

Cold temperature storage will also result in an increase in reducing sugar content, primarily glucose. Higher concentrations of glucose cause products to fry dark resulting in unacceptable product color. Therefore, low temperature storage is not appropriate for potatoes destined for the processing market. Fluctuations in the pile temperature may promote sprouting. For that reason, storage temperatures should remain as consistent as possible.

After mid-winter, nearly all potatoes available in commercial markets have been treated with a chemical sprout inhibitor, such as chlorpropham (CIPC). CIPC is the most commonly used post-harvest sprout inhibitor in the United States. CIPC inhibits sprout development by interfering with cell division, and, generally, a single application maintains long-term sprout control. Alternatives to CIPC are needed for both organic and export markets—where CIPC is not permitted.

Essential oils as alternatives to CIPC

Research from the University of Idaho has evaluated several compounds that can be used for effective sprout suppression. All are classified as “Generally Recognized as Safe”

have sprout suppression properties. Hydrogen peroxide is also allowable by the federal organic standards.

These alternative compounds are not true “sprout inhibitors” that inhibit sprouting by interfering with cell division or some other biological process. Volatile oils and hydrogen peroxide are more correctly called sprout suppressants, as they physically damage developing sprouts with a high concentration of the product in the surrounding headspace in the potato storage. Because of high volatility, these compounds leave behind little or no residue. Since new sprouts continue to develop, repeat applications are required at two to three week intervals or on a continuous basis.

Application methods

Application methods will differ with these alternative products. CIPC is typically applied with a thermal applicator at high temperatures to create an aerosol or thermal fog that is circulated in the storage ventilation system. These types of applications may not be best suited for efficient distribution of more volatile compounds. Other means of applying the oils would be to create a cold aerosol, or utilize a wick volatilization

Caution U

Kleinkopf, G.E., Oberg, N.A. and N. L. Olsen. 2003. Sprout Inhibition in Storage: Current Status, New Chemistries and Natural Compounds. *Amer J of Potato Res.* 80:317-327.

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Additional resources

Kleinkopf, G. and N. Olsen. 2003. Storage Management. *In* Potato Production Systems (*eds* J. Stark and S. Love.). Pp. 363-380.