

100 Corn and Soybean Production and Protection

Statement of Issues:

Nearly two-thirds of Iowa's land surface (~23 million of 36 million acres) is annually dedicated to production of corn or soybean. Because of the importance of these crops to Iowa's economy and emerging bioeconomy, planned Extension programming focuses on enhancing profitable corn and soybean production and the other issues related to crop protection. These include efforts focused on the prevention or limitation of losses from weed, insect, crop disease and non-pathogen related damage. Soil, water and nutrient management issues are inherent to the two crops grown in annual monoculture and are likewise addressed. In addition, economical production of forages and small grains are issues that many farmers share, and the advent of alternative agronomic crops presents additional information needs for Extension to provide.

Performance Goals:

- Corn and soybean production.
 - 1) Increase use of research-based crop management practices.
 - 2) Adapt current practices to specialty trait or cropping systems.
- Crop protection.
 - 1) Enhance the knowledge of persons involved in production agriculture (farmers, ag supply personnel, crop consultants, etc.) on the biology, ecology and management of important crop pests. This knowledge will lead to implementation of more effective and economic pest management systems.
 - 2) Continuously modify crop protection recommendations to anticipate the changing mix of products being grown.
- Forages, small grains and new opportunities.
 - 1) Increase adoption of Best Management Practices (BMP) for forages and the production of non-traditional crops, including, but not limited to, Identity Preserved, Value-Added, and biomass crops.
 - 2) Improve the communication of the value of forages in organic production and in Conservation Security plans to all producers.
- Soil, water and nutrient management.
 - 1) Increase the adoption of corn and soybean in conservation systems in Iowa.
 - 2) Assist producers who bring USDA-conservation reserve program (CRP) acreage back into crop production to employ appropriate best management practices for nutrient and soil quality on those acres that includes no-till, chisel plow, sod-based rotations, improved waterways and conservation buffers.
 - 3) Educate producers and service providers on the use and benefits of diagnostic and other resource tools, including the Iowa P-Index, RUSLE2, soil nutrient testing, plant-based nutrient testing, etc., so that they are eligible for state and Federal conservation programs benefits.
 - 4) Increase the adoption of specific, economically appropriate practices of N and P from

both fertilizer and animal manures including application timing and rates that integrate with the producer's cropping system.

- 5) Evaluate effective BMP's for biomass removal for livestock and fuel production.

Output Indicators (Activities):

- Conduct replicated research experiments and demonstrations at ISU research farms, grower fields and agribusiness partner locations.
- Organize and maintain monitoring programs for appropriate crop pests (for example adult corn rootworms, Asian soybean rust, aflatoxin); disseminate the results to inform growers and crop advisors when to scout for these pests; and promote IPM plans.
- Convey research results and recommended crop production and pest management practices to Iowa growers via conferences, field days, publications, and web-based information.
- Conduct core training on applied agronomic sciences for agribusiness professionals (for producers, Certified Crop Advisers and other agribusiness personnel, both beginning and experienced) through formal and informal sessions including those programs coordinated, organized, and conducted by the ISU Extension Agribusiness Education Program (Field Extension Education Laboratory programs, Integrated Crop Management Conference, Agrichemical Dealer Updates, Crop Advantage Series meetings, annual ISU scout school and short courses, etc.) and related activities (Integrated Crop Management Newsletter).
- Conduct pasture-walks and pasture weed management demonstrations to demonstrate grazing best management practices to improve profitability and sustainability of livestock operations.
- Partner with commodity organizations, agricultural input suppliers, seed companies, other agribusinesses and biomass industries to conduct replicated research experiments and extension demonstrations of recommended crop production and pest management practices in grower fields.
- Partner with commodity organizations, agricultural input suppliers, seed companies, and other agribusinesses to convey research-based information through meetings, field days, publications, and web-based materials of the partnering organizations.
- Develop and deliver a curriculum covering an integrated approach for soil, water, and nutrient management. Create area-specific adaptations of the curriculum. This training would meet requirements for annual training of over 2000 confinement site manure applicators and over 1200 commercial manure applicators.
- Prepare farmers within different watersheds by educating them about the value of conservation systems and nutrient management.
- Conduct training workshops and education opportunities for different management tools such as P-Index, RUSLE2 for soil erosion estimation, residue estimation, nitrogen calculation, and others.
- Conduct workshops and training opportunities for alternative management of CRP lands to enhance and preserve the environmental benefits that were developed during the years of the CRP contracts. Identify appropriate opportunities to use CRP acreage after the contract expiration.
- Promote use of ISU corn, soybean, alfalfa and small grain variety trial data in selecting adapted crop varieties.

- Promote Total Quality Management systems (for example, ISO 9000) as a means of reconciling diverse regulatory and production needs into profitable production systems.
- In cooperation with other specialists, increase adoption of integrated crop-livestock production systems to improve farm profitability and environmental quality.

Outcome Indicators (Impact):

101 - Agronomic practices: Number of producers and service providers attending corn and soybean programming that focuses on improving agronomic practices.

102 - Integrated Pest Management: Number of producers and service providers attending programs to learn and apply Integrated Pest Management practices.

103 - Forage production and production systems: Number of producers and service providers who participate in programs designed to increase forage production and profitability and forage-based production systems.

104 - Bio-economic and other new crop production: Number of producers and service providers who attend programs designed to increase the awareness of new crop opportunities and varieties appropriate for bio-energy production.

105 - Conservation tillage systems: Number of producers and service providers who participate in programs designed to increase the adoption of conservation systems on Iowa's corn and soybean acreage.

106 - Conservation Reserve Program alternatives: Number of landowners and producers attending programs that focus on applying best management practices to land coming out of the Conservation Reserve Program.

107 - Crop nutrient management: Number of producers and service providers using diagnostic and other resource tools related to crop nutrient management.

108 - Animal manure management: Number of farmers and service providers managing the nitrogen and phosphorus content of animal manure in relation to the appropriate cropping system.

Target Audiences:

Crop producers
 Livestock producers
 Certified Crop Advisors
 Agribusiness personnel
 Commodity organizations
 Agencies – Federal, State and Local
 Commercial manure applicators

Land owners
Agricultural lenders
Beginning and returning farmers
Policy makers

Team Points of Contact:

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