

# **Sunflower Production and Development Strategy in China**

by

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**[ABSTRACT]** Developed in the recent decades in China, as a new oil crop, sunflower now is the third oil crop in terms of its area and output. In review of the historical development, the experience, features and problems of sunflower development are analyzed; and according to the consumption trends and structure adjustment of arable farming, the feasibility of development objectives of long and medium term are forecasted, and strategic options to realize those objectives are discussed in this paper.

**[Key Words]** Sunflower in China; Development; Strategy

## **I. The Historical Development and Current Status of Sunflower in China**

Sunflower cultivation in China has a long history, with literature record in the year DC 1621, and formal nomination of "sunflower" in 1688. In early dates, as an ornamental plant sowed in the yards and gardens, bronchi type varieties were vastly cultivated, its seeds were mainly used as snacks. In the beginning years of the founding of the People's Republic of China( namely New China), edible varieties were introduced from the former USSR and eastern Europe. Due to the encouragement of Chinese government, its cultivating area had been in gradual enlargement, and reached 230,000 hectares by

1959. In the following 10 more years, because of natural disasters and other reasons, its area declined continuously, and the lowest of 18,000 ha was recorded in 1963, lower than the 20,000 ha in 1950. In 1978, sunflower production was put into national crop production plan by Chinese government. With farmers' great incentives resulted from the enforcement of Rural Household Contract Responsibility System and the inspiration of the governments at different levels, the sunflower cultivation area was acutely increased: 320,000 ha in 1978, 850,000 ha in 1980 with an yield of 900,000 tons, which were respectively 1.3 times in area and 1.7 times in output than 1979. With an area of 1.47 million ha and an output of 1.73 million tons, a highest record both in area and output was reached in 1985. Since 1985, because of diseases rooted in continuous planting and diminishment in the relative economic return, sunflower planting area was on the decline: 910,000 ha in 1990 and hovering around 800,000 ha from 1991 — 1995.

Currently, sunflower is one of the five major oil crops in China and the third oil crop in terms of its area and output just next to rape and groundnut. There are about 20 provinces cultivating sunflower: Jilin, Liaoning and Heilongjiang in the Northeast, Xinjiang, Shaanxi, Gansu and Ningxia in the Northwest, Tianjin, Hebei, Shanxi and Inner Mongolia in the North, and Yunnan, Guizhou and Sichuan in the Southwest. The major regions are: Inner Mongolia Autonomous Region, 200,000 ha; Shanxi Province, 140,000 ha; and Xinjiang Autonomous Region, 120,000 ha. In recent years, sunflower area takes a proportion of 6% of oil crop areas, the average yield per ha (productivity) around 1650 kilogram, a bit higher than the average productivity of oil crops in the country; the total output around 1.3 million tons, 10% of the national oil crop output.

## II. The Problems in Sunflower Development in China

Sunflower cultivation has long existed in China, however, planting as a major oil crop is a matter happened after the establishment of "New China". Therefore, genetic resources, cultivation technology and experience are far from enough. Some obvious features and problems in sunflower development in China thus are as follows:

### 1. Great fluctuation of the planting area.

Due to lack of objectives and programs of development and damages of sclerotinia blight disease, sunflower production has long been over dependent upon government policies and market prices. Thus an unstability of the planting area has resulted ——— changing by several times and even over 10 times or more from year to year.

### 2. Low productivity.

Compared with 1950s, yield per ha has almost doubled. However, the current 1650 Kg productivity is still much lower than some high yield countries. The main reasons fall into cultivation in saline soils and barren hillsides, scarcity in material inputs and technical care. If high-yield varieties were planted, input increased and reasonably zoned, the productivity would be promoted much higher.

### 3. Low proportion of oil-oriented varieties.

Starting as an ornamental plant, China's sunflower development has long served for the purpose of snack foods, which can be shown from variety resources, planting customs and techniques, processing and marketing. Oil-oriented varieties have took an increasing proportion after the introduction of oil-oriented varieties from overseas and in 1970s the emergence of "three line" hybrids in China; but up to now, it only makes some

50% of the total.

#### 4. Scarcity in varieties.

Because of the shortage of rich variety resources, cultivating varieties renews slowly, varieties with high-yield, high-resistance and rich in oil are scarce in particular. What is more, severe adulteration with and degeneration of oil and snack varieties resulted from the lack of purification and revitalization have worsened the taste of edible varieties and reduced the oil content of oil varieties.

### III. The Importance and Potentiality of Sunflower Development in China

#### (I) The special significance of sunflower development

##### 1. Significant to solve the problem of oil shortage in northern China.

At present, the average annual edible oil consumption per capita in China is about 6 Kg, and it is apparently lower in the north, where edible oil production could not meet the demands and soybean oil used as a compensation. Taken the average output of 1.3 million tons from 1991 — 1995 as a base, if half of the sunflower output is used to extract oil, over 200,000 tons of oil can be produced, which will be helpful to promote the per capita oil consumption in northern China.

##### 2. Beneficial to farmers' enrichment.

The main cultivation area of sunflower is poverty area in China, where sunflower is not only seen as an oil crop, but also as a cash crop. That means farmers can gain more income by planting sunflower.

##### 3. Meaningful to improve soil.

Most provinces in northern China have large area of saline land and barren hillside land unsuitable to grow many other crops and is deserted for good. By planting the "pioneer crop"—sunflower, land can be improved by reducing the salt rate, arable land can be increased, and as a result agriculture development can be promoted.

#### 4. Helpful to animal husbandry development.

Taken the average output from 1991 — 1995 as a base, this can be illustrated as such: on the one hand, there are about 12 million tons of flower dishes of sunflower produced annually, which are low in coarse fiber and rich in nutrition, and can feed 1.5 million heads of cattle; on the other hand, 180,000 tons of high quality sunflower seed cakes is produced annually, which can feed 500,000 pigs.

### (II) The great potentiality for sunflower development in China

Sunflower development in China has a great potential in China according to Chinese situation and from the long run, although it began late and there had been some problems and fluctuation in the past.

#### 1. There is a big potentiality in suitable land for sunflower cultivation.

Relatively, the northern China is the region where per capita arable land is ample, the climate also fits sunflower growth, and saline land and barren hillside land are suitable to sunflower production.

#### 2. The environment for sunflower development is applicable.

Sunflower development has gradually aroused the attention of governments at all levels, production layout is getting more reasonable, and the incentives of farmers for cultivation of

sunflowers become higher and higher.

### 3. Technical feasibility is guaranteed.

Studies in sunflower cultivation technology have made some progress, major cultivation areas have extension specialists at different levels. That is a technical guarantee for sunflower development.

### 4. Some hybrid varieties of oil-oriented sunflower have been bred.

Some hybrid varieties of oil-oriented sunflower has been bred, such as Liao-series and Nei-series, which have improvement in yield, oil rate and disease resistance in comparison with former planted staple varieties. The productivity is surely enhanced by enlarging the area of these varieties.

## IV. The Program and Strategy for Sunflower Development

As mentioned above, sunflower development in China has great importance, therefore the Chinese government has a clearer guideline in this regards: aiming at balancing the total production of edible oil, guaranteeing the supply of oil consumed by people in northern China, and enhancing the enrichment of farmers in the area, take full use of the land resources in the northern China and enlarge properly the planting area of sunflower; focusing on applying new high-yield hybrids and integrated high-yield cultivation techniques, promote the productivity; and guided by the market, manage the reasonable geographical layout and proportion of the oil and the snack varieties, and develop comprehensive utilization in order to enhance the returns as a whole.

The development objectives are: by the year of 2000, the total planting area of sunflower will reach 1.2 million ha, the total output 2.7 million tons and the average productivity 2250 Kg; and the planting area of oil varieties takes 60% of

the total sunflower area, distributed mainly in northern China, while snack varieties mainly planted in the Northeast and other minor regions. In order to fulfill the objectives, the following measures should be taken:

1. Intensify all research resources for technological breakout.

The key points are to breed high-yield, high-resistance and high oil rate varieties, as well as to study the measures and technology for preventing and curing sclerotinia blight and leaf spot disease.

2. Work out a development plan and layout. The program for the long and medium term should be made, and a reasonable layout among different sunflower varieties and between sunflower and grain cereal crops based on "integrated" (intercropping) farming will alleviate the damage of diseases, and raise the output of both sunflower and cereals.

3. Strengthen the seed propagation and supply. Set up good seed reproduction basis, improve the system of seed supply, reinforce seed purification and revitalization to prevent degradation and adulteration, as well as to study the fast propagation technology and its application.

4. Develop integrated high-yield cultivation technology and its extension. Develop the required technology, conduct training courses for farmers, and encourage farmers to increase input in sunflower farming, for increasing productivity.

5. Raise the integrated returns of sunflower production. The approach is to conduct the research of overall utilization of sunflower seed and its processed by-products, and pay attention to the application of the research results.