

# The countermeasure of rapeseed industry advance in Anhui province

TONG Chengquan<sup>1</sup>, NIU Yunsheng<sup>1</sup>, ZHOU Kejin<sup>2</sup>, HUANG Qiuyun<sup>1</sup>, SONG Guoliang<sup>2</sup>

*1 Anhui Rapeseed Industry Academy, Hefei, 230001, China*

*2 Anhui Agricultural University, Hefei, 230036, China Email: zhoukejin@163.com*

## Abstract

Countermeasure and thinking to promote rapeseed industrial development in Anhui province were put forward after the status and problem being analyzed and combining with the development goal of the 11<sup>th</sup> five-year plan of rapeseed production. That will be fixing growing area and raising yield per hectare; popularizing new varieties of double-low rapeseed breed and breeding new varieties aiming higher yield and oil content, lower erucic acid and glucosinolates; studying and demonstrating practical and simple cultivation technology, focusing on extending no-tillage, lower cost and higher profit technology, and mechanization production technology; developing double-low rapeseed cake deep processing and comprehensive use, and realizing diversity development and multiple level increment value, so that strengthening rapeseed industrial comprehensive competitive ability; Speeding study the technology of biological diesel oil change from rapeseed oil and offering new channel for peasant income increase; increasing input of science and technology and fund, enlarging the subsidy scope and area of choiceness seeds, and establishing industrial development foundation.

**Key words:** Anhui province, rapeseed industry, problems, development countermeasure

## Rape industrial situation and trait in Anhui province

*Rapeseed produce reached history peak during the 10th Five-Year plan and will drop down during the 11th Five-Year plan*

Anhui province belongs to a valley of the Changjiang River that is one of the most important districts to produce rapeseed, and which is one of important pillar industry in Anhui province agriculture. The area planted with winter rapeseed for perennial areas is 1.0 million hectares, about a total of 1.5 million Tons could be harvested. The plant area and total yield in Anhui province are the second position in China. During the 10th Five-Year plan, the rapeseed production has developed quickly in Anhui province (Table 1).

**Table 1: Anhui province Rapeseed Area from 2001 to 2006**

Year	Area (1000 ha)		Hectare yield (kg/ha)		Total yield (million tons)	
2001	953		1867.5		178	
2002	1002		1519.5		152	
2003	1015	Mean	1507.5	Mean	153	Mean
2004	1033	1005.4	1897.5	1706.1	196	171.4
2005	1024		1738.5		178	
2006	835		1964.0		164	

The average area was about 1 million hectares and hectare yield was 1706.1 kg/ha and total yield was 171.4 million tons During the 10th Five-Year plan in Anhui province. This area takes about 13.5% of total country area and the yield is 15.1%, and the hectare yield is higher by 10.3% than that of country average yield. But since 2006, the area and yield drop down quickly (Table 1). The projects the area planted with winter rapeseed for harvest 2007 to have decreased by 5.2 percent to 0.8 million hectares than that of in 2006, and by 16.9% than average area of the 10th Five-Year. The area of the 11th Five-Year plan will drop considerably in Anhui province.

### *Important position of rapeseed production in Anhui province regional economy*

In 2003, the hectare yield in Anhui province is equal to the country average yield, and it is position of 16<sup>th</sup> in the country. The yield compare advantage index and the size compare advantage index ranked the position of 9<sup>th</sup> and 2<sup>th</sup> separately, and the comprehensive advantage index ranked the position of 3<sup>th</sup> in the country. The rapeseed production is one of the most crops with yield compare advantage.

### *Centralized to advantage area in rape produce in Anhui province gradually*

Rapeseed is a advantage crop in southern area of Huaihe river in Anhui province and have no any crop take it over in winter agriculture. According to the statistic material in 2001-2004 from 9 cities of Chuzhou, Hefei, Chaohu, Anqing, Luan, Wuhu, Maanshan, Xuancheng and Chizhou city, their total area annual is 0.766 million hectares and is 76.6% of the province total area, and their total yield is 1.33 million tons and is 79.2% of the province total yield. Therefore, the advantage of rapeseed produce is obvious in Anhui province.

### *Greater improvement in rapeseed variety and culture technology in Anhui province*

During the 10<sup>th</sup> five-year plan, many new varieties were speeded breeding, and a batch of varieties is approved through Anhui province and the department of country. There are good quality and their yield is higher than that of previous. The extending area of high quality rapeseed has reached 90% upwards. At the same time, a complete of culture technology of high quality and high yield was studied such as grow seedling and planting technology, and direct seeding technology with no-tillage and machine digging channel, and chemical weeding technology, chemical adjusting and controlling technology, and balance fertilizing technology, diseases insect pests prevention and cure technology. These would offer a strong technology guarantee for rapeseed production in Anhui province.

### *Demonstration and popularized a light and easy and effective culture technology*

In recent years, along with the shifting of the rural labor force and the rapidly expanding of single-season rice area, the light and simple rapeseed culture technique obtains development fast. According to statistical material, the area using no-tillage hole sowing technology and no-tillage broadcast sowing with machine pigging ditch technology full mechanization technology had reached 0.43 million hectares, which takes nearly half of the rapeseed planting areas. At same time, the area of high quality and high yield varieties is very large step by step, and the area of canola rapeseed have popularized by 90% more in Anhui province.

### *Make good benefits in fine breeds subsidy in Anhui province*

Since the year of 2003, Anhui province has begun to supply special funds (60 Yuan per hectare) for the seven counties, a total area of 66,667 hectares, such as Huoqiu, Wangjiang, Quanggiao, Feidong, Juchao, Hanshan and Langxi county. To supply free seeds for farmers and 7.5 yuan per hectare as subsidies to develop experiment work of using good breeds. By taking this measure, good situations appear. On one hand, the rapeseed planting come into a large scale, the unity of seeds are improved, the market price is balanced and farmers' interest is gotten, which is warmly welcomed by farmers. For another, the agriculture department popularize this technology to some needed area where farmers are able to harvest more productions, and the fiscal department are very satisfied. Both sides gain benefits in order to benefit more farmers and departments; the expanding good breeds subsidy program should be promoted continuously. In 2006, it will continue to invest 4.05 million Yuan subsidy for using fine breed about 60,000 ha area in rapeseed.

### *Problems and restrict factors in rapeseed industry development in Anhui province*

To begin with, higher cost and lower price, as a result, lower benefit. In recent years, the rapeseed area sharply decreased owing to lower rapeseeds price and higher cost and lower benefit. The price of rapeseed in our country drops year by year since 2001 joining to WTO. The price was the lowest by 1.7 yuan/kg in 2001 that lower 50% than that of 1996. The price was 2.3 yuan/kg in 2005 which is lower 15% than that of last year. But grain crops such as wheat has higher price protected by the government at same time. By compared, planting rapeseed benefit is lower than that of grain crops and planting rapeseed enthusiasm drops.

The national production cost is higher in China than that of other developed countries, especially the cost of labor force is very high. According to the survey that transplanted rapeseed need 172.5 labors every hectare. Every labor needs to pay for 30 Yuan every day, the cost of the labors will be 5100 Yuan per hectare. The cost input materials each hectare is higher by 50% than that of Canada. As a result, the production total cost is 2-3 times domestic rapeseeds than that of import rapeseeds.

On the other hand, the high price of production materials such as chemical fertilizer and it's high price increase the rapeseed production cost. According to the survey in Anhui province soil and manure station that the cost of fertilizer continue to rise except the urea and carbonate ammonium in 2005. The rice of rise except compound fertilizer is 2262 Yuan every ton. It rises 6.17% and 36.76% compared with the year of 2004 and 2003. The price of national phosphate bi ammonium is 2469 every ton, going up respectively 3.26% and 40.28% than the year of 2004 and 2003. The price of national potassium chloride 1930 Yuan every ton, which goes up 26.82% than the year of 2003. The over consumption of production high price not only increase the rapeseed production cost burt also break the initiative of the peasants.

Next, oil industry has over-productivity and high cost lower process benefits. There are one hundred oil process industries with a large scales processed over 50 tons seeds everyday, and there are 17 industries processed 200 tons per day and one processed 4000 tons per day in Anhui province at present. These oil enterprises process ability are over beyond actual requirements. For example, the process plan was 700 tons per day but only actual processed 500 tons each day and processing time remained 4 months a year in 2005 in Anhui zhongguo grain-oil company in Anhui province. The process cost is high by 220 yuan/t and no any benefits is gotten.

Furthermore, it is the lack of nameplate products and lower market competition ability. The oil process enterprises is small Anhui province, and it's product types and quantity are very much and products brand is also much, and oil market is confusion. Only one nameplate product company into Chinese famous brands is Anhui Daping oil company in Anhui province.

In addition, the processing products are first product mainly and a few of synthesized processing products. There are a lots of useful matters wasted and lost.

Finally, the impact of importation oil products was important effect factor such as rapeseed and soybean. In 2005, from Jan to Sep. China imported soybean 195 million tons, increased by 40% comparing with the counterpart period of last year from Jan to Aug the plant oil 44.9 million tons, raised by 43.4%; contrasting with the same period of last year. All of these have brought great effect to the domestic oil-fatness process industry and planting of oilseed.

*The countermeasure and measures for developing and advancing rapeseed production in Anhui province*

Firstly, adjust measures to local conditions and make out a good program in rapeseed in Anhui province. The purpose is that raises further rapeseeds product quality and the special useness. Various places selects suitable rapeseed varieties and organizes production according to the local conditions such as ecology, climate, planting system, economic condition. And difference district establishes correspondence produce base by supporting science and technology so as to raise product quality and market competition ability.

Secondly, the simplified rapeseed culture technology and measures can suit the need of shifting the surplus labor force in the rural area from farming to other sectors. Transplanting rapeseed plants demands a lot of work, time and great labor intensity. With more and more prime labor force living and working outside, the majority left behind are those who are either too old or weak, sick to go outside or disable people and women. These people can not produce good-qualified rapeseed with high efficiency, therefore, there is a urgent need of developing a light and simple technology and mechanization culture level which can at the same time improve the quality of rapeseed production. At present, a new cultivation pattern that is Sowing and harvesting using mechanism and appropriate management has been put forward for problem of lower labor productivity on present cultivation pattern of winter rapeseed.

Thirdly, Steadying area and raising yield per hectare; popularizing new varieties of double-low Rapeseed breed and breeding new varieties with higher yield and oil content, lower erucic acid and glucosinolates content. It can push ahead with rapeseed industry development.

Fourthly, it need reduce the cost of process and distribution and optimize company structure and increase managing level. It is necessary that many process companies make conformity into some large oil groups to improve risk resistance ability. At same time, we need renovate our equipment and program replace traditional process machines and methods.

Fifthly, we need increase the devotion of science and technology and financial investment, and study depth process production and it's industrialization. It is strengthened in the alliance between enterprise and colleges or institutes so as to improve the company technical innovation ability, as a result to produce famous and local and new production and improve products additional value.

In particular, applicability of used rapeseed oil for production of biodiesel has been made sure. Biodiesel is composed of monoalkyl esters of long-chain fatty acids derived from vegetable oils or animal fats. The present production of biodiesel is based mainly on plant oils. Almost all current technologies of conversion of these oils into fuels for diesel engines require high-quality raw materials and a high content of triglycerides. The traditional method of synthesis of fatty acid methyl esters is based on the alkaline-catalyzed transesterification reaction, which has many disadvantages. Long recognized for being environmentally friendly, biodiesel is renewable, nontoxic, biodegradable, and sulfur-free. At present, some private companies such as Anhui guofeng plastic group and Anhui Daping oil group is establishing production line of biodiesel in Anhui province.

Sixthly, we should establish and reform technology service system and market circulation system for rapeseed production. Some agricultural socialization service organizations should be provided into support and services. For example, we can offer technology service and criterion culture technology and plant diseases forecast information and specialization prevention services for producer. As a result to increase the effects and benefits and to decrease the cost of production.

Finally, to improve oil production brands well-known and set up more nameplates in the country. The plant oil product is listed the Chinese nameplate products appraisal catalog in the first time in 2005. One of four nameplate oil produces of our country come from Anhui Daping oil group in 2005. But it is little which in not fit of large oil province.