South Dakota Department of Agriculture

Pesticide residues in plant foliage
Project


- About 2715 plant foliage samples analyzed for residue of pesticide compound or multiple compounds.
Project

- Removed water, soil and food project samples.
- Removed all routine sampling (formulation)
Popular theory

- With today’s technology, any pesticide can be found in any sample due to better testing equipment and lower detection limits.
Detection limits

- The detection limits used for plant tissue samples by SDDA have remained the same for the last 14 years.
Detection limits for foliage samples

- 2,4-D / .005 ppm
- Dicamba / .005 ppm
- Glyphosate / .01 ppm
- Atrazine / .005 ppm
- Picloram / .005 ppm
- MCPA / .005 ppm

- ppm = parts per million
Foliage samples were counted for detection or no detection for any pesticide compound.

- Most samples are tested for multiple compounds. (2 to 10, or more compounds)
- 408 samples had no detection of any pesticide compound (about 15%)
Samples were counted for each individual pesticide compound in this study.

- Detection - .005 ppm or higher
- No detection - <.005 ppm
- Exception (glyphosate - .01 ppm)
Compounds looked at:

- 2,4-D
- Dicamba
- Glyphosate
- Atrazine
- Picloram
- MCPA
Compounds:

- These compounds were chosen because they were thought to be the most widely used and tested for in the samples.
Samples looked at:

- Plant foliage
  - Trees, shrubs and other ornamentals.
  - Grasses
  - Crops
  - Lawns
  - Gardens
  - Weeds
Samples - investigational

- Investigational refers to samples taken during a drift or misapplication complaint.
- Looking for something specific-damage symptoms.
  - Example: RR soybeans showing signs of cupping / puckering (test for 2,4D dicamba, picloram, MCPA, etc.)
  - Burning/yellowing of leaves or foliage (test for glyphosate)
Samples continued:

- Ag inspectors generally find out what is sprayed in the area to determine what to look for.
- Samples may be taken from damaged areas as well as from areas where damage is not visible. (Drift patterns)
Sunflower Field – Tank contamination
Compounds looked at:

- 2,4-D
- Dicamba
- Glyphosate
- Atrazine
- Picloram
- MCPA
2,4-D

- 1825 samples analyzed for 2,4-D
- Detected in 1298 samples
- Not detected in 527 samples
- Percent detected – 71%
1825 foliage samples tested for 2,4-D

- 29% (527) detection
- 71% (1298) no detection
Dicamba

- 1553 samples analyzed for dicamba
- Detected in 731 samples
- Not detected in 822 samples
- Percent detected – 47%
1553 foliage samples tested for dicamba

53% (822)

47% (731)
Glyphosate

- 687 samples analyzed for glyphosate
- Detected in 443 samples
- Not detected in 244 samples
- Percent detected – 64%
687 foliage samples tested for glyphosate

64% (443) % no detection
36% (244) % detection
Atrazine

- 371 samples analyzed for atrazine
- Detected in 194 samples
- Not detected in 177 samples
- Percent detected – 52%
371 foliage samples tested for atrazine

- 48% (177) detection
- 52% (194) no detection
Picloram

- 1062 samples analyzed for picloram
- Detected in 156 samples
- Not detected in 906 samples
- Percent detected – 15%
1062 foliage samples tested for picloram
MCPA

- 1079 samples analyzed for MCPA
- Detected in 319 samples
- Not detected in 760 samples
- Percent detected – 30%
1079 foliage samples tested for MCPA.
This information indicates that the theory does not hold true and if a pesticide is found in a sample, there is a source.
Questions or Comments?

- South Dakota Department of Agriculture.
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