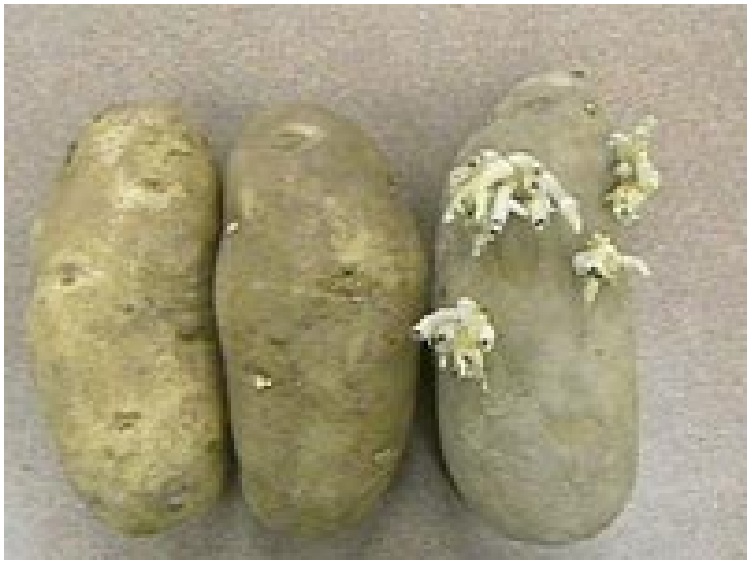
Storage Chemicals Prove Answer For Challenge

Growers can protect investment with applications.



Left potato treated with CIPC-EC, followed by 1,4-DMN. Middle potato treated with CIPC-EC only. Right potato is untreated.

Pressure bruise, shrink and peep control are common quality concerns that potato storage managers face every year. Keeping potatoes in a dormant state throughout the storage season makes these concerns easier to manage.

Using the right storage chemicals at the right times throughout the year not only manages dormancy but also protects the quality of the potatoes. Optimal results can be achieved using sprout control and dormancy enhancing products, such as CIPC and 1,4-DMN (1,4-dimethylnaphthalene, available commercially as 1,4SIGHT®), in a well-timed application program designed to accommodate the potato variety, storage facility and weather variables.

"We've seen a significant difference in the amount of pressure bruise on the potatoes we've treated with 1,4SIGHT®. This year, application of 1,4SIGHT® will be standard procedure for every lot that is expected to be held past April 1st."
Jim Knutzon, CEO
Farm Fresh LLC.

Works Externally

CIPC has long been the workhorse of sprout control. It works externally on the surface of the potato to prevent peeps from growing into sprouts. The chemical is a mitotic inhibitor, which prevents cell division as sprouts begin to develop. New 1,4-DMN based products, such as 1,4SIGHT®, have an entirely different mode of action than that of CIPC. These products impact the dormancy of potatoes. Natural dormancy is a physiologic state during which potatoes are not able to sprout, even under favorable conditions. It is regulated by natural biochemicals found in the potato. 1,4-DMN is able to restore or enhance the dormant state as it penetrates the skin. So, unlike CIPC, 1,4-DMN does not "kill" emerging shoots, but prevents peeps from forming. As important, dormant potatoes respire at a lower level, limiting the amount of water and CO_2 respired. This, in turn, reduces shrink and susceptibility to pressure bruise. The product 1,4-DMN can be used as a stand-alone product, or as a supplement to a CIPC program in a space sequential fashion.

DMN application in progress. Fog distributed through air supply plemun into potato bins.

What Is 1,4-DMN?

The product 1,4-DMN is a naturally occurring plant substance found in potatoes and was identified by UK researchers to impact the dormancy of potatoes. As early as 1952, scientists observed that stored potatoes contain "volatile chemicals" capable of suppressing spout growth.

Since then, several naturally occurring volatile biochemicals have been identified as evolving from stored potatoes and evaluated for their ability to suppress sprouting. The product 1,4-DMN was identified as one of the most potent sprout suppressants found in potatoes. When 1,4-DMN is present in sufficient concentrations, the potato will remain in a dormant state.

"We've been using 1,4SIGHT® (1,4-DMN) in our storages for several years. It is like giving vitamins to our storage potatoes. It seems to retard the aging process, stop breakdown, and help with cell regeneration."
Kevin O'Rorke, Balcome & Moe, Pasco, WA

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Each Chemical

Every treatment program should be customized for the individual storage facility. Depending on the storage manager's objectives, three windows of opportunity present themselves during the season.

Ultimate Benefits

Ultimately, a well-designed storage treatment plan addresses all three main quality concerns: pressure bruise, shrink and peeps. Lowering respiration decreases the likelihood of pressure bruise. Reduced shrink and improved peep and sprout control help maintain the firmness of the potato. This results in a higher quality potato for packing and greater insurance for your investment.

Contact your chemical applicator for assistance in designing a custom treatment program for your storage facility.

EARLY SEASON			
	Aug	**Sept**	**Oct**
Objective	Establish a deep, extended dormancy to reduce shrink and pressure bruise.		
What	1,4DMN (dormancy enhancer)		
When	Up to 21 days post-harvest and prior to the first CIPC treatment		

MID-SEASON			
	Nov	**Dec**	**Jan**
Objective	1) Restore dormancy and extend storage life. 2) Prevent peeps and sprouts as potatoes being to awaken.		
What	CIPC or 1,4DMN, depending on condition and estimates ship date.		
When	When you expect the natural dormancy of the variety is about to end.		

LATE SEASON - PRIOR TO TREATMENT						
	Feb	**Mar**	**Apr**	**May**	**June**	**July**
Objective	Delay peeps and sprouts, extend shelf life, and reduce downgraded loads.					
What	1,4-DMN (either in storage or in transport)					
When	Depending on the variety and conditions, the appropriate product can be applied in storage, in the packing shed prior to shipment, or in transport to market via aerosol delivery. 1,4-DMN is commercially available in aerosol delivery for transport vehicles as 1,4SHIP.					

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