CHOWAN RIVER BASIN REGIONAL COUNCIL

Edenton National Fish Hatchery

Edenton, NC

June 15, 1999

-MINUTES-

The meeting was called to order by Vice-Chairman Brewster Brown at 4:15 PM. Self-introductions were made (see Attachment A). Motion was made by Lee Wynns to approve minutes of April 13, 1999 meeting. Motion received a second and passed.

DISCUSSION/VOTE ON RESOLUTION

Vice-Chairman Brown read the resolution and opened the floor for any discussion. Bill Early spoke in opposition of the resolution. He took exception to the wording "compartmentalized" and "significant deterioration" in the resolution and questioned whether it was appropriate for the council to recommend this resolution. Vice-Chairman Brown reviewed the intent and charge of the council and stated that after his own research and discussion with the coordinating council, he determined that the council is acting within the guidelines of its bylaws. Councils can give advice to state, federal, and local agencies and local citizens. The question was asked as to why Nucor is so against doing an EIS. The time factor – EIS would hold up progress – and they (Nucor) feel that the permitting process would adequately address issues. Some in the group felt that the baseline/background data that would be provided by an EIS would prove to be helpful and needed years from now. Mr. Wynn expressed concern that we (the council) not be seen as "tree huggers" or that we are trying to make it difficult for Nucor. However, this resolution is our only way to let Nucor and DENR know that we want to err on the side of being sure about the health of our river.

Someone asked what impact this resolution, if passed, would have on the Nucor project. Vice-Chairman Brown stated that this resolution would have no impact, such as shutting down Nucor. Nucor has set their course and already invested too much time and money at this point to leave now.

Ernie Brown, VA Department of Conservation & Recreation, suggested that background information (minutes, etc.) be researched to back up what the council is stating in the resolution.

Lee Wynns made a motion to accept the resolution with a cover letter that includes name call vote. Mr. G. D. Perry seconded motion.

Roll Call Vote:

William Griffin, Jr.	Yes	Nan Laughton	Yes
Leo Wynns, III	Yes	Brewster Brown	No
Bill Earley	No	G. D. Perry	Yes
Bill Pless	No	John Carlock	Abstained

Motion carried. The resolution will be signed by Vice-Chairman Brewster Brown and Secretary Nan Laughton and forwarded to the Coordinating Council. A copy of the minutes will also be sent along with the resolution.

Vice-Chairman Brown reminded the council that anyone can present resolutions to the council and he extended the invitation to do same.

PRESENTATION/DISCUSSION OF DEMONSTRATION PROJECT SUMMARIES AND PROPOSALS

Three proposals were presented to the council. Vice-Chairman Brown reviewed proposal number one which addressed soil compaction problems at waste treatment plants in the Chowan Basin that land apply through irrigation. These fields need to be subsoiled at a minimum of twice a year for good water penetration, which results in no run off of wastewater in the Chowan Basin. Small municipalities can not afford the $8,000 piece of equipment needed to do the subsoiling. The proposal is that the council purchases the equipment and the equipment would then be available for use by all small municipalities in the Chowan Basin. Vice-Chairman Brown recommended that the council work with the Albemarle and Mid-East RC&D's in developing a plan to carry out this project.

Billy Griffin presented proposal number two, which addressed using GPS guided soil sampling and application of nutrients at prescription rates. The initial cost to grid soil samples and mapping runs around $8.50 per acre. These samples are taken on each 2.5-acre grid. Lime and fertilizer are applied using GPS information and trucks that apply individual nutrients based on each soil sample at recommended rates. This is precision application of nutrients that protects water quality. Many farmers can not afford to try this new precision sampling and application. A demonstration would be done on each farm not presently using GPS in the Chowan Basin. The council will supply the $8.50 per acre up to 25 acres if the farmer will apply nutrients based on the soil samples. This will demonstrate the new prescription application of nutrients and results will be less fertilizer applied and better water quality. The estimated cost of this project is $4,250.00.

Vice-Chairman Brown presented proposal number three, which recommended water sampling above and below a large intensive livestock operation on Potecasi Creek in Hertford County.

After discussion, it was the consensus of the council that we adopt the first two proposals and hold off on the third one at this time. Vice-Chairman Brown invited

anyone who would like to help get these proposals ready to contact Guy or Joan. Currently committee members are Marjorie Rayburn, Billy Griffin, Brewster Brown and Guy Stefanski. The proposals need to be ready to present to the Coordinating Council at their next meeting on September 24th.

Project Preparation Timeline:

Draft Proposals
Mailed out to full council for responses
Present to Council at August 5th meeting and vote on proposals

PLANS FOR NEXT MEETING

The next council meeting will be held August 5th at the Martin Community College-Bertie Campus in Windsor. We will be voting on project proposals.

There being no further business or discussion, the meeting adjourned at 6:15 P.M.

Respectfully submitted,

Nan Laughton
Recording Secretary

ATTACHMENT A

ATTENDANCE LIST

Nan Laughton	Chowan SWCD
John Stallings	Bertie Co.
Ernie Brown	Va Department of Conservation & Rec.
Marjorie Rayburn	NCCES - Chowan
Billy Griffin	NCCES - Bertie
Guy Stefanski	APNEP Staff
Randy Collins	NCCES - Gates
Bill Pless	Town of Murfreesboro-Hertford Co.
Patricia Piland	Gates County
G. D. Perry	Farmer - Colerain
John M. Carlock	Hampton Roads VA PDC
Brewster W. Brown	Hertford Co.
Lee Wynns	Town of Colerain
Bill Earley	County Manager - Hertford Co.

NC STATE UNIVERSITY *College of Agriculture and Life Science*

Department of Biological and Agricultural Engineering

Precision Agriculture:

A Comprehensive Approach

Precision agriculture is a popular new concept in production. Precision agriculture can be defined as a comprehensive system designed to optimize agricultural production. A truly comprehensive approach to precision agriculture begins with crop planning and includes tillage, planting, chemical applications, harvesting, and post harvest processing of the crop.

Objectives

Comprehensive precision agriculture has five major objectives:

1. Increased production efficiency
2. Improved product quality
3. More efficient chemical use.
4. Energy conservation.
5. Soil and ground water protection.

Keys to Success

To be successful, comprehensive precision agriculture relies on three key elements:

- Information
- Technology
- Management

Information is perhaps the modern farmer's most valuable resource. Timely and accurate information is essential in all phases of production from planning through postharvest. Information available to the farmer includes crop characteristics, soil properties, fertility requirements, weed populations, insect populations, plant growth response, harvest data, and post harvest processing data. The precision farmer must seek out and use the information available at each step in the system.

Modern technology in agriculture is the second key to success. Technology is rapidly evolving and the farmer must keep up with the changes that may be of benefit in his or her operation. The personal computer is one example of such technology. The computer can help the farmer organize and manage data more effectively. Computer software, including spreadsheets, databases, geographic information systems (GIS), and other types of application software are readily available. The global positioning system (GPS) has given the farmer the means to locate position in the field to within a few feet. By tying position data in with the other field data mentioned earlier, the farmer can use the GIS capability to create maps of fields or farms. Sensors are available or under development that can monitor soil properties, crop condition, harvesting, or post harvest processing and give instant results or feedback which can be used to adjust or control the operation.

Management, the third key to success, combines the information obtained and the available technology into a comprehensive system. Without proper management, precision crop production would not be effective. Farmers must know how to interpret the information available, how to utilize the technology, and how to make sound production decisions.

Methods

To practice precision agriculture, growers must select and use the necessary equipment and technology. There are a lot of equipment choices available to the modern grower. Equipment users should carefully evaluate the capabilities of and equipment before they purchase. For example, in chemical application, the goal is to deliver the material to the correct target at the proper rate. Errors in application rate should be kept as low as possible. By selecting equipment capable of high accuracy application, the grower has achieved the first step in implementing precision agriculture. The same concept is true in planting, tillage, harvesting and post harvest equipment decisions. Growers should not rush into a complete system until they have identified the elements that will benefit their farm.

With this background in mind, comprehensive precision agriculture system can be viewed in two phases.

- Site Specific Management
- Postharvest Control

Site specific management is the field phase of the production system. Once the necessary equipment and technology are in place, the farmer can decide to continue to manage the fields by the whole field approach or by a site specific approach. In whole field management, the field is treated as a composite area and decisions are based on the composite data for the entire field. In site specific management, the field is broken down into smaller grids and decisions are based on the requirements of each grid. GPS/GIS technology and variable rate equipment are used to apply inputs based on the grid requirements. By treating each grid according to its prescription, over application of chemicals and seed are avoided on areas where it will do no good. Areas that require the higher rates can still receive them.

Post harvest precessing is the second phase of the comprehensive approach. By using sensors to monitor the postharvest process, computers can be used to enhance the quality of the product or reduce energy requirements. The best quality product can be delivered to the buyer.

Summary

A truly comprehensive approach to precision agriculture must cover all phases of production from planning to post harvest. Information, technology, and management are combined into a production system that can increase production efficiency, improve product quality, allow more efficient chemical use. conserve energy, and provide for soil and ground water protection.

Prepared by:

Gary T. Roberson

Agricultural Machinery Systems Specialist

CHOWAN RIVER BASIN REGIONAL COUNCIL

PRECISION AGRICULTURE
DEMONSTRATION PROJECT

DRAFT PROPOSAL

I. PRIORITY PROBLEM

Precision agriculture is a comprehensive system designed to optimize agriculture production. This technology is being tried by some farmers in Bertie County and the Chowan River Basin. Precision agriculture technologies offer the greatest opportunity for increasing crop productivity and input efficiency while reducing the impact on the environment.

The initial cost of field mapping and GPS grid soil sampling is around $8.50 per acre. With the farm crises and low farm commodity prices, many farmers cannot afford to try this new technology. This demonstration project will allow farmers not presently using precision agriculture to try it on a field and compare it to standard applications that farmers are now using. This will demonstrate the new prescription application of nutrients with expected results of less fertilizer applied and higher water quality.

II. OPTIONS CONSIDERED

Applying nutrients not based on soil sampling or applying nutrients based on one sample for large acreage ???????????????

III. DISCUSSION of SELECTED OPTION/PROJECT ABSTRACT

- **Project Title:** Precision Agriculture in the Chowan River Basin
- **Lead Agency:** NC Cooperative Extension Service – Bertie Center
- **Goal:** To demonstrate precision agriculture soil sampling and application of nutrients
- **Objectives:**
  - Increase production efficiency
  - Soil sampling using 2.5 acre grids
  - Applying nutrients only needed by a given crop
  - Reduce nutrient loss from fields
- **Likelihood of Success:** This demonstration project will show the advantage and savings using precision agriculture.
- **Public Support:** Support from local agri-businesses, NC State University and local farmers.
- **Time & Resources Required:** Time will be required to inform farmers of the demonstration. Agri-business firms will be hired to map and soil sample fields using GPS. Calculations of savings will be run on all fields. Nutrients will be applied based on soil samples.

- **Cost-effectiveness:** Precision agriculture increases production efficiency while protecting soil and ground water by applying only nutrients needed for crop production.
- **Deliverables:** The Bertie County Extension Office and Colerain Peanut and Supply Company will be the delivering agencies. The Extension Office will provide education and the agri-business firm will do the service work. Results of the project will be recorded by both agencies and provided the Chowan River Basin Regional Council and other interested parties.

IV. DETAILED PROJECT DESCRIPTION/SCOPE of WORK

WHAT: This project will demonstrate to farmers in the Chowan River Basin of North Carolina the advantage of precision farming. Farmers that have not tried GPS soil sampling and application of nutrients will be offered the service on land up to 25 acres. Colerain Peanut and Supply Company will take the samples, map the fields and apply the nutrients based on the soil analysis. The Extension Office in Bertie County will calculate cost analysis on each field. Soil samples will be taken on a 2.5 acre grid. End results will be nutrients applied as recommended with reduction of runoff and leaching that reduces the impact on the environment. Paying the initial cost on limited acreage will show the farmers the advantage of precision farming and demonstrate increased production efficiency.

WHO: The project will be a joint effort between the NC Cooperative Extension Service – Bertie County and Colerain Peanut & Supply Company. The lead agency is the NC Cooperative Extension Service – Bertie Center with William J. Griffin , Jr. (252/794-5317) as the primary contact person.

HOW: Fields will be compared using standard soil sampling and nutrient application versus GPS grid sampling and nutrient application.

WHERE: The project will be located within the Chowan River Basin.

WHEN: Pending appropriate contract development, the project could start in September 1999 and run through May 2000.

PROJECT BUDGET: Contract with Colerain Peanut and Supply Company to map and conduct soil samples on 500 acres at $8.50 per acre equals a total cost of ~~$4,250.~~ 5K
extra for outreach/Ed. (flyers, leaflets) 750.

V. ACTIVITIES to MONITOR SUCCESS

The NC Cooperative Extension Office in Bertie County will monitor and compare results from each farm and field. Beef up this section

VI. PROGRESS REPORTS

Comparison results will be made available to the Chowan River Basin Regional Council. Results, along with a detailed analysis of comparisons, will be shared with participating farmers.

VII. REVIEW, EVALUATION and REDIRECTION

This demonstration project will be reviewed, evaluated and redirected (if necessary) by the Technical Committee of the Coordinating Council for the Albemarle-Pamlico National Estuary Program and members of the Chowan River Basin Regional Council.

VIII. BASINWIDE or REGIONAL APPLICATION

The results of this demonstration project can be transferable to other river basins with wide application. In part, the NC Cooperative Extension Service views this project as a "teaching/training demonstration project" to be applied locally and statewide.

IX. EDUCATION and OUTREACH:

This demonstration project will help approximately 20 farmers initially to see the benefits of using precision agriculture methodolgy. Final results will be shared with other farmers in the Chowan River Basin during educational meetings.

X. ENDORSEMENT by REGIONAL COUNCIL

This demonstration project was officially endorsed by members of the Chowan River Basin Regional Council on June 15, 1999 at a meeting in Edenton, NC.