

PEPPERS

POST-HARVEST
HANDLING
AND STORAGE

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Maturity

Peppers mature through three distinct stages during development namely, immature green, mature green and mature red. From immature green to mature green, pepper fruit increase in firmness and pungency and the cell walls thicken. No change in colour occurs. Mature green peppers are horticulturally mature and can be consumed fresh or in processed form (eg. canned). Harvesting immature green peppers results in poor colour and flavour, low yields and short lifespan.

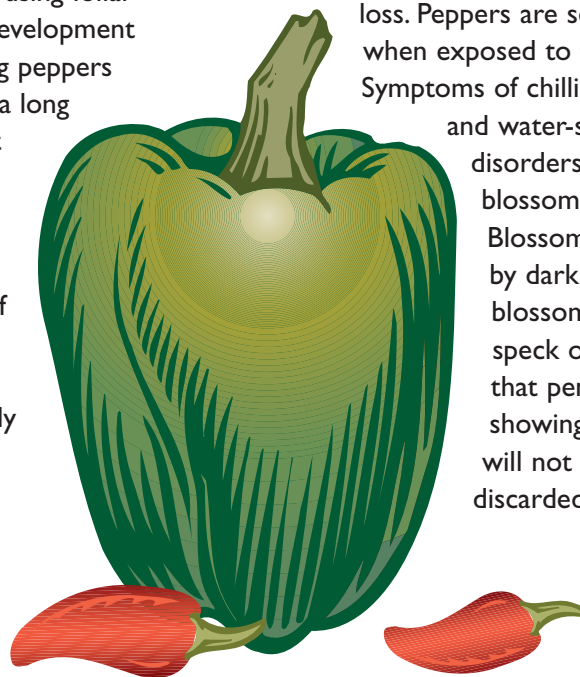
In the mature red market, peppers that have not fully ripened and have traces of green colour are often unacceptable for marketing. The colour change from mature green to mature red is due to the conversion of chlorophyll (green) to carotenoids (red or orange). This change from green to red colour can be accelerated using foliar applications of ethephon once colour development has been initiated on the plant. Allowing peppers to turn red naturally on plants requires a long growing season and extends the harvest period.

Ethephon has been used to enhance ripening of bell, chili, pimiento, jalapeno, and paprika peppers. Two applications of 100 ppm ethephon at 1 week intervals beginning once the peppers are full-sized, and about 30% red can significantly improve colour. A single application of ethephon at higher concentrations may induce fruit abscission and defoliation and decreases yields.

Post-harvest methods for ripening peppers involve spraying ethylene over the harvested fruit. This method is not always successful because peppers vary in their ability to change colour from green to red once detached from the parent plant. Application of 100 ppm ethylene followed by three days storage at 20-25°C and 85-90% relative humidity can improve colour of chili peppers. A newer type of Korean hot peppers, 'Choorae hong', responds well to post-harvest ethylene treatments.

Harvesting, Handling & Storage

Freshly harvested peppers must be stored between 7 to 10°C and 95% relative humidity. The typical storage life of peppers under these conditions is 3-5 weeks. Storage life is limited by moisture loss. Peppers are sensitive to chilling injury when exposed to temperatures below 7°C. Symptoms of chilling injury include pitting and water-soaked tissue. Physiological disorders in peppers include blossom-end rot and pepper speck. Blossom-end rot is characterized by dark, sunken lesions at the blossom end of the fruit. Pepper speck occurs as spot-like lesions that penetrate the fruit walls. Fruit showing either of these disorders will not store and should be discarded.





Storage Diseases

The major post-harvest diseases of peppers are *Alternaria* and *Botrytis* rots. *Phytophthora* rots can also occur if the pepper fruit are exposed to prolonged periods of heavy rainfall. Fruit infected by *Phytophthora* have water-soaked lesions.

Fungal rots during storage can be controlled by:

- (1) Promptly cooling harvested fruit
- (2) Avoiding bruising and injury
- (3) Post-harvest hot water dips at 52-55°C for 2 minutes
- (4) Post-harvest application of registered antimicrobials (eg. O-phenylphenol at 98 g/L).

For further information on the fungicides registered for use on peppers, contact your Rural Service Centre or the Provincial Vegetable Specialist, Saskatchewan Agriculture and Food.

Further Reading

Biles, C.L., M.M.Wall & K. Blackstone. 1993. Morphological and physiological changes during maturation of new Mexican type peppers. *Journal of American Society of Horticulture Science* 118:476-480.

Cantliffe, D.J. & P. Goodwin. 1975. Red colour enhancement of pepper fruits by multiple applications of ethephon. *Journal of the American Society of Horticulture Science* 100:157-161.

Lockwood, D. & H.M.Vines. 1972. Red colour enhancement of pimiento peppers with (2-Chloroethyl)phosphonic acid. *Journal of the American Society of Horticulture Science* 97:192-197.

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