

Surround WP Crop Protectant Against Insect Pests for Organic and Conventional Fruit, Vegetable and Tree Nut Production

Surround WP is available to organic and conventional apple, grape, and vegetable growers in Canada. This product is mainly used for protection against insect pests. Surround WP is made from kaolin clay (white clay), an edible mineral, used in toothpaste and also as an anti-caking agent in processed foods. It is now being used as a crop protectant in agriculture, with interesting results. Organic growers are allowed to use Surround WP, and it is listed by the Organic Materials Review Institute (OMRI).

Surround WP is a wettable powder that can be applied with a traditional sprayer equipped with a good agitation system. The product must be properly agitated or mixed with water to allow complete and uniform plant coverage to ensure that the protective properties of the product are fully utilized. Once the water evaporates, the powdery film that remains on the plant and fruit provides protection by acting as a physical barrier.

Surround WP's highly reflective white coating is reported to achieve a crop protection effect by reducing egg laying activity and feeding damage from insects. This protection may be accomplished in several different ways. The powdery film formed on the plants may prevent insects from identifying a host crop and consequently the insects do not land, feed or lay eggs on the host crop. The coating may also cause insects to deem the fruit or leaves unsuitable. If insects recognize the crop and land on it, clay particles from the coating may stick to the insects causing them to become agitated, and stimulated to move to other more attractive plants rather than remaining to feed or lay eggs.

Surround WP is a finely processed form of kaolin clay with particles that are smaller than generic, or bulk, kaolin clay. Unrefined bulk kaolin clay may be harmful when applied to leaves since the undesirable coating it forms interferes with the plant's ability to absorb light for photosynthesis. The particles in Surround WP, however, are small enough to allow the wavelengths of light required for photosynthesis to pass through the film, while blocking out or reflecting some of the harmful infrared and ultraviolet radiation. In apple production, this film can provide additional protection to fruit from sunburn and also help keep the plant cooler on very hot days.

There appears to be no mammalian toxicity or general environmental danger when Surround WP is properly used. See label for details.

Since consumers generally look for perfect fruit and vegetables, it should be noted that the kaolin clay powdery film left on the fruit at harvest time may deter consumers from purchasing produce. Fruit and vegetable growers may consider washing or brushing off the residue prior to sale. When washing is not possible, applications should be made early-season only. Residue may be minimized on smooth skin crops such as apples if applications stop when the fruit is approximately $\frac{1}{4}$ of its expected size.

Use of anti-foam and spreader/sticker are not recommended.

Although the kaolin clay is natural, growers are still required to have their pesticide applicator's licence in order to purchase and apply this product.

Apple Production

In Canada, Surround WP is registered for use on various pome fruits to reduce damage from a variety of insect pests including: pear psylla, tarnished plant bug, overwintering leafrollers, leafhoppers, apple maggot, plum curculio, first-generation codling moths and the European apple sawfly. This product has also received positive reviews from commercial apple growers for its ability to reduce sunscald on "fair skinned" cultivars. Other reported benefits for some varieties include reduced fruit drop and improved colour.

In dry climatic conditions, Surround WP may be quite persistent on the crop. In Maritime growing conditions, however, growers should reapply the product every 7 to 14 days, or sooner if a heavy rainfall occurs. Subsequent applications are also required to cover new growth and to compensate for loss of product from wind erosion. Timing of the initial application depends upon the pest to be controlled.

When tank mixing Surround WP with sulphur products, wettable sulphur products are to be chosen. Do not tank mix plain elemental sulphur with Surround WP. Check the label before tank mixing.

For typical semi-dwarf trees in full foliage, a spray volume of 1000 to 2000 litres per hectare is recommended. Adjust the rate of application for the amount of foliage present in the row to achieve near-drip coverage (just enough coverage so that the spray does not drip off the plants) for larger or smaller trees. Use 20 to 50 kg per 1000 litres of water. Use higher product applications of 37.5 to 50 kg/ha early in the season to ensure optimal coverage. Surround WP may delay fruit harvest by 3 to 7 days. Fruit growers may consider washing or brushing off residue prior to selling their produce. Always read the label before use.

Cucurbit Production

Surround WP is registered for suppression of cucumber beetles on cucurbits such as, cucumber, melon, pumpkin, squash, watermelon and a few other cucurbit crops listed on the label. Surround WP should be applied to achieve near-drip coverage (just enough so that the spray does not drip off the plants). The volume per hectare should be increased as the season progresses in proportion to the increase in size of the crop and foliage. A maximum of 500 litres of water per hectare is recommended.

For cucumber beetles: Use 12.5 to 25 kg of Surround WP per 500 litres of water. Apply at 5 to 7 day intervals with the first two applications 3 days apart prior to infestation of adult beetles. Please note: It is very important to make these two applications before the appearance of beetles since this will make the plants less attractive to the beetles. The beetles may carry bacteria that cause plant diseases which are difficult to control, once established. Use the higher concentration for the first application and the lower concentration for all subsequent applications. During periods of wet weather, reapply Surround WP as soon as foliage is dry to re-establish coverage. Make up to 5 applications per year.

Monitor the crop for the time to harvest as Surround WP may delay crop maturity. Application of plain water via a sprayer prior to harvest may help in reducing Surround WP residues on the crop. Always read the label before use.

Grape Production

Surround WP is registered for reduction of damage from various species of leafhoppers on grape vines. Surround WP should be applied to achieve near-drip coverage (just enough so that the spray does not drip off the plants). Use 25 to 50 kg of Surround WP per 1000 litres of water. Do not exceed 50 kg of Surround WP per hectare per application.

Apply at 7 to 14 day intervals once the initial infestation is detected. Use the high rate for early applications. The low rate may only be needed for later ones.

Surround WP may delay maturity of grapes, especially white varieties. Minimal amounts of Surround WP will stay on wine grapes up to veraison (when they start to soften and change colour). After veraison, Surround WP will more easily stick to grapes. Applications may be made up to the day of harvest. For table grapes where a residual white film is not desired, do not apply Surround WP Crop Protectant post bloom.

Application of plain water via a sprayer prior to harvest may help in reducing Surround WP residues on grapes. This may be particularly helpful for wine grapes. Always read the label before use.

Dry Bean or Potato Production

Surround WP is registered for various species of leafhoppers (including the potato leafhopper). Surround WP should be applied to achieve near-drip coverage (just enough so that the spray does not drip off the plants). The volume per hectare should be increased as the season progresses in proportion to the increase in size of the crop and foliage. A maximum of 250 litres of water per hectare is recommended. For leafhoppers: Use 6.25 to 12.5 kg Surround WP crop protectant per 250 litres of water. Do not exceed 12.5 kg of Surround WP per hectare per application. Apply at 7 to 14 day intervals once initial infestation is detected by monitoring. For early applications, use 12.5 kg Surround WP crop protectant per 250 litres of water. Follow-up applications may only require 6.25 kg Surround WP crop protectant per 250 litres of water.

Carrot or Leafy Vegetable Production (including celery, lettuce, parsley, spinach)

Surround WP is registered for the aster leafhopper. Surround WP should be applied to achieve near-drip coverage (just enough so that the spray does not drip off the plants). The volume per hectare should be increased as the season progresses in proportion to the increase in size of the crop and foliage. A maximum of 500 litres of water per hectare is recommended. Use 12.5 to 25 kg Surround WP crop protectant per 500 litres of water. Do not exceed 25 kg of Surround WP crop protectant per hectare per application. Apply at 7 to 14 day intervals once initial infestation is detected by monitoring. For early applications, use 25 kg Surround WP crop protectant per 500 litres of water. Follow-up applications may only require 12.5 kg Surround WP crop protectant per 500 litres of water.

Raspberry or Strawberry Production

Surround WP is registered for the potato leafhopper. Surround WP should be applied to achieve near-drip coverage (just enough so that the spray does not drip off the plants). The volume per hectare should be increased as the season progresses in proportion to the increase in size of the crop and foliage. A maximum of 500 litres of water per hectare is recommended. Use 12.5 to 25 kg Surround WP crop protectant per 500 litres of water. Do not exceed 25 kg of Surround WP crop protectant per hectare per application. Apply at 7 to 14 day intervals once initial infestation is detected by monitoring. For early applications, use 25 kg Surround WP crop protectant per 500 litres of water. Follow-up applications may only require 12.5 kg Surround WP crop protectant per 500 litres of water.

This fact sheet is provided for general information only. Always consult the product label before use. Revised May 2014.