



Potato Greening Fact Sheet

Key Points

- Greening of washed potatoes is the single biggest cause of wasted potatoes in store.
- Greening is a problem because of the actual and perceived association of pigment change with accumulation of toxic alkaloids. This can be detrimental to consumer health and an allergy concern.
- Greening is caused by exposure of tubers to light and is influenced by other environmental factors and cultivar genetics. Greening can occur at production and in storage/retail if appropriate conditions occur.
- Strategies to avoid greening in the field include adequate agronomic practices to protect tubers from sunlight exposure.
- Strategies to avoid greening in store include different lighting systems, and appropriate covering and packaging.

Why do potatoes turn green?

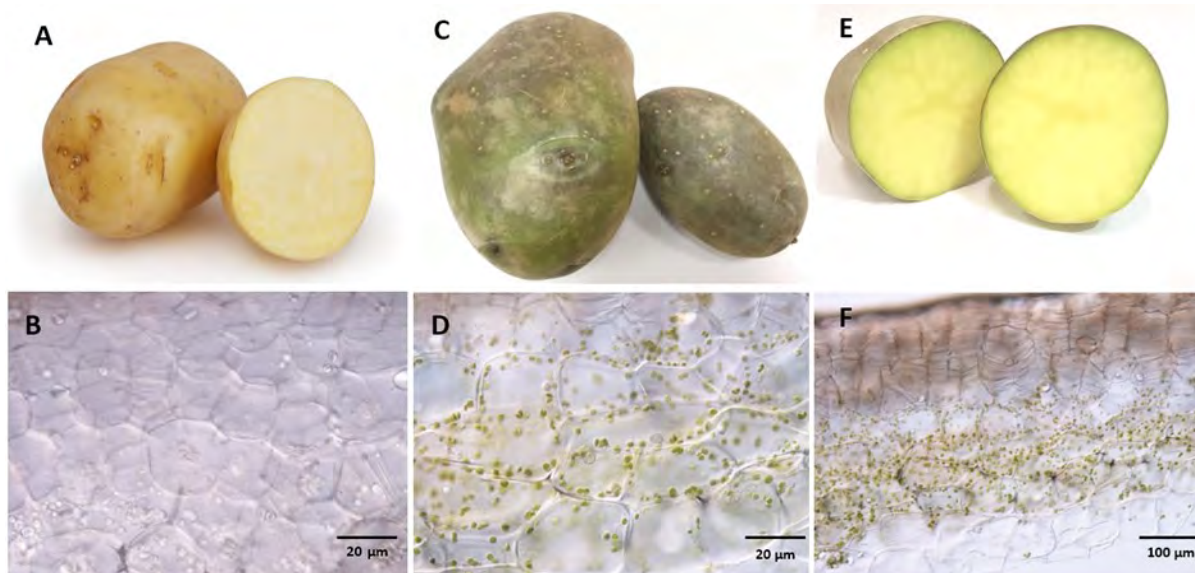
Potato tubers turn green after a few days of exposure to light. This is caused by the accumulation of chlorophyll in the outer cell layers of the tuber. Greening can occur at any stage throughout the potato supply chain, in the field, in storage, or on the store shelf.

What causes greening?

Light exposure is the main factor that affects greening. When potatoes are kept in the dark, no greening can occur. The rate of greening can be impacted by genetic, cultural, physiological and environmental factors, such as planting depth, tuber physiological age, temperature, atmospheric oxygen levels, and lighting conditions.

What is the consumer's perception?

There are two different but related issues associated with green potatoes: market appearance and health concerns. Appearance problems are associated with the green discoloration on the tuber skin, which is caused by



Greening of potato tubers is due to chlorophyll production beneath the outer skin.

chlorophyll production. Health concerns arise from the accumulation of toxic glycoalkaloids in tubers, which produce a bitter taste. Chlorophyll and glycoalkaloid synthesis occur through two different metabolic pathways, but are both induced after light exposure.

Are green potatoes toxic to eat?

Glycoalkaloids are toxic when consumed at high concentrations. However, glycoalkaloid levels in slightly green potatoes are usually below the limit. Glycoalkaloid formation is mainly localised below the skin, usually no deeper than few millimetres. Thus, peeling away the green parts can reduce the toxic effects of glycoalkaloids.

How can we control greening?

Controlling infield greening should be done by selecting optimum planting depth depending on soil type and climatic conditions, sufficient hilling during the growing season, and improved irrigation practices to reduce soil erosion and cracking. Strategies to reduce postharvest greening include controlling light conditions, temperature, coating tubers, and using modified atmosphere and light-protective bags.

Useful Resources

For more information about potato greening, our review paper is available online: 'Potato tuber greening: A review of predisposing factors, managements and future challenges,' in the American Journal of Potato Research, by Tanios, S., Eyles A., Tegg R. and Wilson C. (2018).



Can we stop our potatoes from going green?

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