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**Illinois Produce Growers Study -  
Viability of South Water Market in Chicago  
As an Outlet for Marketing Produce and  
Analysis of Net Returns  
Received Through Alternate Marketing Channels**

by

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**Abstract**

Most Illinois produce growers do not participate in the wholesale marketing system. Instead, most concentrate their efforts in direct marketing of their produce via pick-your-own operations, roadside stands, farmers' markets, and contracting with food processing firms. Currently only 2-3 percent of the produce arriving in Chicago is of Illinois origin. The wholesale market for produce in Chicago has traditionally been organized around the South Water Market. The small involvement of Illinois producers in the South Water Market is of concern because 1) it may be indicative of problems in the wholesale marketing system used to bring produce to regional retail and hospitality

markets, and 2) because it may imply that income generating opportunities for Illinois produce growers are constrained by inefficiencies in the marketing system.

**Objective**

This paper aims to identify the barriers to marketing produce at wholesale markets in Chicago and whether or not the wholesale market in Chicago is a viable outlet for marketing produce. The specific objectives are:

1. To identify the marketing practices of produce growers in Illinois.

2. To determine how the wholesale markets in Chicago can be made more accessible and attractive to Illinois produce growers.

3. To ascertain net returns and opportunity costs associated with marketing produce through alternate channels.

## **Data**

A survey of 161 fruit and vegetable growers located throughout the state of Illinois was conducted in February and March 1992. The surveyed group identified themselves as "wholesalers" in the 1989 Directory of Fresh Fruit and Vegetable Markets published by the Illinois Department of Agriculture. The survey was designed to determine: 1) whether produce growers were using the South Water Market in Chicago; 2) if so, their reasons for using the market; 3) if not, what inhibited them from using the market; and 4) what innovations would facilitate the use of market. 65 growers responded to the survey. Only 13 respondents are currently using the South Water Market. An additional 17 indicated an interest in using the market.

A second survey of the 30 produce growers who are using or are interested in using the South Water Market was conducted. The growers were asked to list the quantity, selling price, expenditure and the time spent in marketing produce through different channels. This data was compiled for the months of July, August and September 1992. The prices of produce sold at the South Water Market were obtained from the "Chicago Wholesale Fruit and Vegetable Report" published daily by the Market News Service, USDA, Chicago.

## **Results of Survey on Marketing Practices On Illinois Produce Growers**

The 13 farmers who currently use the South Water Market were asked to rank the reasons for using the South Water Market on a scale of 1 to 5, 1 being unimportant and 5 being very important. It is evident from their responses that good working relationships with the merchants is the overwhelming reason for Illinois growers to use the South Water Market. Typically, the mer-

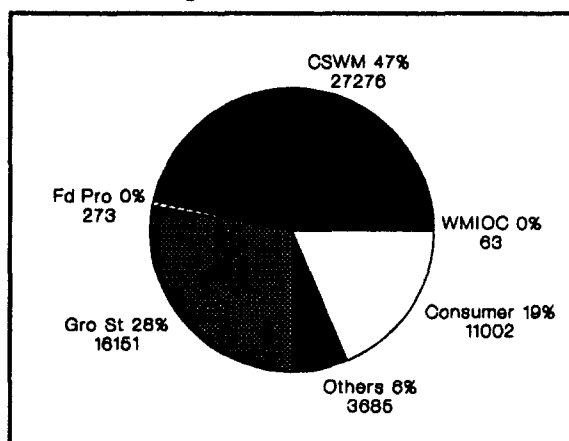
chants operate on a commission basis which may range from 15 to 25 percent of the value of the produce. Growers must contact merchants well in advance of delivery to notify them of date of delivery and type and quantity of produce. After delivering the produce, growers may not receive payment for a month or more. All this necessitates a good relationship between growers and merchants which must be developed over time.

Though proximity to the market has been cited as a relatively important reason for using the market, the respondents who currently use the market cover a wide geographical area, ranging from Cook County to the more distant Union County. Distance, therefore, is not a major obstacle for a farmer with sufficient produce to sell. Indeed, much of the produce sold at the South Water Market comes from a great distance. Compared to being physically present at all times at the at farmers' market and "pick-your-own" stands, growers must only invest in transportation to and packaging for the South Water Market.

Personal interviews conducted with growers indicate that the majority who use the market use it as a last resort. They would rather sell their produce somewhere else, and use the South Water Market only to dispose of excess produce. Minimal value-adding activities take place at the South Water Market. Some of the merchants deal with ripening, repacking, and some processing. Additional space would increase their ability to perform value-adding services. This may also promote the acceptability of Illinois produce.

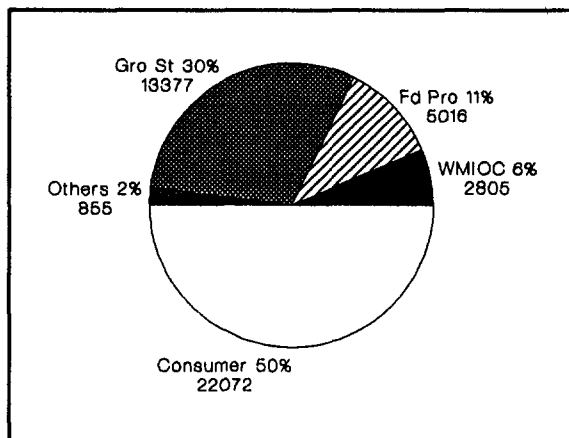
The next part of the survey was directed towards the growers who did not use the South Water Market to identify the factors limiting them from using the market. This group includes both those respondents interested in using the South Water Market but not currently doing so, as well as those who indicated they were not interested in using the South Water Market. The respondents not using the South Water Market typically are composed of small farmers who sell their produce locally. Satisfactory markets available elsewhere was cited as one of the most important reasons for not patronizing the South Water.

**Figure 1 Respondents using the SWM with less than 250 acres devoted to produce**  
Number of respondents : 8



**Legend**  
 CSWM - Chicago South Water Market  
 OWMIC - Other Wholesale Markets in Chicago  
 WMIOC - Wholesale Markets in Other Cities  
 Fd Pro - Food Processors  
 Gro St - Grocery Stores  
 Cons - Consumers  
 Units:cwt

**Figure 2 Respondents interested but not currently using the SWM with less than 250 acres devoted to produce**  
Number of respondents : 10



Both large and small produce growers are interested in using the SWM. A few very large produce growers use the South Water Market and also sell their produce to food processors and other wholesale markets both in Chicago and in other cities. Figure 1 shows the marketing chan-

nels used by respondents with less than 250 acres of produce who are using the South Water Market. Figure 2 shows the marketing channels used by respondents who are interested but not currently using the SWM with less than 250 acres devoted to produce. Only growers with less than 250 acres are considered in Figures 1 and 2 to remove the distorting effect of large growers since the bulk of Illinois growers operate at low or moderate volume.

Those using the SWM make significant use of the South Water Market. Given the otherwise similarity in marketing outlets, these findings suggest that the SWM may be an attractive outlet for small to mid-size Illinois growers not currently using the SWM. Distance from Chicago was cited as an important barrier to using the South Water Market. The growers surveyed are spread throughout the state and their distance from Chicago varies from 10 miles in Cook County to 350 miles in Union County. Growers in the southern and the south-western part of the state are closer to the wholesale markets in St. Louis than in Chicago. Similarly, some of the growers in the eastern and south-eastern part of the state are closer to the wholesale markets in Memphis and Indianapolis.

A fair number of the respondents are ignorant about the selling practices at the South Water Market. The primary reason may be that they have not attempted to use the market for the reasons mentioned above. To sell produce at any wholesale market, it is necessary to adhere to certain standards. Unlike produce which can be sold "loose" at a farmers' market, produce sold at the South Water Market must conform to USDA grades and must be packaged in specific size crates or containers. As many of the Illinois growers are small producers, they do not produce sufficient quantities of individual fruits and vegetables to conform easily to the demands of the merchants at the South Water Market. For the same reasons, they may not find it economical to package individual produce in containers of different sizes to meet the requirements of the merchants. These problems are not as pronounced in direct marketing through farmers' markets, roadside stands, or "pick-your-own" operations.

**Table 1****Changes Which Would Facilitate Better Use of the Wholesale Produce Market in Chicago**

Changes which would make the Wholesale Produce Market in Chicago more attractive	No. of replies	Average	Std. Dev.
(a) Provision of information on how to sell your produce at the South Water Market			
(i) Information of selling practices	29	4.45	1.07
(ii) Information on quantities of individual fruits and vegetables required	28	4.46	.91
(iii) Information on packaging requirements	29	4.21	1.37
(iv) Information on quality requirements	28	4.32	1.1
(b) Establishing producer cooperatives for marketing	26	3.62	1.52
(c) Provision of local pre-cooling facilities	24	3.13	1.48
(d) Provision of local bulking facilities	23	3.17	1.58
(e) Changing the location of the wholesale market in Chicago	26	4.15	1.32
(f) Others			
(i) Modernization of the South Water Market	1	5	0
(ii) Better facilities to handle fresh produce	1	5	0
(iii) Improved parking	2	5	0
(iv) Reduce commission of the merchants in the South Water Market	2	3	2
(v) Better Payment provision	1	5	0

Although produce accepted for sale at the South Water Market must conform to certain standard sizes, grades and quantities, survey respondents did not perceive the lack of bulking and packaging facilities as major barriers to marketing produce at the South Water Market. Certain fruits and vegetables (e.g. peppers) must be cooled to improve their shelf life. During our visit to the South Water Market in the spring of 1992, one of the major merchants specifically said that he would be more willing to accept peppers which had been pre-cooled. Most respondents are either unaware of the benefits of pre-cooling, or feel the expense does not justify the benefits.

Poor parking facilities and method of conducting business at the SWM were cited as important reasons for avoiding the market. Growers seem to be deterred from using the market because they could not simply drive their trucks in and sell their produce as they do in local markets; they had to contact merchants well in advance or use agents. Reputation of the merchants and respondents' past experiences at the SWM or in other wholesale markets, were also cited as reasons for avoiding the market.

As a next step, growers were asked to list the factors which would help them market produce at the South Water Market. Their responses are summarized in Table 1.

Increased information about selling produce at the South Water Market was cited as the most important factor which could increase use of the South Water Market. Respondents who indicated interest in using the South Water Market but are not currently doing so are generally small farmers with an average of 50 acres devoted to produce. Due to the small quantity of fruits and vegetables they produce, most market through local markets. Information about selling practices, quantities of individual fruits and vegetables required, packaging, and quality requirements would help Illinois growers use the market.

Because the present facilities at the South Water Market are antiquated, they pose problems to growers transacting business. Poor parking facilities and overcrowded lanes make the use of the market very burdensome and time consuming. Some produce growers surveyed also felt that the market was unsafe to use. A modernized facility is more likely to attract Illinois growers.

Since Illinois growers produce in relatively small quantities, a producer cooperative may be an attractive marketing arrangement. By pooling their resources, small growers could construct pre-cooling and bulking facilities which would make their produce more suitable for the South Water Market. However, since the growers are very heterogeneous in terms of the types of fruits and vegetables they grow, and in terms of their geographical distribution in the state, forming a cooperative might be difficult. Forming a cooperative ranked low in priority for the respondents. Since the produce industry is very seasonal, investing in infrastructure for pre-cooling and bulking facilities may not be an immediate priority for Illinois growers. The president of the Illinois Produce Growers Association also felt that a marketing cooperative would not be a popular idea among Illinois produce growers.

Finally one of the major produce growers in north central Illinois stated that Illinois produce growers must market their produce in markets to the south or east to avoid competition from the growers from northern states. Wholesale markets in St. Louis, Memphis and Indianapolis draw a good amount of produce from southern Illinois. During the peak summer season, produce from

Michigan, Wisconsin and Minnesota flows south towards the South Water Market.

### **Analysis of Net Returns Received by Illinois Produce Growers Through Alternate Marketing Channels**

#### *Theory and Methodology*

Thirty produce growers who expressed an interest in the South Water Market were asked to keep sales figures on price received, expense incurred and quantity of produce sold through different marketing channels. The crops monitored were sweet corn, bell pepper, pumpkin, tomatoes, squash, watermelon, cabbage, apples and peaches. The study covered the months of July, August and September, 1992, the peak harvesting season in Illinois. The time spent in marketing produce and expenses associated with marketing it through different channels were also recorded.

The prices obtained at the South Water Market are generally lower than those obtained through local channels. However, it takes considerably less time to sell produce at the South Water Market as compared to say a farmers' market where a grower has to spend the whole day selling his produce. This section examines whether the time saved in marketing produce through the South Water Market is economically justified.

The net returns received by marketing produce through any channel would be equal to the price times quantity of produce sold minus the total expenditure incurred in marketing the produce. The expense incurred for marketing produce would be a function of type of crop, packaging costs, value-adding process, transportation and transaction costs. An additional expense of in the form of commission payment to the merchants would have to be incurred while marketing produce through the SWM. In an efficient marketing system if all marketing channels are used then net returns received through alternate marketing channels and net returns received through the SWM would be same. However, SWM is not being used then net returns received through alternate channels would be expected to be greater than net returns received through the SWM (Bressler and

King, 1970). Two generally accepted principles thought to underlie regional price differences are (1) price difference between any two regions (or markets) that trade with each other will just equal transfer costs; (2) price difference between any two regions that do not engage in trade with each other will be less than or equal to the transfer costs (Heytens, 1986). Therefore, if net returns received through various marketing outlets are in excess of transfer costs, it implies that markets are not well integrated. In an efficiently integrated market system, there would be a positive correlation over time among prices at different market locations (Heytens; Thompson, Eales and Hauser). Ravallion (1986) also agrees that static price correlation remains the most common measure of spatial integration in agriculture. However, Barbara Harriss (1979) disagreed from this view. She indicated that high correlation coefficients may be due to "physical discontinuities." She cited factors such as monopoly purchase price and averaging of price data over time, due to which not much confidence could be attributed to correlation coefficients.

We can compare the net returns received through local channels to the net returns that could have been received through the SWM. If only one of the markets is being used then the net returns received through the market being used would be expected to be greater than the expected net returns through the market not being used. By taking into account the time spent in marketing the produce through the local channels such as "farmers' markets" and "pick-your-own operations" and comparing this time to the time spent in driving to Chicago and transacting business at the SWM, we can then determine the implicit wage rate associated with marketing produce through alternate channels and not using the SWM. The implicit wage rate (IW) is the extra money that a farmer could earn by marketing produce through channels other than SWM, compared to what he could earn by using the SWM. This IW is expected to be a function of type and volume of produce marketed, distance from Chicago and the current marketing outlets available to the growers.

Equation 1 presents the calculation used in arriving at the implicit wage rate associated with

marketing produce through marketing channels other than the South Water Market.

$$IW = \frac{\sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^d [(q_{ijk} \times p_{ijk}) - e_{ijk}] - \sum_{j=1}^m \sum_{k=1}^d [(Q_{swj} \times P_{swj}) - E_{swj}]}{\sum_{i=1}^n \sum_{j=1}^m \sum_{k=1}^d t_{ijk} - \sum_{j=1}^m \sum_{k=1}^d T_{swj}} \quad (1)$$

where,

- IW = implicit wage rate for alternate channels.
- i = marketing channels other than SWM.
- j = crops.
- k = dates on which produce was marketed.
- q = quantity of produce marketed through channels other than SWM.
- p = price obtained at channels other than SWM.
- e = expenses associated with marketing produce at channels other than SWM.
- $Q_{sw}$  = quantity of produce which could have been marketed at SWM.
- $P_{sw}$  = price which could have been obtained at SWM.
- $E_{sw}$  = expenses associated with marketing produce at SWM.
- t = time spent in marketing produce through channels other than SWM.
- $T_{sw}$  = time spent in marketing produce at SWM.

The quantity ( $Q_{sw}$ ) which could have been marketed through South Water Market is made up of the sum of the total quantity (q) sold through other channels as well as the quantity of produce actually marketed through the SWM. Since all produce grown at the farm may not meet the grade and size requirements of the SWM, it is assumed that 95 percent of all produce sold through channels other than the SWM could have been sold at the SWM. This factor was taken into account while calculating IW.

In cases where respondents did not list the expenses which would have been incurred while marketing produce through the SWM, the

expenses were approximated by using the average net returns as a percentage of the selling price at the SWM. The net returns, or net prices at the South Water Market range from as low as 40 percent of the selling price in the case of tomatoes to as high as 68 percent of selling price in the case of sweet corn.

A positive value of IW implies that if the respondent had marketed through the SWM it would cost \$IW per hour in unrealized returns to do so. If \$IW is less than what he can earn through other pursuits, he is better off using the SWM; if not he is better off marketing through other channels. If the prices at the South Water Market are higher than the prices obtained through other channels, the implicit wage rate calculated in equation 1 would be negative as long as more time is spent marketing through other channels. This implies that the farmer would both earn a higher price and save time by using the SWM.

From the first survey we found that distance from Chicago and acreage devoted to produce were important factors that influence the marketing channels used by Illinois produce growers. By regressing the IW against distance from Chicago and acreage devoted to produce we might be able to determine the size and location characteristics of farmers who most profit from using the SWM. This approach is valid assuming that all produce growers could grow a similar mix of crops, or that profits associated with growing different crops are the same. Dummy variables representing crop or market type could also be included in the regression model to identify the effects of marketing a specific crop or using a specific marketing channel.

## Results

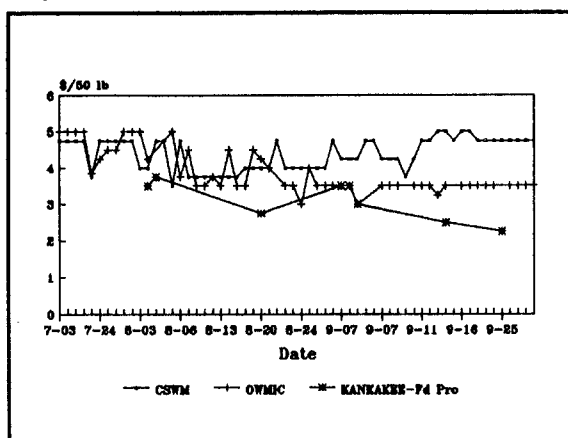
Twelve produce growers responded to the "price and expenses" survey. The gross price received through different marketing channels is shown in Figures 3 through 8. Only seven growers supplied adequate data to calculate IW. Two respondents supplied data exclusively on prices obtained at the SWM; hence those prices could not be compared to prices obtained through other channels. Three other respondents supplied inade-

quate data.<sup>1</sup> The results based on the seven usable responses are shown in Table 2. Table 3 presents a breakdown by growers of net returns received from channels used, total hours spent in channels used, expected net returns from SWM and expected hours spent at SWM

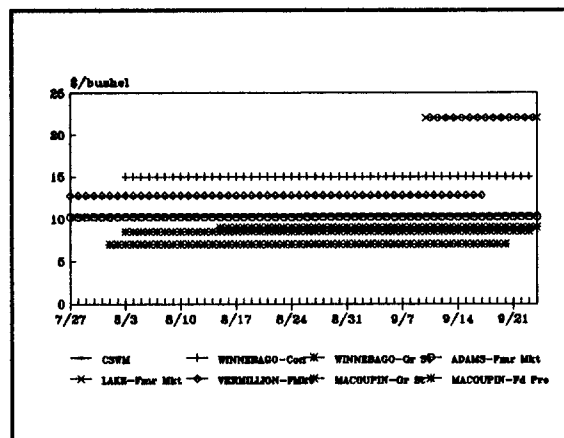
The selling price of apples at the SWM was assumed to be \$10.50 per bushel. The Market News Service did not list the price of apples of Illinois origin in their daily Fruit and Vegetable Report because the amount of Illinois apples sold at the SWM was very small. However, as shown in Appendix 1, the two apple growers who did sell their apples at the SWM received a uniform price of \$10.50 per bushel during August-September 1992. Hence \$10.50 per bushel served as the price of any shipment of apples from Illinois which could have been sold at the SWM during this period.

To calculate time spent in marketing produce at SWM, it was assumed that if the growers were to use the SWM they would typically sell their produce at the market once a week. Farmers typically market their produce through other channels like farmers' markets and grocery stores twice a week. Since volume will not be a limiting factor for marketing produce through SWM, it would be convenient to use the market once a week. As most of the growers in Table 2 sold apples, perishability is not a matter of concern. If the growers were to use SWM twice a week, the implicit wage rate calculated in Table 2 would on an average increase by 16 percent. Produce growers with smaller IWs spent considerably more time marketing their produce through local channels than produce growers with higher IWs. Therefore one of the reasons for smaller IWs is that the produce growers would save significant amount of time marketing their produce through the SWM.

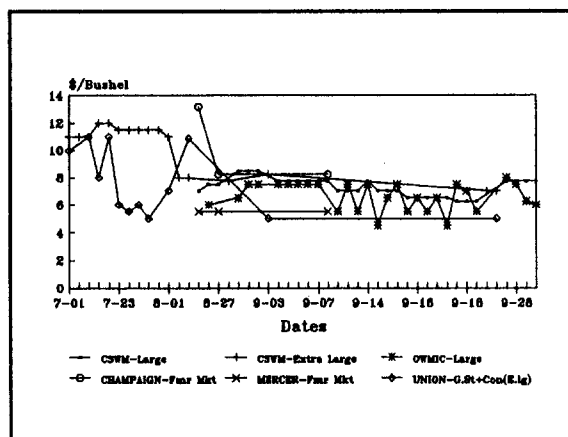
**Figure 3 Selling price of Cabbage  
July - September 1992**



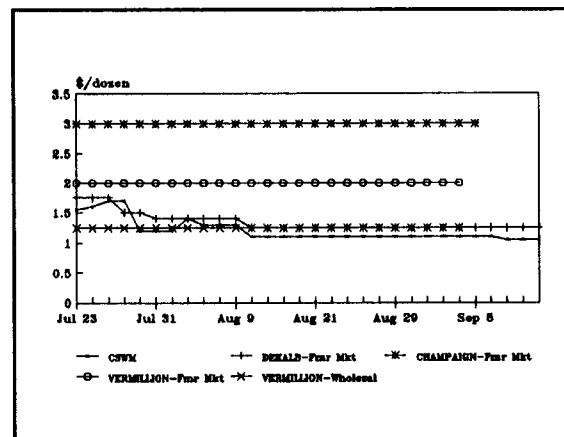
**Figure 4 Selling price of Apples  
July - September 1992**



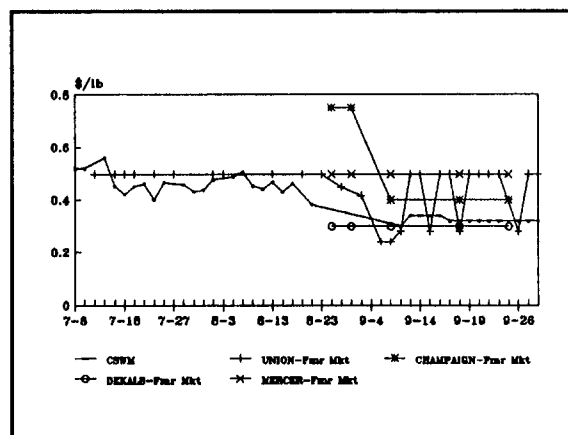
**Figure 5 Selling price of Bell Pepper  
July - September 1992**



**Figure 6 Selling price of Sweet Corn  
July - September 1992**



**Figure 7 Selling price of Tomatoes  
July - September 1992**



**Figure 8 Selling Price of Zucchini Squash  
May - September 1992**

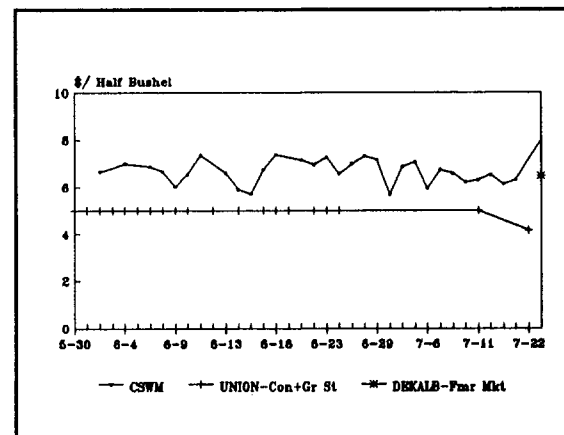


Table 2

IW	Distance from Chicago	Acreage under produce	Crops Marketed	Alternate channels
1) \$ 6.62	289 miles	16	Apples	Farmers' Market
2) \$ 12.24	256 miles	80	Apples	Farmers' Market, Grocery Stores, Food Processors
3) \$ 20.10	128 miles	18	Apples	Sold on Farm
4) \$ 61.35	88 miles	21	Apples	Farmers' Market
5) \$286.50	40 miles	187	Apples	Farmers' Market
6) \$465.22	65 miles	38	Bell pepper, Sweet Corn, Squash, Tomato	Farmers' Market
7) $\frac{\$4951.21^2}{22.25-27}$	52 miles	250	Bell Pepper, Cabbage	Other wholesale markets in Chicago, Food Processors

Table 3

Growers	Net Returns from Channels Used	Hours Spent in Channels Used	Expected Net Returns from SWM	Expected Hours Spent at SWM
1)	\$ 4365.25	245	\$ 3206.11	70
2)	\$ 27920.00	817	\$20381.60	201
3)	\$ 2879.00	56	\$ 1953.00	10
4)	\$ 11370.00	65	\$ 8977.50	26
5)	\$133825.00	304	\$55886.00	32
6)	\$ 13977.25	25.75	\$ 8510.91	14
7)	\$ 64558.69	22.75	\$59607.48	27

### Conclusion

The survey of produce growers in Illinois revealed the following attitudes towards the South Water Market:

a. Growers who use the South Water Market are attracted by:

- The price offered at the market.
- Year-round demand for produce.
- Proximity to the market.
- Good relationships with merchants.

b. Those growers who do not use the South Water Market are deterred by:

- Long distance from Chicago and/or the high cost of transportation to Chicago.
- Perceived low net prices at the South Water Market.
- The availability of satisfactory markets elsewhere.
- General lack of knowledge about how to sell at the South Water Market.

Medium-sized growers are the most likely group to use the market in the future. Most small growers have adequate local markets, while most large growers have developed or can develop direct marketing channels with buyers. Medium-sized growers would most benefit from the market-making services provided at a terminal produce market.

The methodology used to determine the implicit wage rate for marketing produce through alternate channels can be useful in identifying the size, location and crop characteristics of farmers most likely to profit from using the South Water Market. Analysis of six produce growers who did supply adequate data reveals that farmers who are further away from Chicago benefit most from using the South Water Market (their IWs are smallest). One of the reasons for this may be that there are fewer alternative marketing outlets, and smaller local demands for produce, in areas in Illinois distant from Chicago. The marketing alternatives (particularly farmers' markets) available to growers close to Chicago are more lucrative, and represent greater demand, than the SWM or the local markets available to producers at greater distance from Chicago.

The results presented in Table 2 as well as prices graphed in Figures 3 to 8 indicate that produce markets in Illinois are not well integrated. The results in Table 2 indicate that the difference between the prices of produce at different locations in Illinois and the prices at the SWM in Chicago exceed transfer costs. The implicit wage rate for marketing produce through local channels is in far excess of what one would expect. In fact, the price of produce sold at the farmers' market in Champaign were consistently 10 to 20 percent higher than the prices for the same product at grocery stores few blocks away, even though produce sold at the grocery stores were generally of higher and more uniform quality. It appears that consumers perceive produce sold at the farmers' markets to be "fresh" and of superior quality, and are therefore willing to pay a premium over the price paid in grocery stores. Nonetheless, markets for producers in Illinois cannot be considered to be price efficient according to performance criteria typically applied to commodity markets.

Finally, although a sample of six is not big enough to draw conclusive results, the methodology illustrated in this paper can be used by individual farmers to determine if they can benefit from using the South Water Market, or other markets if sufficient price data are available for comparison.

## Endnote

<sup>1</sup>The growers marketed their produce directly to consumers in very small quantities. They reported only aggregate revenue data and could not determine or did not report the actual time spent in marketing their produce.

## References

1. Thompson, Good and Mandal, "Illinois Produce Growers Study," report submitted to the city of Chicago.
2. Bressler, Raymond G. and Richard A. King, "Markets, Prices, and Interregional Trade," 1970.
3. Ravallion, Martin. "Testing Market Integration," *American Journal of Agricultural Economics*, 1986.
4. Heytens, Paul J. "Testing Marketing Integration," Food Research Institute Studies, Volume XX, No. 1, 1986.
5. Harriss, Barbara. "There is a Method in My Madness: or is it Vice Versa? Measuring Agricultural Market Performance," Food Research Institute Studies, Volume XVII, No. 2, 1979.
6. Thompson, S. R., J. S. Eales and R. J. Hauser. "An Empirical Analysis of Cash and Futures Grain Price Relationships in the North Central Region," *North Central Journal of Agricultural Economics*, Volume 12, No. 2, July 1990.