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Information Note Regarding Pesticide Use in High Tunnels

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The purpose of this information note is to communicate to pesticide users and other stakeholders the Pest Management Regulatory Agency's (PMRA) recommended best practices to minimize potential risks when pesticides are used under high tunnels.

Current status

A high tunnel is an agricultural technology being used worldwide and its use is increasing across Canada. The PMRA currently defines a high tunnel as a single or multi-bay walk-in structure without a foundation, typically covered with impermeable material and set over crops in fields. High tunnels may be seasonal, movable, and are ventilated mainly by opening the sides and the ends of the structure. In contrast, the PMRA defines a greenhouse as a permanent, enclosed walk-in structure where crops are grown in appropriate growing media on elevated benches, containers or troughs placed on the ground. Ambient conditions such as temperature, humidity, and ventilation are controlled with either high or low technology systems, and pesticide spray drift is not released into the environment. From a regulatory perspective, other types of walk-in, permanent enclosed spaces that are used for crop production (for example, mushroom or endive) are also considered to be greenhouses.

Pesticides currently registered in Canada have not been specifically assessed for use in high tunnels. While the PMRA is developing a regulatory position, the application of pesticide products registered to manage specific pests on crops grown in field and/or greenhouses will be permitted for use in high tunnels, unless stated otherwise on the label.

Best Practices for Pesticide Use in High Tunnels

At this time, Health Canada has not conducted health or environmental risk assessments specific to the use of pesticides in high tunnels. Therefore, the following best practices are recommended to reduce potential exposure related to the use of pesticides in high tunnels.

- **As a first choice, select pesticides that are registered for both field and greenhouse uses for a specific crop and pest.**

If a pesticide has been approved for both field and greenhouse uses for a specific crop and pest, then the associated risks for both protected and field conditions have been assessed. These products would be the preferred option for use under high tunnels. If possible, the use pattern and application equipment should reflect that of the greenhouse label directions to minimize potential exposure.

Integrated Pest Management

Pest occurrence and pressure in high tunnels may differ from field or greenhouse production due to differences in environmental conditions and crop management practices.

Growers should:

- **Practice Integrated Pest Management (IPM).**

Practicing IPM is important for sustainable pest management and can include various approaches such as cultural practices to discourage pests, identification of the pest problem and determination of the pest level that warrants pesticide application. By practicing an IPM approach, reliance on pest control products may be reduced.



Pesticide Residues – Phytotoxicity and Exposure

High tunnels protect crops from environmental effects such as rainfall, wind and photodegradation and it is therefore likely that pesticide residues on the crop dissipate more slowly than under field conditions. Crop phytotoxicity may be impacted from the use of certain pesticides in high tunnels. In addition, increased exposure for pesticide applicators as well as higher residues on food may be a concern for products registered on field crops and used under high tunnels. For example, field application equipment, such as airblast sprayers, may cause elevated inhalation and dermal exposure if used under a high tunnel.

Pesticide applicators and workers should:

- **Read the product label and minimize pesticide exposure.**

Wearing the most complete personal protective equipment required on the label, as well as applying the pesticide at the lowest label rate and/or frequency for a particular crop/pest combination, are examples of good practices to follow when applying pesticides under high tunnels.

- **Minimize application when high tunnels are in place.**

Some crops that are grown under a high tunnel are covered for only part of the growing season. Applying pesticides registered for field use during the uncovered period is recommended. Whenever possible, apply pesticides when the crops are not covered.

- **Use application equipment that will result in lower exposure to the applicator.**

If airblast spray equipment is used to apply pesticides in a high tunnel, use every precaution to lower exposure to the applicator and any nearby workers. This may include using closed cab equipment, or wearing chemical resistant coveralls, headgear and gloves when an open cab sprayer is used. Always ensure that no other workers are present in the high tunnel at the time of application.

- **Follow the most prohibitive Restricted-Entry Interval (REI) on the label.**

There may be REIs on the label for field use and/or greenhouse use. Follow the longer REI. If a pesticide label's use instructions do not include an REI, apply a 12-hour minimum REI before anyone can enter the high tunnel.

- **Test for phytotoxicity by applying the pesticide on a small area of the crop to be treated under high tunnels before the entire crop is treated.**

Environmental Exposure

If a product is registered only for use in a greenhouse, but is used in a high tunnel, there is also the potential for higher environmental exposure.

Applicators should:

- **Minimize off-site spray drift.**

If a product is registered only for use in a greenhouse, but is used in a high tunnel, then the sides and ends of the tunnel structure must be closed during application to prevent off-site spray drift. If the product is registered for field uses and the sides and ends of the



high tunnel structure are open, all relevant buffer zones specified on the product label should be adhered to in order to protect sensitive terrestrial and aquatic habitats. The best available application strategies that minimize off-site spray drift should be used, including optimizing meteorological conditions (for example, wind direction and low wind speed) and spray equipment (for example, coarse droplet sizes and minimizing height above canopy).

Additional Information

If you have any questions, the PMRA's Pest Management Information Service can be contacted at:

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