Transgenic soybeans are grown on approximately 98% acres produced in Iowa and transgenic herbicide resistant corn acres have dramatically increased in recent years and is estimated to be 65% of the acres grown in Iowa. Recent internet in bio-rational fuels has resulted in a significant increase in corn production at the expense of soybean acres. Much of these acres will be glyphosate-resistant hybrids and the predominant weed management “system” will be the sole use of glyphosate. This will result in greater ecological pressure on weed communities and will select for weed species and weed specie biotypes that can exist and excel in glyphosate-based production systems. While specialty grains, such as low linolenic soybeans, waxy corn, white corn, sweet corn and popcorn, represent an important economic opportunity, the ability to produce consistent yields will be hampered by the escalation of glyphosate-based systems and the adapted weed communities. Furthermore, “traditional” weed management tactics employ herbicides that may cause injury to crops and thus may affect yields and grain quality. Specialty crops may be more likely to demonstrate negative responses to traditional weed management tactics. The overall outcome of the project is to provide Iowa growers with effective and efficient weed management options that represent a low risk of negatively impacting weed communities or grain quality.

**Objectives for FY2009**

1. Develop effective, safe weed management programs for specialty grains with an emphasis on new transgenic cultivars and popcorn
2. Continue to assess the risks of traditional weed management programs in specialty grains
3. Document which weeds are becoming new economic problems in response to the adoption of transgenic cropping systems either via evolved herbicide resistance or weed population shifts
4. Monitor weed population shifts in grower fields
5. Develop tactics to manage weed community changes in transgenic crop production systems
6. Provide growers with an understanding of the risks that are concomitant with simple weed management systems (transgenic crops and glyphosate-based weed management)

**FY2009 Expected Outputs**

Data from the herbicide screens will be made available to growers via newsletters, web-based articles, reports and extension/outreach programs. Similarly, the opportunistic grower-field demonstrations and experiments will be made available similarly. The farm-scale, long term studies will be compiled (3 year data) and presented. Several new publications from the *Glyphosate, Weeds, and Crops* series will be finalized and made available to Iowa growers. Currently, presentations at regional, national and international scientific meetings are planned. Five journal publications have been submitted and a major book chapter is currently under review. Blogs and web articles are consistently submitted for grower information.