Adjusting Planting Practices to Protect Pollinators

Infosheet

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A significant number of bee kill incidents were reported by Ontario beekeepers during the planting season in 2012 and 2013. The Pest Management Regulatory Agency (PMRA) of Health Canada investigated these incidents and determined that the majority of them were found to be associated with the planting of corn and soybeans with neonicotinoid seed treatments used to control certain insect pests. Studies have shown significant levels of neonicotinoid concentrations are exhausted from negative vacuum planters during planting and may be susceptible to leaving the fields via drift. In 2013, research conducted in Ontario and elsewhere found that flowering plants and trees may be important foraging sources for bees and are a potential source of exposure to contaminated dust around fields during planting.

In order to mitigate risk of dust exposure to bees, Ontario stakeholders believe that practical initiatives to reduce dust released during planting should be considered. This includes the use of an improved seed lubricant **and** the use of planter deflectors, in order to minimize pollinator exposure.

Two key ways to mitigate dust drift, as referenced above, include:

1) Use the Fluency Agent from Bayer CropScience for seed flow lubrication at the recommended rate, and

2) Install equipment to direct exhausted air from the planter vacuum fan towards the ground.

LUBRICANTS

If a producer chooses to use a seed flow lubricant for corn and soybean seed treated with neonicotinoid seed treatment they **must** use the Fluency Agent; talc or talc/graphite blends are no longer permitted for this purpose. The PMRA has made the use of the Fluency Agent as a seed flow lubricant a requirement for the 2014 growing season.

The use of graphite to lubricate the planting mechanism (i.e. finger pick-up units for corn or mechanical metering units for soybeans) is still acceptable under the new regulations. However, graphite may not be used in pneumatic planters when the seed has been treated with a neonicotinoid insecticide.

The Fluency Agent will be made available from a range of suppliers including most seed companies. It is very important to use the correct amount of Fluency Agent; this rate is **1/8** of a cup per unit of seed. Thorough mixing of the Fluency Agent with the seed will be required for proper performance; this can be accomplished in the seed hopper or by adding the Fluency Agent to the seed auger when loading bulk seed.

Research has found that the Fluency Agent significantly reduces the quantity of neonicotinoid in the exhausted dust. To help further support this mitigation strategy additional measures may be needed to further reduce the amount of dust exhausted from the planter and released off the field.

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DEFLECTORS

It is possible to reduce the risk of contaminated dust drifting onto flowering trees and plants along field boundaries by controlling or re-directing planter fan exhaust. One solution incorporates the use of deflectors, which have been used in other jurisdictions, and may significantly reduce the amount of off-field drift of dust generated during planting.

The vast majority of producers using pneumatic corn planters in Ontario may not be able to source a factory-made deflector. Equipment manufacturers are currently working on solutions which require time to design and test. Some deflector kits are available now and growers should consult their local equipment dealers for options. Growers can also explore possibilities on their own to develop a dust deflector system for their planter based on the following design considerations:

1) An adaptor or fitting will be required that fits on the vacuum fan housing that collects the discharged air and funnels it into a round opening so that tubing can then be attached (see Figures 1 and 2).

2) It is critical that the fitting and initial tubes are large enough as to not produce any back pressure that may lead to planter malfunction. The fitting and exhaust tubes must be at least equal in area to the original fan exhaust. Larger is better. An initial vent tube which is 6" (15 cm) in diameter would provide roughly 28 sq. in. (177 sq. cm) of opening and may be adequate for some but not all fans.

3) At some point in the system, it is very important to expand the total size of the venting in order to slow the air speed in the system. The goal is to have the air velocity significantly reduced as it is directed at the ground. This may occur immediately as the air exits the fan housing with the appropriate manifold (Figure 2) or slightly after the fan by splitting the air stream with a "T" or "Y" connector into two exhaust tubes, (Figure 1). In some cases, it may be easier to run only a single tube until a spot on the planter is reached where it could be more conveniently split into two; in other designs, the single tube may deliver the air to an expansion box (Figures 3 and 4), which has a much larger area than the tube, before the air is discharged towards the ground.

Figure 1. Example of a basic deflector design. (Source: Syngenta Canada)

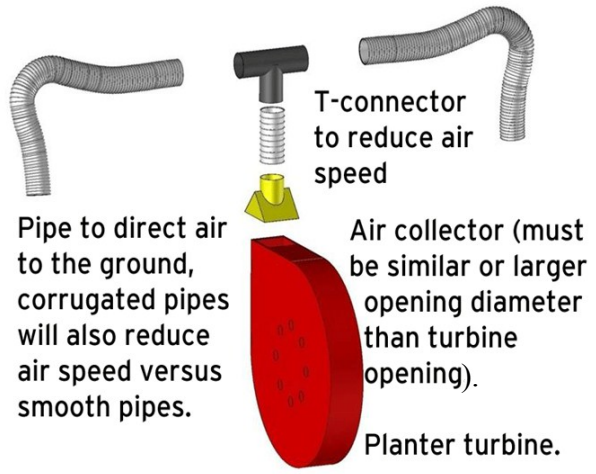

Figure 2. Fitting and tubes connected to the top of a Kinze planter (Kearney Planters, Highgate ON).

4) The discharge area is directed towards the ground and should be positioned as close to the ground as possible without the exhausted air creating soil dust. It is recommended that this release point should be encircled with strips of carpet, rubber or bristles to help diffuse the exhaust air (see Figures 3 and 4) and to allow the system to run closer to the ground without the fear of damage from obstacles in the field. Position the hose outlet or expansion box with sufficient clearance from other planter components to facilitate the flow of crop residues.

5) **Important**. To ensure that the modification has been done properly, you should run the planter outside, with seed in the metering discs and at the proper RPM without the deflector and then once you attach the deflector run it again at the same RPM. You should be able to achieve suitable vacuum readings, with or without the deflector, with reasonable adjustment to the fan speed.

NEXT STEPS

It should be noted that while the use of the Bayer CropScience Fluency Agent is mandated, deflectors are not. Some planter manufacturers may not support warranty or performance claims when a deflector has been installed. However, producers are encouraged to view corn planter deflectors as they would selecting the proper nozzle on a sprayer in order to reduce drift and reduce pesticide movement off the field. Similarly, it should be noted that seeding in close proximity, especially upwind, to areas where pollinators may gather such as bee yards should be avoided regardless of the usage of alternate seed lubricants or deflectors.

Producers should be aware that the purchase or building of a planter deflector may be eligible for financial assistance from the Growing Forward 2 program. (www.ontario.ca/growingforward2).

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Figure 3. Expansion box and bristles to discharge air/dust (Kearney Planters, Highgate ON).

Figure 4. John Deere expansion box.

OTHER INFORMATION SOURCES

1) http://fieldcropnews.com/wp-content/uploads/2014/01/pollinator-protecton-Jan-9final.pdf
2) http://www.monosem-inc.com/2014_deflector.html
3) http://www.kearneyplanters.com/index.php?cat=listing&id=64
4) http://www.ontariosoilcrop.org/en/programs/growing_forward_2.htm
5) www.ontario.ca/crops