

Waxy breakdown of garlic

Parálisis cerosa (Sp.)

Cause

Waxy breakdown is a physiological condition that usually develops after harvest.

Symptoms

Symptoms are not apparent until the skins surrounding the cloves are removed. Initially, affected cloves may show small, slightly sunken light yellow areas. Later, the entire clove will become affected, turning amber in color. Affected cloves are somewhat sticky or waxy in texture, and somewhat translucent; they remain firm, if somewhat slightly shrunken. Cloves may be affected individually and be intermixed with healthy cloves, be primarily on one side of the head, or the entire head may be affected.

Occurrence

Waxy breakdown is largely a condition that develops post-harvest, although it may occur earlier. Incidence is variable, depending on the cultivar and environmental conditions. Three situations may result in this disorder:

- Pre-harvest environmental conditions that encourage a high respiration rate in the bulb, such as an early harvest and mild temperatures (68-75 °F) during harvest, curing and drying.
- Excess sun while curing, which will affect cloves on the exposed side.



Clove on the left has discoloration due to waxy breakdown. Clove on the right is normal.

(Photo by Melodie Putnam)



Cloves affected by waxy breakdown are often on the exterior of the head.

(Photo by Melodie Putnam)

- Poor ventilation in storage and transportation.

Waxy breakdown develops between 25 days to six weeks after harvest; and larger bulbs may be more strongly affected.

Control

Importance

This condition degrades garlic quality and causes a reduction in pyruvic acid contents, resulting in reduced pungency.

- Stop irrigation well before harvest
- Curing and drying at 93-97 °F may prevent waxy breakdown
- Prevent sun damage to heads
- Provide appropriate ventilation for bulbs in storage and while in transit.

References

- Cirrincione, M.A.; Guiñazú, M.E. 2007. Momento de inicio y evolución de la manifestación de parálisis cerosa en bulbos de ajo cv. Sureño INTA. *Horticultura Argentina* 26 (61): 50.
2015. Páralisis cerosa (waxy breakdown), en bulbos de ajo. Documento Proyecto Ajo/INTA No.119. Estación Experimental Agropecuaria La Consulta.
- Cirrincione, M.A.; Guiñazú, M.E.; Burba, J.L. 2008. Efecto de manejos pre y poscosecha sobre la intensidad respiratoria y la presencia de parálisis cerosa en bulbos de ajo. *Horticultura Argentina* 27(64): 57.
2014. Determinación de diferentes tipos de parálisis cerosa a través del análisis de piruvato en bulbos de ajo en el cultivar Sureño INTA. *Horticultura Argentina* 33 (82): 54.
2015. Determinación de sólidos solubles para diferenciar los tipos de parálisis cerosa “a”, “b” y “c” en bulbos de ajo de la cultivar Sureño INTA. *Horticultura Argentina* 34(85): 37.
- Guiñazú, M.E.; Cirrincione, M.A.; Burba, J.L.; Rivero, M.L. 2007. Efecto de la temperatura de suelo y fecha de cosecha sobre la intensidad respiratoria de los bulbos de ajo e incidencia de parálisis cerosa. *Horticultura Argentina* 26(61): 51.
- Guiñazú, M.E.; Cirrincione, M.A., Ferraris, M.N. 2007. Efecto del tamaño de diente de ajo plantado y del calibre de bulbo cosechado sobre la aparición de parálisis cerosa. *Horticultura Argentina* 26(1): 50.
- Ramsey, G.B.; Wiant, J.S. 1941. Market diseases of fruits and vegetables. Asparagus, onions, beans, peas, carrots, celery, and related vegetables. Miscellaneous Publication No. 440. Washington D.C.; USDA.
- Schwartz, H.F.; Mohan S.K., 2006. Compendium of onion and garlic diseases and pests, 2nd Ed. APS Press.