Agriculture and Natural Resources

2010-2014 Plan of Work

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 nonpathogen related damage. Soil, water and nutrient management issues are associated with 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.

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Objectives:

101 Corn and soybean production.
  1. Increase use of research-based crop management practices.
  2. Adapt current practices to specialty trait or cropping systems.

102 Crop protection.
  1. Enhance the knowledge of persons involved in production agriculture (farmers, agricultural supply personnel, crop consultants, etc.) on the biology, ecology and management of important crop pests. This knowledge will lead to implementation of more economically and environmentally effective pest management systems.
  2. Continuously modify crop protection recommendations to anticipate the changing mix of products being grown.

103 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 to all producers of the value of forages in both organic production and in Conservation Security Program.
104 Soil, water, and nutrient management.
   1. Increase the adoption of conservation systems in corn and soybean production in Iowa.
   2. Assist producers who bring USDA-conservation reserve program (CRP) acreage back into crop production to employ appropriate best management practices on those acres for nutrient and soil quality that includes no-till, chisel plow, sod-based rotations, and improved establishment and maintenance of waterways and conservation buffers.
   3. Educate producers and agricultural service providers on the use and benefits of diagnostic and other crop management 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 management practices of N and P from both fertilizer and animal manures sources including application timing and appropriate rates for the producer’s cropping system.
   5. Evaluate effective BMP’s for biomass removal for livestock and fuel production.

105 Post harvest management and storage
   1. Support environmentally and socially responsible production of specialty or transgenic grains.
   2. Create support programs and training programs for the application of internationally recognizable quality management systems to grain production.

106 Crop processing, quality, and distribution
   1. Resolve developing problems related to specialty grains and bio-based processing co-products.
   2. Develop a base of expertise in the agronomic, management and business aspects of differentiated grains and bio-based co-products.

Outputs (number of activities, contacts, products):

1. Establish 5+ monitoring programs for appropriate crop pests, depending on growing conditions (adult corn rootworm beetles, black cutworm moths, Asian soybean rust, aflatoxin, Western bean cutworm, bean leaf beetle, soybean aphid, etc).
2. Post and/or publish monitoring results to inform growers and crop advisors when to scout for these pests through electronic and print media.
3. Conduct 50+ conferences and field days to disseminate results on current crop production research, recommended integrated pest management practices, and integrated crop-livestock production practices to producers who attend Extension-sponsored events.
4. Post and/or publish research results through print and electronic media.
5. Establish partnerships with commodity organizations, agricultural input suppliers, seed companies, other agribusinesses, and biomass industries to conduct and convey replicated research experiments and extension demonstrations of recommended crop production and pest management practices in grower fields.
6. Develop and deliver a curriculum covering an integrated approach for soil, water, and nutrient management. Create area-specific adaptations of this curriculum.

7. Provide 70+ training sessions through the above curriculum to 2,000+ confinement site manure applicators and 1,200+ commercial manure applicators.

8. Provide effective and efficient weed management options for specialty grains with a low risk of negative impact on weed communities or grain quality.

9. Participate in and/or lead, as appropriate, activities of the Iowa Grain Quality Initiative (IGQI) to promote Total Quality Management systems (for example, ISO 9000) as a means of reconciling diverse regulatory and production needs into profitable production systems.
   a. 105 Post harvest management and storage
      i. Provide current information relating to ongoing quality and acceptability issues.
      1. Producers of genetically modified (GM) and specialty crops will be using readily-available Iowa State recommendations to prevent resistance, isolate varieties as needed, and design weed control programs.
      2. There is a need for a practical, auditable third-party supported protocol that can be used by producers and handlers to plant incompletely approved GM crops; IGQI and industry partners will draft this protocol.
      3. The bio-security website training program will be expanded, and also delivered on site as needed.
      4. Spreadsheets will be available to evaluate storage performance versus construction and operating costs, and to evaluate time and capacity relationships among harvest, transportation and drying operations.
      ii. Provide a rapid response to and resolution of short-term grain quality issues caused by local weather conditions, biotechnology, or other external forces.
      1. Grain storage/management related materials from ISU, other Universities, and commercial suppliers are being organized into a multi-level training program that will emphasize decision making spreadsheets and online training.
      2. Grain storage information will be offered through web programs, meetings, and print materials.
      3. An online industry course in quality management systems will be created.

b. 106 Crop processing, quality and distribution
i. Develop and apply technologies that will improve marketing efficiency and value of Iowa’s primary grains and derivative products.
   1. The ISU Grain Quality Lab will provide reduced cost grain quality analysis services for publicly sponsored hybrid and variety trials and ISU research projects.
a. Provide grain quality analysis services and instrument support for ISU research projects, public variety evaluations, and ISU germplasm licensees.

2. Policy and technical guidance on the distribution of feed and fuel will be provided to regulators, industry-leaders and legislators, through study of total caloric needs, digestible caloric availability, total protein and fat needs, aggregate amino acid needs, and the digestible component of each.

3. IGQI will maintain a comprehensive inventory of grain processing locations, compiled in a user-friendly mapping device showing processing capacities and logistical and contact information.
   a. A web based inventory of existing corn storage capacity, projections for future needs, types, and locations for storage will be on the IGQI website.
   b. Current databases for corn and soybean usage; map updated quarterly showing location of processing plants and other major users in Iowa.

4. Support services will be provided for bioprocess companies in developing analytical and quality control capabilities.
   a. Assistance to at least 3 Iowa companies for quality measurement of grain or processed products.
   ii. Provide educational programs to assist target audiences in capturing opportunities presented by market changes and restructuring.
   1. Development of one or more decision-making instruments to assist producers, industry leaders, policy makers in answering emerging nutrient quality and quantity questions.
   2. Documentation of the feeding value of new and emerging bio-fuels co-products.

**Outcome Indicators:**

102 Crop protection (Objective 1) (soybean aphid management)
   1. 80% of the attendees at the 2009 Crop Advantage Series understand the Integrated Pest Management principles of soybean aphid management.
   2. 50% of the attendees at the 2009 Crop Advantage Series applied the Integrated Pest Management principles when managing soybean aphids in 2009.

104 Soil, water, and nutrient management (Objective 4)
   1. 75% of the attendees at the 2009 Crop Advantage Series understand the principles of plant nutrient management, the various options available, and the implications of the use of each option on their respective farms.
   2. 25% of the attendees at the 2009 Crop Advantage Series applied the principles to select the best option for their respective farms in 2009.
**Target Audiences:**
Crop producers
Livestock producers
Certified Crop Advisors
Agribusiness personnel
Commodity organizations
Agencies – Federal, State and Local
Commercial manure applicators