The development of appropriate pest management programs for transgenic crops to insure the continued utility of the traits and to provide growers of specialty crops with tactics to effectively manage pests and maintain profitability.

**The Issue**

The unprecedented adoption of transgenic and specialty corn hybrids and soybean varieties has resulted in several problems. Notably, the selection pressure imposed on the weed community by the transgenic cropping system has resulted in weed population shifts (i.e. Asiatic dayflower [Commelina communis]) and the evolution of weed biotypes that are resistant to the herbicide (i.e. horseweed [Conyza canadensis]). Furthermore, the production of specialty grains (i.e. low linolenic soybean) has increased dramatically and represents an important new profit potential for Iowa agriculture. In both situations, traditional pest management programs, specifically weedy pests, may represent an economic risk for growers, either by exacerbating the changes in the weed community or by causing significant quality problems for the grain attributable to herbicide injury.

**Objectives for FY07**

1. Evaluate the potential for suspect weeds to evolve resistance to glyphosate  
2. Determine which weeds are becoming new economic problems in response to the adoption of transgenic cropping systems  
3. Develop management tactics to manage changes in the weed community in transgenic crop production systems  
4. Assess the risk of traditional weed management programs in specialty grains  
5. Develop effective, safe weed management programs for specialty grains

**Expected Outputs**

- Management recommendations for transgenic crops that will delay or deter weed population shifts  
  - Recommendations have been developed and specific new herbicides have been determined to have a relatively high potential for phytotoxicity to popcorn varieties  
  - Weed population shifts require several years to fully develop – monitoring weed populations is underway
- Management recommendations that will delay or deter the evolution of herbicide resistant weeds while maintaining economically effective weed control
- List of herbicides and relative tolerances on specialty grains  
  - To develop the list, data collected over several years is required
- Management recommendations for weed control in specialty crops

This project would be conducted by the ISU weed management group in collaboration with specialty crops organizations, grower organizations, plant breeders, and in conjunction with representatives from the seed industry and ag-chemical companies.