

Agronomic Division — 1994 Annual Report

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The past year has been one of the busiest and most productive in the Agronomic Division's history. In addition to enhancing our Soil Testing, Nematode Assay, Plant/Waste/Solution, and Field Advisories, we have also instituted a number of changes that promise to improve Division-wide efficiency for years to come. In every instance, the *Program Successes, Priorities, Disappointments, and Needs* outlined below have been defined as they relate to the furtherance of our mission: increasing crop productivity, promoting responsible land management, and safeguarding environmental quality.

1994 PROGRAM SUCCESSSES

1) New Building Completed and Occupied.

Careful planning and diligent supervision have provided the Agronomic Division with a state-of-the-art facility from which to serve North Carolina growers. Step-by-step involvement by the Director and the section chiefs has ensured that the ideals embodied in the blueprint were transformed into fully functional laboratories and work spaces. Systematic attention to detail also ensured that agronomic services were not disrupted during the difficult transitional period. Enlarged work areas, improved building design, and new equipment have subsequently enhanced both the speed and precision with which the Division responds to the needs of growers.

2) Communications Specialist Hired

The communications specialist is (i) increasing public awareness about the range and impact of the Division's four primary services, (ii) preparing written materials that enable growers to take maximum advantage of the Division's services, and (iii) helping Division administrators in their efforts to clarify the economic and environmental implications of field-level and policy-level decisions. A brochure format has been standardized to promote each of the Division's services (the Nematode Advisory Brochure has been printed and distributed), a slide set has been prepared for each of the Regional Agronomists, a liming document has been widely circulated, and a number of the Division's informational materials have been revised.

3) Computer Systems Analyst Hired

The computer systems analyst is helping to develop, test, and maintain the Agronomic Division's new computer network. A Local Area Network (LAN) has been established and all office staff and regional agronomists have been brought on-line. As a result of file-transfer and electronic-mail capabilities, communication among Regional Agronomists, growers, and Division specialists has improved. So too has the speed and efficiency of many activities performed in the Division's central offices. That speed and efficiency will be optimized when the Division completes its Laboratory Information Management System (LIMS), which is currently being developed with input from the systems analyst.

4) Start Accelerated Automation/Computerization of All Programs

A team of computer consultants and programmers has been hired to design the Laboratory Information Management System (LIMS). Working closely with the Division's section leaders and systems analyst, the team has completed the design phase of the system and is making progress on the programming phase.

Once completed, the LIMS will enable data to be captured electronically from analytical instruments, thus optimizing the speed and efficiency with which soil, nematode, plant, waste, and solution samples can be analyzed. The electronic data base will be accessible to growers, and it will also enable reports to be generated more quickly. The LIMS is scheduled to be fully functional by July 1, 1995.

5) 1994 Lime Campaign

In conjunction with the NCDA Plant Industry Division, the Plant Food Association of North Carolina, the N.C. Cooperative Extension Service, and representatives of the fertilizer industry, the Agronomic Division participated in a state-wide campaign to improve crop performance by increasing the use of agricultural lime. Although lime has been extensively promoted for years, current usage is often inadequate to sustain long-term productivity on our soils. Losses from soil acidity—which lime can correct—cost North Carolina growers millions of dollars each year. To help reduce these losses, the Division took the lead in preparing a primer for growers and lime dealers entitled *Facts on Soil Acidity and Liming*. The Division's new facility was also the site for the Lime Campaign Kick-off Event. Although still too early to assess the overall impact of the campaign, preliminary reports from growers and lime dealers are extremely encouraging.

6) The Development of Nematode Hazard Indices (NHI)

Because of differences in crop susceptibility and nematode pathogenicity, a low population of one nematode species can pose a severe threat, while a much larger population of a different species may pose no threat at all. NHI provide a way to help growers evaluate crop-specific pathogenicity and thus assess the likelihood of damage to their crops. NHI are expressed as the probability of significant damage (on a scale of 0–100) to a specific crop at the nematode levels detected. The inclusion of NHI on Nematode Assay Reports will make them easier to understand.

7) Organizing Plant, Waste, and Solution Data

Sample data from 1989–1994 has been organized in a form that can be summarized for use in educational programs. Data can be manipulated to indicate trends and problems by county and region.

8) Cooperative Research Program in Nutrient Management

The Division continued a very successful cooperative research program in nutrient management for plastic-culture strawberry production. Current fertilization programs for this crop in the mid-Atlantic states are based on this work. Guidelines for interpreting leaf and petiole analyses have been developed and are being used to fine-tune nutrient applications. This practice enhances yield quality while protecting the environment. Summaries of this work are currently being published.

9) Completed Planning for Laboratory Information Management System

Business requirements were identified and a detailed RFP was developed.

10) Chemical Technician III Hired for Plant/Waste/Solution Advisory Section

The additional staff will allow the Division to maintain current two-day turnaround times on an increasing workload.

11) Agronomist I Hired

This agronomist will allow the Division to meet demands for interpreting an increasing workload and will provide additional opportunities to enhance educational services and promote the use of nutrient-management tools.

12) Maintenance Supervisor Hired

The supervisor is helping to maintain the new facility, provide a safe working environment, enhance operational efficiency, and maintain laboratory equipment.

PRIORITIES FOR 1995

1) Complete Automation and Computerization of All Programs

The Laboratory Information Management System (LIMS) is scheduled to be finished by July 1, 1995. At that time, growers will begin receiving new and more informative reports. Laboratory data will be electronically captured and calculations and recommendations will be computer-generated. Electronic transfer of reports to parties other than growers should streamline office operations and reduce mailing costs. A new accounting system will increase the efficiency of fee collection and record keeping.

2) Complete Division and Section Brochures

Having completed a model brochure for the Nematode Assay Section, the Division can now prepare brochures for the other sections and for the Division as a whole. The combination of overall design regularity coupled with service-by-service variety in color and photographs will convey to growers a sense of the integrated program we have worked to create. By staying within the production capabilities of the NCDA service bureau, we will achieve a professional (but not ostentatious) design at a minimal cost.

3) Enhance Educational Efforts

From both an economic and environmental standpoint, agricultural efficiency is important to every North Carolinian. Declines in such efficiency impose a widening circle of social costs: growers lose money, consumers are denied safe and affordable food and fiber, the state as a whole suffers a wide array of environmental problems, and future generations inherit a degraded resource base. To avoid these problems, the Division will intensify its educational efforts through slide presentations, field days, management notes, and news releases. We will also explore the use of the internet as a tool for getting information to growers and other interested citizens.

4) Increase the Regional Agronomist Staff

For maximum impact, the Division must provide on-site assistance so that growers can implement management recommendations in the most cost-effective and environmentally sound manner. At present, eight Regional Agronomists stationed around the state provide hands-on expertise in coping with a variety of location-specific problems. Increasing the number of such agronomists would improve two-way communication between growers and the Division's central offices, thus insuring that the Division remains responsive to field-level problems. A larger field staff would also enhance our ability to fulfill the educational objectives outlined in Priority 3 (above).

5) Enhance the Division's Irrigation and Water Advisory Service

Over the next five years, the NCDA will face critical questions on water quality and conservation. In some regions, agriculture, industry, residential housing, and tourism will compete for available water. This competition will raise some serious public-policy issues concerning water allocation. With adequate funding, the Agronomic Division could play an important role in shaping the outcome of that debate. Identifying and avoiding such problems as excess bicarbonate and soluble salts, as well as specific element toxicities and deficiencies, before they reach a critical stage, will be important as we manage agricultural enterprises.

6) Develop Video Imaging System

This system will be used to make computerized cyst and egg counts of soybean cyst nematodes, the most pernicious soybean pathogen in North Carolina. Currently nematode assays recover only the juveniles. Egg counts are better predictors of damage potential than are juveniles, but current staffing is inadequate to make those determinations. Video imaging will permit computer-aided egg counts with little or no need for increased staffing.

DISAPPOINTMENTS IN 1994

1) Failure to complete the automation/computerization effort by July 1994.

Bid responses were inadequate. A decision was thus made to develop the LIMS internally, using the state convenience contract.

2) The quality and versatility of some hardware and software we were forced to accept in our automation/computerization effort.

We are now investigating the possibility of replacing the communication server and software.

MOST IMPORTANT ADDITIONAL NEEDS FOR 1995

1) People

More Regional Agronomists are needed to serve the needs of growers across the state.

2) Money

We need an increase in line items, particularly for (a) temporary wages, (b) building-related utilities, and (c) computerization efforts (e.g., telephone services, data circuit charges.)