

**Agronomic Division — 2002 Annual Report**  
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*providing site-specific service  
to enhance agricultural and environmental quality*

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, protecting water resources, and developing new agricultural enterprises, agronomic services are more important than ever. Here are some highlights from 2002.

**SERVICE**

In fiscal year 2001–02, our laboratories processed more than 380,000 agronomic samples (soil, nematode, plant tissue, waste and solution) and issued nearly 58,000 advisory reports. Our workload was lighter than usual this year due to the drought which devastated the whole state. Samples processed by the Nematode Assay section included 287 diagnostic samples from the Plant Disease and Insect Clinic at North Carolina State University (NCSU) and 382 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; counseled producers on using proper fertilizers, saving money, and implementing nutrient management plans; and assisted with the department's Hay Alert program and sweetpotato weevil quarantine.

Regional agronomists responded to hundreds of requests regarding environmental issues — primarily waste management plan revisions or clarifications, regulatory updates, and river basin oversight reviews — and participated in local advisory committees. Agronomists also provided technical expertise and service for several regional and statewide environmental projects in cooperation with the N.C. Department of Environment and Natural Resources (DENR), N.C. Dept. of Transportation, NCSU, and USDA Natural Resources Conservation Service.

The soil testing and waste analysis laboratories continued to operate under DENR Division of Water Quality's (DENR-DWQ) wastewater certification program and are qualified to provide critical testing for animal waste permit compliance. Following a pilot project, all division laboratories have implemented an ongoing recycling program for sample boxes, soil waste, liquid waste and dry litter.

Within the Soil Testing section, efforts to increase lab efficiency and accuracy of results continue to dominate activities. Upgrades to the soil dryers should help minimize drying time of samples and increase efficiency, thereby reducing turnaround time. A new ICP instrument, used for elemental

analysis, should enable the lab to more easily meet sample volume demands. Robotic automation and other ideas to increase efficiency are being explored, partly through open communication with other soil testing labs in the southeast U.S. and East coast. The laboratory is enhancing its quality-assurance program through participation in the North American Proficiency Testing Program. This program coordinated through the Soil Science Society of America evaluates laboratory performance through interlaboratory exchange of samples and statistical evaluation of data on a quarterly basis.

## EDUCATION

Agronomic Division specialists and regional agronomists reach thousands of growers, homeowners, and agricultural professionals through a wide range of educational activities. The division conducted 28 laboratory tours for students, farmers, master gardeners, agribusiness groups, and scientific visitors from out of state. Virtual tours of the division's services and facilities were also provided on the Internet.

Throughout the year, agronomic information was disseminated through farm shows, field days, training events, professional meetings and symposia, and the media. Outreach included 18 news releases, 19 technical publications, and 30 educational exhibits. Many of the exhibits were designed for presentation to previously untargeted agricultural groups including organic growers, compost producers, parks and sports turf professionals, and nursery growers.

Safeguarding environmental quality continues to be a top priority. This year, Agronomic Division staff provided a training session during DENR's spray irrigation and biosolid application schools. The division also cooperated with NCSU to provide ongoing nutrient management training for technical specialists who need DENR certification. Regional agronomists helped the Plant Food Association of North Carolina 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. Due to increasing questions from the public about "heavy metals" in soils, a new informational leaflet is being developed.

At least 13 seminars based on sole or cooperative research by division personnel were presented at the local, state, national or international level, including papers given at the 44th annual meeting of the Tobacco Workers Conference, the 2002 Beltwide Cotton Conferences, the 45<sup>th</sup> annual meeting of the Soil Science Society of N.C., the 2002 CORESTA Congress, and the 7<sup>th</sup> annual symposium of the N.C. Vegetation Management Association. The poster *Minimum Critical Levels and Visual Symptoms for Macro and Micronutrient Deficiencies in New Guinea Impatiens Cultivars 'Grenada' and 'Timor' (Impatiens hawkeri Bull.)* was presented in August 2002 at the annual meeting of the International Society of Horticulture. Two posters—*Recommendations for Cotton in North Carolina Based on Soil & Plant Tissue Analysis* (1<sup>st</sup> place winner in its division) and *Phosphorus Accumulation in North Carolina Piedmont Soils Utilized for Animal Waste Applications*—were presented in November 2002 at the annual meeting of the American Society of Agronomy.

## RESEARCH

Agronomic staff routinely conduct collaborative studies with university personnel, farmers and industry specialists. This year the division played a key role in carrying out a statewide, multidisciplinary, interagency survey concerning the use of best management practices by commercial farmers in critical watersheds. The survey was conducted to improve communication and understanding between farmers and state and federal agencies regarding the implementation of environmental policies.

Regional agronomists conducted about 70 research and demonstration projects in fields throughout the state. These projects were designed primarily to optimize fertilizer rates, waste utilization, sampling procedures, and use of organic material as nutrient sources. In addition, Agronomic laboratories processed more than 4,205 soil samples, about 4,100 plant/waste/solution samples, and 2,448 nematode assays for cooperative research.

The division continued to participate in a multi-agency work group to develop and field test the Phosphorus Loss Assessment Tool (PLAT). In the future, farms with new or revised comprehensive nutrient management plans will be required to assess phosphorus loss from fields to improve phosphorus recommendations and utilization.

The Plant/Waste/Solution section conducted cooperative research with NCSU in the areas of cut flower, plasticulture tomato, and bedding plant production. It also initiated a first-of-its-kind cooperative study with NCSU tobacco specialists to investigate the use of organic material as fertilizer for floatbed production of tobacco seedlings for certified organic production. USDA-funded projects to investigate sampling techniques and calibrate nutrient recommendations for specialty crops, such as cantaloupe, grape and sweetpotato, were also begun.

The division concluded its major field studies on

- the effects of starter fertilizers on corn and cotton grown on soils with low to high phosphorus index values,
- alternative nitrogen sources for certified organic tobacco production, and
- recalibration of nitrogen and potassium sufficiency ranges for cotton.