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Comparison of Crops Profit in Kangbao County

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Abstract Through the comparison of each kind of crops in Kangbao County, it is concluded that there are remarkable differences among the benefits of different kinds of crops. Local farmers are very conservative, first thinking to meet their own demands and then trading for money. Renting lots of agricultural machines has been becoming the most effective cost, which not only improved agricultural productivity, but also increased farmers' income.

Key words Compared benefit, Significant difference, Labor productivity

Local farmers are good at agricultural plantation. In order to ensure the healthy and steady development of national economy and stabilize crops production, the government encourages farmers to grow crops by giving subsidies to farmers. By comparing the cost of crops, the focus of agricultural production, difference of agricultural product benefit, ratio of each investment in agricultural production and commercial rate are discussed.

1 Agricultural condition

Kangbao County is located in Bashang Plateau in northwest Hebei Province, with a total area of 3 365 square kilometers and 282 thousand people, among whom 230 thousand are farmers and the arable land is 8.4 million acre. Because Kangbao County enjoys eastern Asian continental monsoon with an annual temperature of 1.7 °C, 114 days of frost-free period, 350 mm of precipitation, and 3 100 sunshine hours, only one-seasonal crops can be planted there in a year.^[1] The total agricultural value was 1.651 50 billion

Yuan in 2009, which occupied 78.8% of total income in the county^[2]. Crops in large field include wheat, potato, beans and rape seed. In Kangbo County, each hectare of wheat gets 150 Yuan of subsidy.

2 Data source and treatment

In order to find out the benefit of growing crops, 30 farmers in 8 counties and 7 towns were investigated randomly in 2010. 28 pieces of questionnaires were effective and the 28 families had a total arable area of 99.43 hectares. The crops involved spring wheat, avena nuda, flax, rape seed, potato, red bean, and pea. The plantation of each crop is shown in Table 1.

Therefore, the wheat and Avena nuda which are closely related to farmers livelihood take the lead. 22 families planted wheat and 19 families grew Avena nuda, which accounted for 48% of total arable land. This suggested that farmers can satisfy their own needs by growing plants.

Table 1 Crops in Kangbao County

Crops	Acre	Family	Seeds	Fertilizer	Machine	Employee	Net income
Wheat	21.80	22	2 525	6 688	8 365	0	24 071
Avena nuda	25.93	19	4 200	7 295	10 210	0	47 220
Flax	26.67	16	4 577	6 260	8 510	0	57 608
Rape seed	17	14	2 063	3 120	6 900	0	46 272
Potato	4.33	17	5 830	2 190	702	0	64 623
Red bean	2.8	8	100	740	635	0	15 754
Pea	0.67	2	0	840	120	0	800

Note: The area refers to the total arable land in 28 families and the plantation area refers to the area of certain planted crops.

The ratio of production cost is shown in Table 2.

Table 2 Ratio of production cost

Project	Seeds	Fertilizer	Machine	Employee
Absolute value // Yuan	19 295	27 133	35 442	0
Relative value // %	23.57	33.14	43.29	0.00

As shown in Table 2, among the total cost of agricultural production, machinery investment is the largest one, accounting for

43.29%. Fertilizer accounts for 33.14%. The investment in employment is zero, which indicates that the large investment in machinery reduces the input in farmer's labor force.

The benefit of growing various kinds of crops is shown in Table 3.

The benefit of crops per acre differs significantly. The comparison of crops is shown in Table 4.

The net income of wheat, pea, avena nuda, flax and rape seed had no significant differences at 0.05 level, but the net income of potato and red bean was higher than other crops, and the net income of potato was higher than that of red bean.

Table 3 Benefits of each crop

Crops	Wheat	Avena nuda	Flax	Rape seed	Potato	Red bean	Pea	Unit: Yuan
Total mean benefit	1 104.17	1 821.06	2 059.36	2 721.88	14 924.48	5 626.43	1 194.03	
Benefit per family	1 072.71	1 829.88	2 927.20	2 376.61	14 644.71	6 028.13	1 087.50	

Table 4 Comparison of crops' benefit

Crops varieties	N	alpha = 0.05 subset			Unit: Yuan
		1	2	3	
Wheat	22	1 072.704 5			
Pea	2	1 087.500 0			
Avena nuda	19	1 829.875 9			
Rape seed	14	2 376.607 1			
Flax	16	2 927.203 1			
Red bean	8		6 028.125 0		
Potato	17			14 644.705 9	

The commercial rate of each kind of agricultural crops is shown in Table 5.

Table 5 Commercial rate of crops in Kangbao County

Unit: %

Crops	Wheat	Avena nuda	Flax	Rape seed	Potato	Red bean	Pea
Commercial rate	57.64	66.38	74.20	68.08	74.80	78.16	56.82

Hence, the commercial rate of each crop is like this: red bean > potato > flax > rape seed > avena nuda > wheat > pea. Generally speaking, the commercial rate in Kangbao County is high and is highly compatible with the benefit of crops.

3 Conclusions

3.1 Significant differences of net income among crops

Growing potato can bring the highest income, with 14 645 Yuan per hectare. The area planted with potato is 4.35% of total arable land. The crop which yielded the second highest income is red bean, with 6 028 yuan per hectare. Its plantation area accounts for 2.82%.

3.2 The way to maximize benefits Local farmers have strong self-satisfaction consciousness and grow crops in an unreasonable way that the final benefit isn't maximized. Only 48% land was used to produce crops and farmers failed to plant crops with high benefits. 78.57% families grew wheat and 67.86% families grew avena nuda.

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3.3 Reducing farmers' physical input by renting agricultural machine Leasing agricultural machine reduces farmers' physical input, so this investment costs the most. Along with the development of agricultural machine lease industry, almost all works are done by machine. This investment accounts for 43.29% of total investment.

3.4 The high commercial rate of crops in Kangbao County

Modern farmers do not have to store food as their ancestors. Instead, they sell the rest of crops for money. Besides, the commercial rate of crop with large benefit is also high. For instance, the commercial rate of potato and red bean is 74.80% and 78.16% respectively. The commercial rate of crops in Kangbao County reached 68.63% in general.

4 Discussion

More than 61% families grow avena nuda and wheat, which suggested that the traditional eating habit has great influence on local farmers. Such eating habit results in significant differences in benefits of crops. 48% land is used to grow crops with low benefits and then more than half food is sold, which suggested that modern farmers would first consider their life necessities and then the commercialization of crops. With social development, the investment in agricultural machinery is increasing, accounting for 43.29%, which reduces farmers' physical input, enhances agricultural production and decreases seasonal demand of labor for in agricultural production to a certain degree. In this case, people can work in companies to increase family income.

This is only one year's data. Because of dramatic changes of market price of crops, the crop market has higher risks. The changes of crops will be further studied.

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