

Breeding Trends of Bitter Gourd in China

Rukai Huang

Vegetable Research Institute, Guangxi Academy of Agricultural Sciences, Nanning, 530007, Guangxi, China

ABSTRACT:

Bitter gourd (*Momordica charantia* L.) is an important vegetable crop in China, where it is grown on approximately 140,000 ha. annually. Consumer preferences for fruit color, shape, skin pattern, and size vary between and within provinces. Fruit colors range from white or cream to light green to dark green, and shapes include cylindrical, elliptical, spindle and conical types. Fruits develop irregular longitudinal ridges and warty skin, depending upon the variety. Based on these fruit traits, nearly 10 market types of bitter gourd exist in China. Besides the fruit type, other agronomic traits, such as diseases and insect pest resistance, heat tolerance, low temperature tolerance, early maturity are pursued by growers all over China.

The breeding program of bitter gourd started in 1990s in China. During 1990-2000, the targets of breeding focused on high yielding, lighter bitterness, and large fruit size. Since the last 10 years, along with the rapidly expanded of the production area, diseases such as powdery mildew and *fusarium* wilt became serious, insect pest such as melon fly also turn into challenge to bitter gourd production. Breeding programs for powdery mildew and/or *fusarium* wilt resistance were carried out, and several new varieties with powdery mildew resistance had been released to the growers. Due to the popularized of grafting technology against *fusarium* wilt, the breeding program for *fusarium* wilt resistant progressed at a slow pace. On the other hand, bitter gourd cultivars have the capacity to set fruit under low temperature and low light intensity or high temperature is preferred by growers to set up off-season production. Mutation breeding methods were applied to developed cool tolerant or heat tolerant inbred lines, gynocious inbred lines were also developed to breed early maturity hybrids. In 2016, a project of bitter gourd whole genome sequencing was launched; molecular breeding is becoming an important strategy to bitter gourd breeding program.