

Distribution of Spring Rapeseed in China

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The area of spring rapeseed in China is about 400,000 ha, covering 10% of the total rapeseed area in the country. It's mainly distributed in the western part with high elevations, in the northern part at high latitudes and in the regions along the Great Wall with hot summer and cold winter where double cropping system is practised. There exist great differences in varieties and cultural techniques adopted in these three main spring rapeseed production areas due to different weather conditions.

Climatic Characteristics in the Areas with High Elevations

The spring rapeseed areas with high elevations are referred to those located in Qingzang Plateau, the foot of Tianshan Mountains in Xinjiang, Ying-shan Mountain in Inner Mongolia and Great and Small Xingan Mountains in the Northeast with 1,500 m above sea level, in which single crop is grown each year. The highest place is in Quxue, Tibet with 4,500 m above sea level, however, most places are around 2,000-3,500 m above sea level. In these areas, the weather is very cold and dry with periodical wet seasons. It is characterized by low ave. annual temp., less effective accumulated temp. and great differences in temp. between day and night. In winter the cold period lasts very long and in spring the temp. rises very early but slowly, enabling rapeseed to grow very well during seedling stage. The summer is never too hot with long solar duration, great air transparency and intensive radiation, thus making the photosynthetic rate very high. Besides, the annual evaporation is twice as much as the annual precipitation. A cold and dry microclimate is formed with adequate rain and temp. Generally, days are sunny and nights are rainy, very ideal for the growth and oil accumulation of spring rapeseed. The area can be regarded as one of the spring rapeseed production areas with high and stable yields. And it is also the area where varieties with big seeds and high oil con-

tent are developed. The thousand grain weight of the big seeds can be 6-7 g and oil content can reach 50-51%. The typical high yielding varieties, i.e. above 4,500 kg/ha, are mainly produced in these areas with irrigation. Very productive varieties of *B. napus* and *B. juncea* are grown in areas with great accumulated temp. and rich water resources. However, *B. campestris*, which is early, can only be planted in the area with short frost-free period. The growth period of the earliest variety is only 60 days. Basically, spring rapeseed is extensively cultivated in mountainous areas but intensively cultivated in irrigated fields.

Climatic Characteristics in the Areas at High Latitudes

The spring rapeseed areas at high latitudes mainly include those in the northern part of Xinjiang, northeastern part of Inner Mongolia and Heilongjiang Province at or above North Latitude 45. The weather here is characterized by its long and cold winter and windy and dry spring. The temp. rises rather late but quickly, so rape seedlings cannot be fully developed. The summer is short with high temp., which drops quickly. In autumn cold air is very active. Cold wave comes early, so the crop is easily attacked by the early frost. The high temp., much rain and long solar duration in summer provide spring rapeseed with very good conditions for growth. However, in some areas further north, the crop at seedling and maturing stages often meet with low temp. and frost due to short frost-free period so that the crop is often damaged by cold current. Furthermore, it is very dry in early spring, which is another limiting factor for the growth of the crop. Therefore, *B. juncea*, which is tolerant to drought and very resistant to stress conditions, is very suitable in this region. *B. campestris* can also be grown since its growth period is short so that damage might be avoided. Generally, the rapeseed production in this area is highly mechanized but ave. yield is rather low.

Climatic Characteristics in the Areas with Double-Cropping System

These areas with 2 crops a year are mainly distributed along the Great Wall and other regions with cold winter and hot summer where the crop can neither overwinter nor oversummer, such as Jiling and Liaoning Provinces in the Northeast ; Shanxi, Inner Mongolia, Hebei Provinces, Beijing and Tianjin in North China ; Gansu, Ningxia, Qinghai Provinces in the Northwest. These areas are quite scattered and the weather conditions are rather complicated characterized by its long frost-free period and big accumulated temp., which can satisfy the requirements for the growth of 2 crops a year. It is cold in winter but there is still a cold period in spring suitable to the growth of the early varieties. Temp. is high in summer and drops slowly in autumn, so another early crop can be grown. Generally, spring-sown (March) rape can be harvested in June before high temp. comes in summer and the summer-sown (July or August) rape can be mature before autumn frost, and har-

vested in Oct. The vegetative growth of the summer-sown rape is not so good because of the effect of high temp. on seedlings. Therefore it is easily attacked by aphid and virus disease, causing the yield lower than the spring-sown crop. In these areas, either 2 crops of rape are grown a year or one rape rotates with other crops, or there are certain areas that one rape is intercropped or mixed sown with other crops. The short and early *B. campestris* is taken as the main crop in these areas.

Most of the *B. napus* and *B. campestris* varieties introduced from Canada, Sweden, Denmark, Poland and Australia can directly be used in the above mentioned spring rapeseed production areas in China. In recent years, the foreign varieties used in production here in China are Oro, Tower, Westar, Altex, Tobin, Span from Canada ; Gullive, Olga, Todas, WW1258, WW1037 from Sweden ; and Marnoo, Ru6 from Australia. Yet, some of the varieties from Denmark and Poland are not clearly named.