

ECONOMIC BENEFITS OF PREPLANT HERBICIDE APPLICATIONS IN CORN AND SOYBEAN. Gail L. Marik and Gregory R. Armel, Field Sales Agronomist and Product Development Specialist, DuPont Ag and Nutrition, Wilmington, DE 19880.

The presence of certain winter annual weed species has increased in several corn (*Zea mays*) and soybean (*Glycine max*) growing regions largely because of increasing conservation tillage acres coupled with reduced reliance on residual herbicides due in part to the advent of genetically modified crops. Attempts to control these winter annual weeds with continued use of herbicides targeting only one site of action has caused the selection of certain herbicide resistant biotypes or shifts toward increased populations of naturally tolerant weeds. Often times these resistant or tolerant weed shifts are isolated to specific tracks of land and are only considered an issue for those who use that land. However, there are certain over-wintering weeds such as dandelion (*Taraxacum officinale*), cressleaf groundsel (*Senecio glabellus*), and marestalk (*Conyza canadensis*) that produce wind disseminated seeds which have the potential to spread herbicide tolerant or resistant biotypes over great distances. Therefore, the need to properly manage certain winter annual weeds will become more important if these resistant or tolerant biotypes continue to spread. Successful management strategies for these winter annual weeds include the use of fall and/or early spring applications of herbicides with various sites of action. Herbicide mixtures including certain systemic, residual herbicides like sulfonylureas in mixtures with auxin mimic herbicides (i.e. 2,4-D) and/or non-selective herbicides (i.e. glyphosate and paraquat) offer the ability to control emerged winter annual weeds with the added potential of controlling secondary germinations which could appear before crop planting. This paper will look at the potential benefits associated with these types of fall and early spring burndown applications including resistance management, improvements in seedbed condition at planting, decrease in early season weed competition, improved weed management flexibility, and a potential decrease in input costs in comparison to other alternative measures.