

An innovative potato dormancy enhancer and sprout inhibitor helping maintain quality and reduce storage losses in fresh, processed and seed potatoes

Potato Dormancy Enhancer & Sprout Inhibitor



www.agrisource.co.nz



1,4SIGHT is distributed in New Zealand by Agrisource. For more information contact your crop agronomist or rural retailer.

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Sprout control, pressure bruising and shrinkage are quality issues that store managers face each year. Incorporating 1,4SIGHT into your storage treatment regime can provide unprecedented success in managing these common storage challenges. Maintaining dormancy helps retain potato firmness resulting in fresher appearing skin finish and fewer rejects.



WHAT IS 1,4SIGHT?

The active substance of 1,4SIGHT, 1,4-Dimethylnaphthalene (1,4-DMN) is naturally produced by potatoes and was originally discovered after analysis of potato volatiles in the 1970's and 80's. 1,4SIGHT is a dormancy enhancer (sprout inhibitor) which prolongs dormancy in stored potatoes and is fully reversible. Other Dimethylnaphthalenes have also been detected or extracted from foods, such as poppies, corn buds, red beans, raisins, dairy products, smoked cheese, olive oil, tomatoes, and starfruit. Commercial usage of 1,4SIGHT began in the USA in 1996.

HOW DOES IT WORK?

1,4SIGHT, even at low levels, initiates positive affects within the tuber. Once applied it penetrates through the potato skin, naturally enhancing the potato's ability to turn on or off genes which alter protein levels associated with sprout growth, wound healing, weight loss and restoring dormancy. Dormancy lowers the respiration rate slowing the loss of moisture and solids thereby reducing shrink, weight loss and susceptibility to pressure bruise. The sprout inhibition is temporary in nature and fully reversible. It dissipates out of the potato over time depending on storage temperature, the amount of ventilation and the rate that it is applied.

CAN I INTEGRATE 1,4SIGHT WITH CIPC?

1,4SIGHT is effective as a stand-alone treatment or can be safely integrated with CIPC applications. While 1,4SIGHT works internally to delay sprouting activity, CIPC works externally to prevent cell division in the eyes of potatoes. They can be used alone or together to extend dormancy while controlling sprouts. Importantly 1,4SIGHT delivers the added benefits of reducing shrink, weight loss and susceptibility to pressure bruise.

APPLICATION TIMING

Early application after harvest and before visible signs of sprout growth, results in optimum efficacy and efficiency of use. 1,4SIGHT has no negative impact on curing or wound healing so can be applied early. Apply shortly after the storage door closes to establish dormancy. Repeat applications help extend dormancy while preventing sprouting.

GETTING THE BEST OUT OF 1,4SIGHT

Application rate depends upon many factors including potato variety, facility type, temperature, venting, store fill level and conditions of the potatoes at harvest.

Best results are in potato stores where there is minimal air exchange and no fresh air into the store for 24-48 hours after treatment.



Untreated



1,4SIGHT® Treated

USE RATE

Apply 10 - 20 mL/tonne of potatoes

Use the high rate for the initial treatment. The low rate should be used for subsequent re-treatments as required to maintain dormancy unless the store is only partially filled, in which case the high rate should be continued.

1,4SIGHT can be used repeatedly until potatoes are sold.

EXPECTED LENGTH OF ACTIVITY AND FACTORS TO CONSIDER

- With an initial application rate of 20 mL/tonne even the most difficult varieties should remain dormant for 30 days.
- A subsequent 'top-up' treatment of 10 mL/tonne, 30 days after the initial application should be expected to retain dormancy for an additional 30 to 60 days.
- Monitor the store on a periodic basis (2-4 weeks) for signs of sprouting. Retreat at the first sign of peeps. Focus monitoring on parts of the store where good vapour penetration could be considered most difficult.
- Some varieties are more aggressive and the second, 'top-up' application may require a rate of 15 mL/tonne.
- Best results will be achieved if the storage temperature of the potatoes is maintained at or below 10 °C.
- Warmer storage temperatures increase sprouting pressure and the volatility of 1,4SIGHT.
- Partially emptied stores means there is increased headspace in the store, diluting the vapour pressure of 1,4SIGHT. If the store is half empty then compensate by doubling the application rate for the remaining stored potatoes. This will help ensure adequate vapour pressure and good performance.

1,4SIGHT DELIVERS EFFECTIVE SPROUT CONTROL

	APPLICATION DATE				Sprout Growth Assessment (Min and Max length) 27 October
	28 June	21 July	6 August	7 September	
Untreated					5 – 180 mm
1,4SIGHT® LOW	10 mL/tonne	10 mL/tonne		10 mL/tonne	2 – 17 mm
1,4SIGHT® HIGH	20 mL/tonne		20 mL/tonne	10 mL/tonne	< 2 mm

Alpha Research Ltd Location Pukekohe Variety Fianna

ACTIVE INGREDIENT

960 g/L 1,4-dimethylnaphthalene in the form of a technical concentrate

PACK SIZE

10 L

PRODUCT STORAGE CONDITIONS

1,4SIGHT will freeze at temperatures below 5 °C.

Store in a warm (15-20 °C) location.

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READ THE LABEL CAREFULLY BEFORE USE

1,4SIGHT

USE DIRECTIONS

For optimum sprout control, potatoes should be dug immediately on maturity, moved into storage and treated. Suberization will not be impaired. Potatoes that have been ground stored before harvest will contain low natural levels of 1,4-DMN and may require more frequent treatment of 1,4SIGHT to establish and maintain base levels. 1,4SIGHT may leak from storage areas that are not well sealed. Such stores will require more frequent re-treatment to maintain levels of 1,4SIGHT. Areas of potential leakage should be minimised for economic control of sprouting. 1,4SIGHT vapours can pass through wood and most plastics. Do not use these materials to repair leaks.

METHODS OF APPLICATION

The following application equipment types are suitable for application:

Thermal Fogging equipment capable of generating a dry fog, is the preferred method of application. Do not allow any liquid to contact the surface of the potatoes. Do not allow any liquid to contact plastic in the store. Operate the ventilation at as low a volume as reasonable.

Wet fog equipment and Misting equipment feeding into forced aeration systems. These should only be used when in-store temperatures are above 10°C. In colder conditions droplets rather than a vapour is formed. Droplets settle on the potato skins and can mark the tubers. Do not allow any liquid 1,4SIGHT to contact the surface of the potato. Do not allow any liquid 1,4SIGHT to contact plastic in the store. Operate the ventilation at as low a volume as reasonable.

After application, the normal store ventilation system should be set to recirculate only and should remain on this setting for 24-48 hours to allow the vapours to fill the air space and be absorbed by the tubers. Maintain a gentle air circulation within the store during this 24-48 hour period to aid movement of the vapours through-out the whole stack. After 48 hours resume normal ventilation procedures.



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