pricing, making profitable decision, McGraw- Hill Internatiional, Editions.