

A10. FIELD INVESTIGATION OF CROP INJURY:

Keep an open mind and investigate all possible causes and sources of the problem when assessing crop injury. Question all statements from involved persons about the cause and the source of the problem. The truth often is not obvious. Crop injury can have many causes other than herbicides and symptomology does not always provide definitive answers.

NDSU Extension staff can assist in determining the cause of crop injury but are not responsible for conducting an extensive investigation to determine the cause or extend of economic loss. Extension staff will not act as a mediator in disputes. Independent consultants can be hired for investigations. Samples can sent to the Plant Diagnostic Lab (PDL) at NDSU.

Contact the ND Dept. of Agriculture for the proper procedure before filing a civil action seeking reimbursement for property damage allegedly stemming from the application of a pesticide. Individuals can contact the ND DOA at 600 E. Blvd, Bismarck, ND 58505-0020. (800) 242-7535 or (701) 328-2231.

The PDL at NDSU will evaluate injury symptoms on plants to provide opinions and possible explanations on causes of the problem. The PDL does not test soil or plant material for herbicide residues. Refer to page 115 for list of testing labs.

Analysis of plant tissues or soil by a testing laboratory may not show the cause of the problem. Each active ingredient must be tested individually, which increases expense. A positive detection can be useful but the detected herbicide may not cause the symptoms. A negative test does not prove that the herbicide did not cause the problem because the herbicide may cause injury at concentrations less than the detection limit or the herbicide may have degraded before the samples were taken.

The pattern of crop injury in a field can identify the injury source. A sprayer skip is valuable in diagnosing a herbicide problem. Herbicide field history for the past 3 years should be considered. Uniform damage over the field would suggest herbicide carryover or injury from a direct application rather than drift.

Drift is usually worse near the source with damage diminishing as the distance increases. Differences between affected and non-affected plants should become more visible with time since recovery by damaged plants will be more rapid. Crop injury that is associated with one or two sprayer tank loads would suggest sprayer contamination or a mistake in mixing. An aerial photograph is useful in identifying patterns of crop injury.

Injury symptoms can identify the herbicide family. Look in the affected field, surrounding fields, and between fields. The size of plants when affected by a growth regulator herbicide can be determined by the height of the stem where malformed leaves first occur. A soil-applied herbicide will affect plants as they emerge rather than drift. Dates that injury occurred can coincide to dates of herbicide application on and around the field.

The direction of herbicide drift can sometimes be determined by finding "drift shadows" by trees, buildings or elevated roads. Anything that intercepts or deflects spray droplets can cause an area of undamaged plants on the downwind side of the object.

Vapors from growth regulator herbicides are volatile and a wind shift after application may cause vapor drift in a different direction than the drift of spray droplets. Spray droplets only move in the direction that the wind is moving. Sources of unintended herbicide exposure are difficult to identify. For example, the residue of long residual herbicides from drift or an accidental spraying, or soil movement due to wind or water erosion can damage a susceptible crops planted in successive years.

Damage from drift may not be as severe as the initial appearance and a decision to keep or till should not be made until sufficient time for regrowth to occur. Rapid conclusions can lead to unwarranted decisions with spray drift.

Degree of yield loss caused by the herbicide damage is difficult. Accurate visual estimation of yield loss from a non-lethal exposure to herbicide is not possible. Collecting representative yield comparisons can be used to estimate of yield loss. Yield from injured and uninjured portions of the field can be compared. Usually, splitting the field into several strips is better than comparing one half of the field to the other. Comparisons to nearby fields can be done but variability among fields is great. Average yields of several nearby fields also could be considered.