

Breeding Paprika for Spice and Color Production

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Dried fruits of non-pungent cultivars of red pepper (paprika) are used in the form of powder as spices or in the form of oleoresin for the production of natural red color. The major quality attributes of paprika are: color content and stability in storage, pungency level and nutritional value, mainly as vitamin contents.

These quality characteristics are of a quantitative nature and under polygenic control. Likewise, a low branching pattern and a concentrated fruit set and maturation are important features for paprika cultivars designed for mechanical harvest as practised in Israel.

A wide genetic variation in the color extractable from powder or oleoresin has been found in segregating populations of *Capsicum annuum* L. There is also genetic variation in the contents of capsaicinoids and vitamins, which enables the breeding of high-quality cultivars. The "Pedigree method" is widely used for the breeding of quantitative characteristics in paprika whereas the backcross method is preferred when dealing with monogenic characters.

The use of hybrid cultivars in paprika is limited by the lack of appropriate stocks of cytoplasmic male sterile and restorer lines. Genetic manipulations at the molecular level are also hampered by the difficulty in regenerating plants from cell cultures of paprika and by the lack of genetic maps and molecular markers for the genes governing quality attributes.

Key words: paprika, quality, color, carotenoids, pungency, oleoresin, genetic variation, breeding.

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