

Pesticide Safety on the Farm: Montana Private Applicator Behavioral Trends



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Introduction

The goal of this investigation was to assess the behavioral trends of certified private (farm) applicators when applying pesticides. By understanding these behaviors, the MSU Pesticide Education Program has catered programs and developed tools to address fundamental deficiencies to promote better pesticide stewardship.

Methods

A total of 474 applicators were asked various pesticide drift and/or pesticide safety questions within 21 pesticide education programs throughout Montana from 2009 - 2011.

- **Pesticide Safety Questions.** Two hundred eighty applicators were surveyed in Big Timber, Butte, Fort Benton, Great Falls, Choteau, Phillipsburg, Dillon, Townsend, White Sulphur Springs, and Helena, MT.
- **Pesticide Drift Questions.** One hundred ninety four applicators were surveyed in Havre, Cut Bank, Chester, Chinook, Phillipsburg, White Sulphur Springs, Whitehall, and Helena, Montana.

Audience members were polled using the Turning Point Technologies Audience Response System (TARS). This system was selected due to ease of use, anonymity, and instantaneous results which increased dialogue by audience members.



Photo 1. MSU Extension Agents being trained on how to use pesticide safety kits to teach applicators practical solutions to commonly reported poor behaviors.

Figure 1. Have you ever been effected by pesticides?

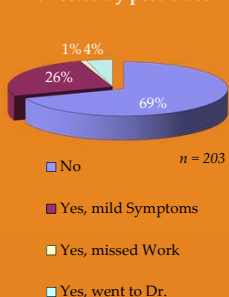


Figure 2. Have you smoked or taken a pinch of chew while applying pesticides without the benefit of washing your hands?

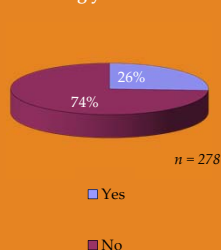
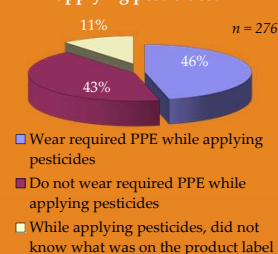


Figure 3. Do you wear personal protective equipment that is required on the pesticide product label while applying pesticides?



Demographics

Montana private applicators surveyed in this study were quite experienced. Sixty six percent of the applicators surveyed had over 10 years of spray experience, with 45% indicating they had over 20 years experience. These applicators primarily used formulations containing: 2, 4-D (ranked #1, 34%), picloram (ranked #2, 24%), and glyphosate (ranked #3, 18%).

Figure 4. Have you ever ingested food while applying pesticides without the benefit of washing your hands.

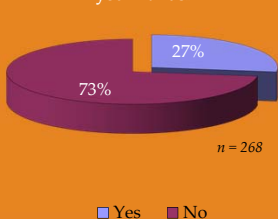


Figure 5. Did you ever remove gloves while repairing equipment?

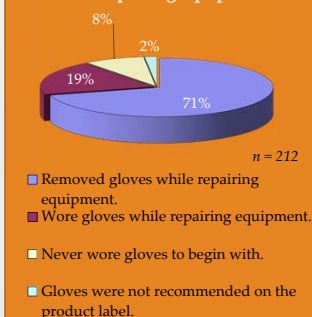


Figure 6. Have you ever sprayed when you knew it was too windy?

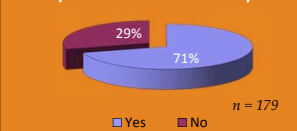
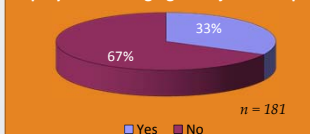


Figure 7. Have you ever witnessed your spray drift damaging an adjacent crop?



Acknowledgements

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Results/Discussion

Thirty one percent of applicators surveyed indicated they were poisoned by pesticides at some point in their career. Five percent reported missing work or seeing a doctor for at least one poisoning event during their lifetime. (Figure 1).

Reported poisonings may be due to many factors including improper personal protective equipment (PPE), ingestion of pesticide residuals, or spraying under poor conditions.

- 1) **Ingestion.** Approximately one in 4 applicators reported ingesting/smoking/chewing materials while they were likely contaminated by pesticides. This was without the benefit of washing their hands after a spray application (Figure 2 & 4).
- 2) **Improper PPE.** A vast majority of applicators (79%) removed gloves or never wore gloves to begin with while repairing pesticide application equipment during a spray application (Figure 5). Dialogue with respondents indicated the difficulty/frustration when repairing equipment with cumbersome, poor fitting, chemically resistant gloves (usually nitrile). Forty three percent of Montana private applicators do not wear the full required PPE while in the act of applying pesticides (Figure 3).
- 3) **Improper Spray Conditions.** Seventy one percent of applicators surveyed sprayed at some point in their career when they knew it was too windy. Consequently, 33% of the audience members indicated they believe they caused damage to an adjacent crop while spraying when it was too windy (Figure 6 & 7). Inhalation of pesticide drift may also lead to poisoning symptoms depending on pesticide product used.

Impacts/Future

Results of this study may be used to stimulate audience participation. Consequently, results have been inserted online into downloadable presentations which county agents and other local pesticide educators can use. Fifty six safety training kits (containing PPE, florescent dye, and demos.) have also been created for county agents when teaching applicators pesticide safety. These kits enable trainers to walk applicators through practical solutions to many of these poor behavior patterns observed within this study (Photo 1).