

## **Conducting Applied Research with County Agents**

**Y. C. Newman**

Extension Forage Specialist  
University of Florida, Agronomy Dept., Gainesville, FL

The rationale of conducting forage applied research in cooperation with county agents is to have an on-site resource that would allow making inferences about a forage practice or treatment in addition to demonstrating a particular practice.

Non-replicated demonstration plots have been traditionally used in extension efforts involving forages. These demonstration areas or parcels are single, sole plots that showcase in many instances the latest in crop technology, allow for hands-on experience as well as direct contact with specialists and county agents. Single demonstration plots are a potent mean of conveying or illustrating a technique (such as the critical planting depth for bahiagrass or bermudagrass seeds, timing of fertilizer application, inoculation of legumes, stubble needed for a particular species, etc) but they are non-replicated and, therefore, lack error measurement and the control that is brought by replication. Demonstration plots, however, fall short in situations where you want to make generalizations, or draw conclusions based on data collected from those plots. To properly make an inference or estimate a relationship between two or more variables, a measurement of fluctuations in observations, or error, is needed (Montgomery, 1997). This error measurement is only achieved through replication.

The purpose of using replicated applied research in outreach settings in cooperation with county agents is not to substitute for basic research but to complement those efforts through outreach by addressing, in a scientific manner, pressing issues for ranchers and farmers. Core investigators may address similar topics; some of their objectives may include more intricate aspects of the research necessary to respond to many underlying questions that usually require more treatments or levels of the factor being studied thus requiring more human and monetary resources.

To be effective, the proposed applied research needs the participation of the county agent, the producer or cooperator, and planning and coordination from the forage specialist (Newman et al., 2006). They need to follow some guidelines which are crucial for this type of study to be successful. First, the protocol for research needs to be simple in plot and design layout. Where traditional research will procure as many replicates as possible, applied research in extension settings need to be kept, in many instances, to the minimum replicates. The resources and objectives are geared to comply with the necessary replication but because the priority use is for outreach, less would imply more efficient use of the resources; also, they would combine blocks for data collection and sections for demonstration. Second, the cooperator or producer where the trial is to be implemented needs to be reliable and committed to facilitate the resources (land, animals, machinery, etc) throughout the duration of the research. Third, a close follow-up is necessary with county faculty because county extension agents, on their day-to-day work, need

to multitask and cover a wide array of topics. Forage specialists must keep a close track of applied research progress, and coordination between agents and specialists is critical.

While addressing practical problems, applied research/demonstrations can serve multiple purposes within the outreach roadmap. This extension resource can be used for:

a) Demonstration of practices, b) on-site in-service training of agents, c) team teaching, with county faculty, in support of county Extension programs, d) at hand-resource for documentation of materials (photograph opportunity) to be used in educational programs (workshops, short courses, demonstrations, etc.), e) generation of extension publications, and f) generation of applied research publications. An example of such avenue for publications is the electronic journal Forage and Grazinglands, part of the Plant Management Network which targets applied issues in forage and grazing land production (Plant management network, 2007).

Participating agents in their second year have expressed that the applied research/demonstration setup has: a) provided “a tremendous amount of knowledge in the forages and research area”, b) generated applied research results that relates to their county vicinity, c) created the opportunity to show first hand the possibilities of substituting N fertilization with the implementation of clovers in the grazing program of the county, d) shown the possibly best adapted cool-season forages for the area, and e) most importantly, it has allowed them and the producers to be part of this process.

#### References:

Montgomery, D.C. 1997. Chp. 2. Simple comparative experiments. Design and analysis of experiments. 4<sup>th</sup> ed. John Wiley & Sons. New York.

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Plant Management Network 2007. <http://www.forageandgrazinglands.org>;