

Watermelon Production of Gansu Province in China

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Gansu Province is located in the middle part of China (E longitudes 92°13' to 108°46' and N latitudes 32°31' to 42°57'). It is one of the most famous areas in China for production of watermelon and melon with excellent quality, due to the special climate.

Climate Characteristics of Gansu Province.

Gansu abounds with sunlight. More than 75% of the region has at least 2500h per year sunshine (the highest has 3400h per year), much more than other areas with the same latitudes. The amount of solar radiation is 445.0-663.6 KJ/cm² per year in Gansu, with sunlight days 74%. The annual precipitation is little, ranging from 40-538. mm in the production area. (Lanzhou in the middle part) the annual precipitation is less than 300 mm and mainly concentrated in late July to September. The annual evaporation from land surface is 1400-4000 mm. The daily range of temperature in the season of watermelon growth is about 12-16C. The climate from east to west in Gansu transitions into a continent dry climate from a semi-humid climate. Due to the special climate Gansu has become a very important seed production base of watermelon and melon with large fruit and good quality in China.

Meanwhile, drought is also a limitary factor to the product of watermelon and melon in Gansu. Because of little rainfall irrigation culture is an important method for agriculture production but is restricted by a shortage of water resources. Production is also impacted often by cotton aphid

infestations, virosis, sun-scald resulted from high temperatures, drought, solar radiation, and sometimes by frost in the early spring and by sandstorms.

Watermelon cultivars suitable for Gansu Province. Virtually all types of watermelon and melon are suitable for the Gansu region, due to the various climates present. These include introduced varieties belong to the Russian ecological type, the East Asian ecological type, and ecological type of North China.

For historical reasons, the germplasm of the local types is mainly from Russian and North China ecological sources, with large fruit and drought resistance but without resistance to excessive moisture.

Cultivation Characteristics and Key Technologies of Watermelon Culture.

Direct sowing in Open Field. The main production technique is direct sowing in the open field for most areas. Seedling transplanting and tunnel production are only used in the suburbs, although this practice is becoming bigger and bigger year by year because of higher economic returns. With the use of film coverings beginning in the 1980's, the traditional direct sowing on an open field has been improved into shallow sowing under film, shallow sowing covered by thinner soil (1.0 cm thickness instead of 2.5 cm), then breaking the film immediately emergence to aid the seedlings.

Growth during the Summer. Usually watermelon production stops during the summer in Gansu, and the harvest production begins in early fall. So plants should be protected from virosis and sun-scald when high temperatures arise.

Sand culture and irrigation culture. Sand culture in the middle region and high ridges (> 20 cm) in the western region is usually employed in Gansu. The sand culture culture, similar to the film culture, depends only on natural rainfall and 2-3 irrigations. The high ridge culture must be irrigated 3-5 times during the vegetative growth period, and every 7-15 days during the reproductive period, with $600-800 \text{ m}^3/\text{km}^2$ water per time.

Seed production. Because of plentiful sunlight and heat units, Gansu produces not only good watermelon but also seeds that are full and high yielding. The seeds produced in Gansu province are 20% heavier than those produced in eastern provinces. With F_1 hybrid production of watermelon beginning in 1980s, seed production has developed quickly in Gansu. The seed output increases greatly by means of applying high plant densities ($39,000-46,500 \text{ plants}/\text{km}^2$) and single vine pruning, which yields very high returns to the farmers and enterprises. Furthermore, Gansu has become into one of the most important seed production regions for watermelon, with more and more seed enterprises coming up from domestic and abroad.

Major problems in watermelon production.

Variety. Besides the Gansu market, most of the fresh fruit would be exported to other markets in China. “Hongyou No.2”, an old variety, is tolerant to transportation and storage, but the fruit quality is not good enough. In recent years “Xinong No. 8” has been produced on a large scale; it is tolerant to storage with good quality, but its tolerance to transporting is not as good as that of “Hongyou No.2”. The demand for large-sized

fruit is declining because family size is decreasing in cities and towns. So, there is new emphasis on developing new varieties with tolerance to transportation and storage, good quality, resistance diseases, and small fruit, which must have a good market for the next few years.

Using–seed Watermelon production. Using–seed watermelon production in Gansu is very special in China, but there is a scarcity of market information and the market requirement are not stable. So, the further investigation and research concerning the market is necessary for production in future.

Seed production of watermelon. In order to encourage more seed enterprises to come to Gansu to develop seed industry, it is very important to improve management, to have a good investing environment, to establish an ideal reputation, and to coordinate various relations.