

The Impact of the Rise in Vegetable Prices on Vegetable Producer Behavior—Based on the survey of vegetable producers in Jiayu, Hubei Province

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Abstract. In order to study the impact of the rise in prices of vegetables on vegetable producers, and to increase the revenue of vegetable producers, this paper does a survey by anonymous sampling questionnaire. Results shows that: most vegetable growers think that vegetable prices should rise and would continue to rise, and that vegetable prices would increase their revenue, thus in the coming year they would expand the planting scale of vegetable variety whose increase rate is the largest in this year. But because of the increase of logistics costs and production costs, some farmers benefit very little from the rising trend of vegetable prices. Most farmers expect too much in the trend estimation of the prices of vegetables and also lack of planning and forward-looking in production, thus the planting area of single variety is often decided by the market of previous year. According to analysis of the impact of the rise in vegetable prices on vegetable producer behavior, this paper gives the following suggestions to increase revenue of vegetable producers: change the mode of thinking, improve rural information platform, and increase capital investment for vegetable production base.

Keywords. vegetable producers; rise in vegetable prices; planting

With the commodity prices rising in recent years, vegetable prices are hitting record highs. Vegetable producers (hereinafter referred to as the farmers) are the main body engaged in the activities of vegetable production, so the attitude of whom to the rise in vegetable prices directly determines the planting area of its vegetables^[1]. Study and grasp the impact of rising prices of vegetables on their actions has practical significance to grasp the vegetable industry trends, to improve relevant policies and to improve the corresponding service. For this reason, we chose some vegetable producers in Jiayu, Hubei Province, and conduct a survey and research on the impact of the rise in vegetable prices on their behavior. Research results have a reference value for other similar areas to adjust and improve vegetable production policy.

1 The basic situation of farmers

This investigation was conducted in July to August, 2013 in Jiayu, Hubei Province by anonymous sampling questionnaire method, and the investigation respondent are two typical vegetable planting base--Panjianwan Town and Cape Town, where vegetable growers include both large and

scattered small farmers, and finally we obtain 200 valid questionnaires. In these respondents, farmers who get primary school education accounts for 81.5%, high school education accounts for 11%, and secondary (including secondary) education accounts for 7.5%. Basic specific information of farmers is summarized as follows:

1.1 Vegetable planting pattern is mainly in the field; planting scale is generally small

Survey results show that: for the pattern of planting, 49.5% of the farmers grow vegetables in the field, 1.5% of the farmers grow vegetables in greenhouse, 47% of the farmers grow vegetables mainly in the field (seedling cultivation is carried out in greenhouses), and 2% of the farmers grow vegetables mainly in greenhouse, which indicates that farmers in this land remain using the traditional mode to product vegetables; for the planting scale of farmers, farmers whose planting scale is 10 acres or less accounts for 53%, 11-50 acres accounts for 44.5% , 51-100 acres accounts for 1.5%, and 101 acres or more than accounts for 1%, which indicates that vegetable planting style in this land is still smallholder production style, and the phenomenon of land fragmentation is very common. As listed in Table 1 below:

Table 1. Planting pattern and planting scale of vegetable farmers

Item	Planting pattern				planting scale (acre)			
	In the field	In greenhouse	Mainly in the field	Mainly in greenhouse	10 or less	11-50	51-100	101 or more
Number of people	99	3	94	4	106	89	3	2
Proportion	49.50%	1.50%	47%	2%	53%	44.50%	1.50%	1%

1.2 Vegetable farming method is mainly artificial; production technology problems are mainly solved by farmers' own experience

Survey results show that the situation of farmers' vegetable farming methods is: farmers who use the method of artificial farming accounts for 55%, mechanical farming accounts for 34%, mainly artificial farming accounts for 34%, and mainly mechanical farming accounts for 2.5%. This indicates that the farming method of this land is relatively outdated: it mainly relies on artificial farming. The situation of production technology is: farmers who solve production technology problems by professional and technical personnel accounts for 2%, by the guidance of professional and technical personnel accounts for 3.5%, and by the own experience of farmers accounts for 94.5%. This indicates that the scientific farming concept of farmers in this land is not deep understood, and they trust in their own experience. Specific conditions are shown in Table 2:

Table 2. Vegetable farming methods and production techniques solving ways

Item	Farming methods				Production techniques solving ways		
	Artificial	Mechanical	Mainly artificial	Mainly mechanical	By professional and technical personnel	By the guidance of professional and technical personnel	By farmers' own experience
Number of people	110	17	68	5	4	7	189
Proportion	55%	8.50%	34%	2.50%	2%	3.50%	94.50%

1.3 Market information sources is narrow; net revenue per acre of vegetables is not high

Survey results show that the situation of market information sources of farmers is: the farmers who gets information relying on their own feelings and experiences accounts for 52%, from friends and family accounts for 37%, from a variety of social media accounts for 7%, from the government information department accounts for 2%, and from non-governmental organizations accounts for 2%. This indicates that the farmers are too narrow thinking: they mainly trust their own experience. The situation of net revenue per acre of vegetables is: farmers whose net revenue per acre is 0-500 yuan accounts for 4%, 501-1000 yuan accounts for 13%, 1001-1500 yuan accounts for 17.5%, 1501-2000 yuan accounts for 35%, and 2001 yuan or more accounts for 30.5%. This shows that the narrow market information sources leads to the low net revenue per acre of vegetables growing. Table 3 shows the specific circumstances:

Table 3. Vegetable market information sources and net revenue per acre vegetable

Item	Option and Proportion				
Your market information sources	A. government information	B. a variety of social media	C. non-governmental organizations	D. own feelings and experiences	E. friends and family
Proportion	2%	7%	2%	52%	37%
Net revenue per acre vegetable(yuan/acre)	A. 0-500	B. 501-1000	C. 1001-1500	D. 1501-2000	E. 2001 or more
Proportion	4%	13%	17.50%	35%	30.50%

2 The impact of rising prices of vegetables on vegetable farmers

2.1 Rise in vegetable prices increases logistics costs and production costs of farmers

Survey data show that farmers hold different opinions on the main reasons for the rise in vegetable prices. As can be seen in Table 4, farmers who hold that the rise in vegetable prices is mainly due to the high costs of logistics is 185, accounting for 92.5% of the total; farmers who hold that an increase in the costs of production is the main reason is 128, accounting for 64% of the total; farmers who hold that short supply of vegetables is the main reason is 25, accounting for 12.5% of the total; farmers who think that the poor information flow and hot money speculation is the main reason is 18, accounting for 9% of the total; and farmers who maintain other reasons accounts for 3% .

Table 4. Farmers' opinions on the main reasons for the rise in vegetable prices

Item	What do you think are the main reasons for the rise in vegetable prices				
	Increased logistics costs	Increased production costs	Short supply of vegetables	Poor information flow and hot money speculation	Other reasons
Number of people	185	128	25	18	6
Proportion	92.50%	64%	12.50%	9%	3%

Note: in the above table, farmers believe that the rise in prices of vegetable is caused by a variety of reasons, therefore each proportion of Table 4 is only the proportion of each option's number in the total number, so the sum of each proportion is not equal to 1.

Most farmers believe that the increase of logistics costs and production costs is the main cause of the rise in prices of vegetables. Continuous rise in oil prices led to increased cost in transport links of vegetables, and the sharply rise in prices of agricultural, pesticides, fertilizers and other agricultural products lead to a substantial increase in vegetable production costs, which will inevitably affect the end-consumer market, causing prices of vegetables rise sharply^[2]. Although the farmers get some benefits in the process of the rising vegetable prices, but under the double impact of rising production costs and living costs at the same time, the increased revenue benefit of farmers from the rise in vegetable prices is clearly weakened, thus some farmers believe that their income does not increase (or fall) is caused by this reason.

2.2 Rise in vegetable prices results in farmers expecting too much in the trend estimation of vegetable prices

Survey data shows that most farmers hold a relatively optimistic attitude towards the rise in vegetable prices, and also feel good about the development trend of the price level for vegetables. As can be seen in Table 5, 62% of the farmers think that vegetable prices should rise, 25.5% of the farmers believe that the price of vegetables should be stable, and 12.5% of the farmers believe that the price of vegetables should rise a little, not too much. Vegetable growers predict that the vegetable prices should be: 55% of the farmers think that vegetable prices will continue to rise, 28.5% of the farmers believe that the price of vegetables will have a stable development, and 16.5% of the farmers think that vegetable prices will sometimes rise and sometimes fall.

The reasons that farmers expect too much in the trend estimation of vegetable prices are in the following: first, the education level of most farmers is primary education level, thus their level of knowledge is limited; secondly, the source of market information of most farmers is very narrow, and they rely on the feeling and experience of their own to judge the market information, so could not fully grasp the market information and the information they get is unscientific. Third, the majority of farmers believe that vegetable prices will lead to an increase of household income, so they would look forward the rise in vegetable prices psychologically.

Table 5. Farmers' attitude towards the rise in vegetable prices and the trend estimation of vegetable prices

Item	Your attitude towards the rise in vegetable prices			Your trend estimation of vegetable prices		
	Should rise	Should be stable	Should rise a little, but not too much	Keep rising	Develop stably	Sometimes rise and sometimes fall
Number of people	124	51	25	110	57	33
Proportion	62%	25.50%	12.50%	55%	28.50%	16.50%

2.3 Rise in vegetable prices increases farmers' income, and influence farmers' grown varieties and scale in the coming year

Survey data shows that the rise in vegetable prices would result in majority of farmers' income increasing, and most farmers would expand the planting scale of vegetable variety whose increase rate of earnings is the largest this year. Table 6 shows that 68% of the farmers believe that vegetable prices would increase their family income; 26% of the farmers think that even vegetable prices rise, their incomes would not increase; even 6% of the farmers believe that when vegetable prices rise, their income of growing vegetables would decline. Because of farmers' lack of planning and forward-looking in production, the planting area of single variety is often decided by the market of previous year: 74% of the farmers said that in the coming year they would increase

the planting scale of vegetable variety whose increase rate of earnings is the largest this year, 11% of the farmers would not increase planting scale, and 15% of farmers do not have a clear willing.

Most farmers in the coming year are willing to expand the planting scale of vegetable varieties whose prices rise sharply this year, and in the process of communication with farmers we find that their thinking mode is very simple: if a vegetable variety makes them earn money this year, there should be a large demand for such vegetable in the market, so if planting next year, they would certainly make money. But farmers' access to market information lags and their information is asymmetric. The rise in prices this year is likely to be the result of short supply of last year. Farmers see the big gains of planting this vegetable species, so they may compete to grow this species in the coming year, and then there would be an oversupply situation in next year's market.

Table 6. The impact of the rise in vegetable prices on farmers' income and whether vegetable growers would expand the planting scale

Item	What is the impact of the rise in vegetable prices on your income			Would you expand the planting scale of vegetable variety in the coming year whose increase rate of earnings is the largest this year		
	Income increases	Income does not increase	Income falls	Yes	No	Not clear
Number of people	136	52	12	148	22	30
Proportion	68%	26%	6%	74%	11%	15%

3 Countermeasures and suggestions

3.1 Farmers should improve their level of knowledge to have a correct view of the rise in vegetable prices

The education level of most local farmers is primary school, and they rely on their own experience to solve most of the technical problems they encountered in production, what's more, their source of market information is very narrow. The above reasons affect farmers' judgment for the price of vegetables. Farmers should get related information of vegetable prices through newspaper, television or Internet search, and call for more expert guidance. While vegetable prices rise, do not follow the planting trend blindly, but choose vegetable varieties and planting scale with forward-looking planning.

3.2 Release price information timely and improve the rural network information platform

Establish and improve the price monitoring network, and provide timely and accurate market price dynamics for the government and higher authorities so as to form a predict warning mechanism that could identify problems early, reporting fast, analyze reason thoroughly, judge situation accurately. Build a rustic service-oriented Web site to expand market supply and demand of vegetables, so that farmers could quickly and efficiently publish market supply and demand information, do e-commerce transactions, grasp the vegetable market timely, adjust the production structure timely, adapt production to sales, and effectively increase farmers' income.

3.3 Increase capital investment for vegetable production base

Government should actively respond to the call for "vegetable basket project" to increase financial input, plan the overall layout of vegetables rationally, promote vegetables production

develops towards the direction of large-scale, based on base, standard and industrial, and stabilize the capable of self-sufficiency of vegetable products. Under the support and guidance of the government and the agricultural sector, the major vegetable base should motivated by technological innovation, to develop and introduce new varieties actively, promote the use of new technologies, develop contract farming, change the traditional cropping patterns, and improve the quality of production, so as to achieve the purpose of increasing income.

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