Agronomic Division — 2001 Annual Report
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helping to address nutrient management and environmental issues

Thousands of citizens across North Carolina continue to use analytical and advisory services provided by the Agronomic Division to enhance agricultural productivity and environmental quality. With increased emphasis on improving nutrient management and developing new technologies, NCDA&CS support of agronomic services, education, and research is more important than ever. Here are some highlights of the past year.

SERVICE

In fiscal year 2000–01, our laboratories processed nearly 400,000 agronomic samples (soil, nematode, plant tissue, waste and solution) and issued more than 59,000 advisory reports. Our workload included chemical analyses of a record number of soil, plant tissue, waste and nematode assay samples. Samples processed by the Nematode Assay section included 420 diagnostic samples from the Plant Disease and Insect Clinic at North Carolina State University (NCSU) and 157 regulatory samples for the NCDA&CS Plant Industry Division.

Specialists in each section of the Division provided farmers, homeowners and industry leaders with technical advice and recommendations for efficient crop fertilization, bio-solid land applications and effective nematode management. Within the Field Services section, 14 regional agronomists stationed throughout the state conducted on-site assessments for growers; assisted with land management and plant growth problems; and counseled producers on taking representative samples, interpreting reports, and implementing nutrient management plans.

Regional agronomists responded to hundreds of requests regarding environmental issues— primarily waste management plan revisions or clarifications, regulatory updates, river basin oversight reviews, and participation in local advisory committees. They provided technical expertise and service for several regional and statewide environmental projects in cooperation with the N.C. Department of Environment and Natural Resources (NCDENR) Division of Air Quality; NCDENR Division of Soil and Water Conservation; NCDENR Division of Water Quality (DWQ); N.C. Dept. of Transportation (Roadside Environmental Unit); NCSU, including its Neuse River Crop Management Project; and USDA Natural Resource Conservation Service.

The soil testing and waste analysis laboratories continued to operate under NCDENR-DWQ' s wastewater certification program and are qualified to provide testing for animal waste permit compliance. This year, a pilot project was initiated to increase recycling of sample boxes, soil waste, liquid waste and dry litter. The Agronomic Division expects this change to be environmentally and financially sound.

The Soil Testing section has experienced an increased demand for information and data on heavy metals in soils. This issue is especially important for land waste application programs. The Division held a meeting with NCDENR-DWQ to discuss the permitting process and to suggest optimum times for sampling. The Soil Testing section advocated summer/early fall sampling due to pressing workloads later in the year. As a result of this meeting, special notations (Cu$, Zn$) will appear on each report that has a copper- or zinc-index of 2000 or greater. An informational leaflet will accompany these reports and explain that copper and/or zinc levels may cause future problems with crop growth.

Several other changes went into effect to make soil test report recommendations more precise and site specific. New crop codes were added for soybeans following small grain silage, corn silage following small grain silage, and kenaf. In addition to the Cu$ and Zn$ notations mentioned in the previous paragraph, a pH$ code was added to flag samples that may exhibit manganese deficiency due to elevated soil pH levels.

Improving laboratory efficiency remains a primary goal for the Soil Testing section. This year, about half of our soil samples (~160,000) arrived at the lab in the bulk soil sample mailer designed just last year. Samples sent in these mailers can be sorted and processed much more quickly. Efficiency has also received a boost from a new robotic pH analyzer that can measure the pH of two soil samples simultaneously. This instrument has significantly decreased the number of man-hours that have to be devoted to this analytical station. And finally, efficiency, accuracy and convenience for all lab sections have been improved by the availability on online information sheets that can be filled out and submitted over the Internet.

EDUCATION

Agronomic Division specialists and regional agronomists reach thousands of growers, homeowners, and agricultural professionals through a wide range of educational activities. In fiscal year 2000–01, 47 tours of agronomic laboratory facilities were conducted for students, farmers, master gardeners, agribusiness groups, and 22 scientific visitors from out of state. Virtual tours of the Division’ s services and facilities are also provided via the Internet.

Throughout the year, agronomic information is disseminated at farm shows, at field days, during training conferences, and through mass media. Outreach this year included 23 news releases, 8 technical publications, and 31 educational exhibits, including several posters presented at international and national meetings. *Waste Analysis—A Tool for Improving Nutrient Management While Enhancing Environmental Quality* and *Nutrient Content of Animal Waste Generated in North Carolina* were presented at the International Symposium on Addressing Animal Production and Environmental Issues held in RTP in October 2001. *Cotton Response to Potassium Applications* and *Waste Analysis—A Tool for Improving Nutrient Management While Enhancing Environmental Quality* were presented at the national American Society of Agronomy annual meeting in Charlotte in October 2001.

Safeguarding environmental quality continues to be a top priority. This year the Agronomic Division conducted training sessions for NCDENR-DWQ’ s field staff and for N.C. Forestry Service's Tree Nursery Operations staff. The purpose was to acquaint them with our full range of services and how to

use them most efficiently. Regional agronomists also cooperated with the Plant Food Association of North Carolina to conduct two training schools for operators of fertilizer spreader trucks. These training sessions help the state' s efforts to clean up our rivers and to more aggressively protect the environment.

RESEARCH

Our staff routinely conducts collaborative studies with university personnel, farmers and industry specialists. In fiscal year 2000–01, regional agronomists conducted about 50 research and demonstration projects in fields throughout the state. These projects are designed primarily to optimize fertilizer rates, waste utilization, sampling procedures, and use of organic material as nutrient sources. During the same period, our laboratories processed more than 2,900 soil samples, about 1,200 plant/waste/solution samples and 1130 nematode assays for cooperative research.

This year, Agronomic Division has been a member of a multi-agency work group developing and field testing the Phosphorus Loss Assessment Tool (PLAT). As of April 2002, farms where new or revised comprehensive nutrient management plans are required must assess phosphorus loss from fields to improve phosphorus recommendations and utilization. In the fall of 2001, the Soil Testing section analyzed roughly 1400 soil samples to help with development of the PLAT.

The Plant/Waste/Solution section has conducted cooperative research with NCSU in the areas of peanut nutrition, cut flower production, and tomato production in plasticulture. The section also obtained USDA grants for research and calibration studies in specialty crop nutrition. Studies to reassess and fine-tune nutrient recommendations for cotton and strawberry were completed. Field studies have been initiated to investigate the effects of starter fertilizers on corn and cotton grown on soils with low to high phosphorus index values.