

Many Reports of Plant Injury due to Non-target Drift and Carryover.

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The Montana State University Pesticide Education Program has received numerous reports of non-target plant injury due to drift and residual carryover of herbicides. Mixed rotational strategies from continuous small grain to peas, alfalfa and other pulse crops may be factors raising the incidence of pesticide injury in 2016. Applicators should pay special attention to their particular mode of action and the potential for drift / carryover towards susceptible fields.

By rotating to different crops applicators must be cautious when using unfamiliar and at times, familiar herbicides. Some herbicides are active on broadleaf weeds including the widely used growth regulator herbicide active ingredients (i.e. picloram, triclopyr, dicamba, clopyralid, 2,4-D, and aminopyralid). These broadleaf pesticide product active ingredients will also cause damage to desirable broadleaf crops including alfalfa, peas, sugar-beets and potatoes. Many of these active ingredients persist for quite some time and may pose threats to future plantings of broad-leaf crops. Other non-selective herbicides are active on all plants and are generally used for dry down purposes or burndown (i.e. glyphosate, paraquat, diquat). These active ingredients generally have low persistence and don't pose threats to future plantings; however applicators should minimize drift to desirable plants. Grass herbicides including sethoxydim, fluazifop and clethodim alternatively may cause damage towards small grain and native grasses. Always read the product label crop/site requirements. The site that you are applying pesticides must be included on the pesticide product label.

Drift. Drift is defined as 'the airborne movement of a pesticide spray, dust, particle, or vapor beyond the target area'. Applicators can take precautions upon understanding the mode of action of their pesticide product. Read all precautionary statements to gain a better understanding of how to use a pesticide properly. Applicators may also minimize drift by:

- Selecting drift reduction nozzles. Use largest droplets that provide necessary coverage. Read droplet size requirements on the pesticide product label and contact your local nozzle distributor. Drift reduction nozzles including chamber orifice and air induction nozzles can reduce drift from 50 – 75% compared to standard flat fan nozzles.
- Lowering boom height. Lowering boom height a few inches can reduce drift.
- Speed of application. High travel speeds may result in increased drift potential.
- Avoid windy conditions. Spray volume moves off-site as wind increases. Try to spray when wind speeds are consistently less than 10 mph.
- Temperature inversions. Don't spray in the presence of a temperature inversion. Signs of a temperature inversion are early morning or late evening applications when wind is absent, clear skies, and low lying clouds.
- Use buffers. Applicators should use buffers between the spray application and vulnerable non-target sites.
- Use drift reduction adjuvants. Drift reduction adjuvants increase the droplet size produced by certain nozzles.



Carryover. Many herbicide products persist and remain active in the soil for long periods of time. Pesticides that remain in the environment after an application are termed 'residue' or 'residual'. This may be beneficial in providing long term management of noxious weeds; however persistent herbicides can harm desirable plants if used improperly. Growth regulator herbicides can be used in small grain systems, however applicators should follow the re-cropping restrictions (i.e. cropping intervals, replanting interval) on the pesticide product label. Producers are often required to wait from 6 months to two years before planting any broadleaf crops following applications of a growth regulator herbicide containing clopyralid, picloram, and aminopyralid. In addition, many sulfonyleurea herbicides have variable rotation intervals for broadleaf crops and some vulnerable annual small grain crops (Ex. Must wait 10 months prior to replanting or over-seeding barley when using many products containing metsulfuron methyl). By not following the re-cropping restrictions applicators may lose valuable time and money planting a vulnerable crop that will fail to grow to harvest. Even if a crop can be harvested after exposure to an off-label pesticide, the application may produce illegal residues on food or feed crops.

Manure/Compost Restrictions. Applicators and homeowners should be aware that many growth regulator herbicide active ingredients aren't inactivated by livestock digestion, thus resulting manure is a source of pesticide contamination towards susceptible broadleaf plants. Contaminated grass clippings or manure shouldn't be added to compost or directly to gardens as mulch. Applicators should always follow manure, compost and harvest restrictions of their pesticide product. For more information on manure and harvest restrictions <http://pesticides.montana.edu/home-garden/planttoxicity.html>.

FOR FURTHER INFORMATION: For more information on pesticide drift see the MSU PEP drift webguide at <http://pesticides.montana.edu/reference/drift.html>. For more information on pesticide movement in the environment see the MSU Extension PEP MontGuide at <http://pesticides.montana.edu/reference/drift.html>. For more information contact Cecil Tharp, MSU Pesticide Education Specialist (406-994-5067; ctharp@montana.edu).