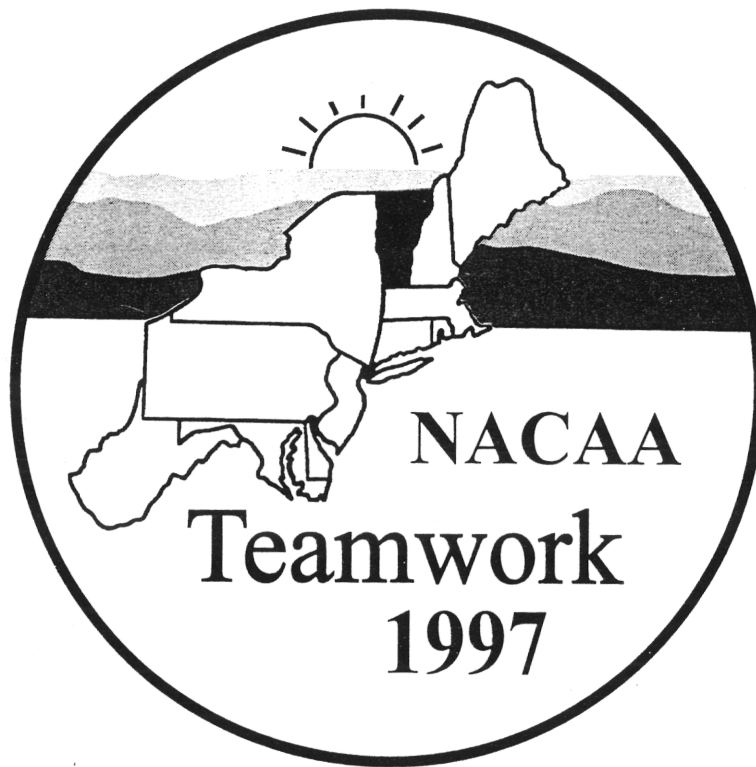


National Association of County Agricultural Agents



Proceedings

82nd Annual Meeting and
Professional Improvement Conference

July 13 - 17, 1997 Burlington, Vermont

MOBILE SOLAR POWERED LIVESTOCK WATERING SYSTEM

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Livestock grazing in riparian zones creates the potential for real and perceived conflicts. Current emphasis on riparian zone management and rehabilitation is focused on controlling livestock use in these highly visible areas. Fences are expensive to build and maintain and can impede wildlife, recreational use and travel. Miles of fences required may be inconsistent with the visual appeal of riparian zones. A socially acceptable and relatively low cost alternative is needed.

Objectives include (1) demonstration of the mobile solar powered livestock water system and temporary electric fence, (2) evaluation of the practicality and effectiveness of this off stream water source, and (3) to take advantage of the educational opportunities generated.

The mobile solar powered livestock water pumping system was effective in diverting livestock from riparian zones. Agency personnel, livestock producers and general rangeland visitors either participated in guided tours or observed the system and contacted me for more information.

EFFECT OF WATER SOURCE AND QUALITY ON WATER INTAKE AND PERFORMANCE OF STEERS GRAZING TALL FESCUE

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A 2-year grazing trial was conducted to determine the effect of water source (well water vs farm pond water) and quality on the performance of growing steers (initial 550 lb) grazing either endophyte-infected (E+) or endophyte-free (E-) tall fescue pastures.

Water was obtained from either a deep well or a pond with heavy cattle traffic. Water was measured into stock tanks and consumption was determined daily. Cattle were weighed and hair scored every 14 days. Water samples were collected and analyzed from both sources at the beginning and end of the study each year.

Well water met normal drinking water standards, while pond water exceeded acceptable limits for sodium, iron, and fecal coliforms. However, water intake, animal gains, and hair scores were not affected by water source. Cattle grazing E+ consumed more water, had lower ADG, and higher hair scores at the end of each season than cattle on E- pastures.

USING VOLUNTEERS IN EXTENSION FARM SAFETY PROGRAMS

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The goal of this research project was to identify, describe and collate Extension Farm Safety programs that use volunteers. Research findings demonstrate ways to deal with smaller budgets and fewer people, while maintaining innovative farm safety programs by using volunteers.

A survey was developed and mailed out during the first half of the project, with incoming data entered and collated into a master summary. The final report was written with graphics added during the final month of the project.

A cross-country trip involved traveling from Vermont to South to Delaware and West to Minnesota, with stops in each state. In each state, the local Extension Farm Safety Specialist provided an overview of the state's Farm Safety program. Additionally, I visited County Agents, local Farm Bureaus, Medical Center faculty, and the National Farm Medicine Center in Wisconsin.

PROPER PLANT TYPE PLANTING DATE, AND DOUBLE CROPPING OPTIMIZE PROFITABILITY OF THE STRAWBERRY PLASTICULTURE SYSTEM

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Annual strawberry plasticulture systems have shown high productivity under NJ conditions, however plant type and planting date research is needed to maximize profitability. Yield of fresh plants [multiple (MCF) and single (SCF)] was superior to plugs in 1995; in 1996 the MCF were highest when planted early and the plugs best in the late planting date; fresh and plugs all superior to dormants; MCF were comparable to SCF in 1995, and superior in 1996. Dormants had superior primary and average fruit weight; MCF plants had smallest fruit; plugs had consistently large fruit. Dormant plants were later fruiting in 1995. Earlier planting date was preferable for yield; later date for fruit weight and earliness. Yield of four vegetables where in the acceptable to high commercial range in 1995 and 96. Pepper yields and quality were superior in cool 1996 relative to hot/dry 1995; tomato and pumpkin performance was the opposite. Muskmelons were comparable for each year. Wet weather (1996) caused a pumpkin crop failure.

DEVELOPING ALTERNATIVE CROPS

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Farmers in irrigated areas of Oklahoma are searching for potential alternative crops to replace low profit agronomic crops. Adapting crops from other parts of the country or world to the local environment and farming situation is one method to develop alternative crops. Alternative crop development programs must provide for actual or potential markets as well as field research to collect data for making decisions on the suitability of the crop as an alternative. Profitability, local adaptation, potential pest problems and need for specialized equipment are important pieces of information needed for farmers to make decisions on alternatives. After 10 years' effort, two pepper crops appear to have potential as alternatives in Oklahoma. Both have required breeding and selection to develop good horticultural characteristics for mechanical harvest and to improve quality attributes to make the peppers competitive in the processing market. Cooperation with early adoption farmers willing to take calculated risks has been key to successful adaptation of the pepper crops

YIELD AND QUALITY OF DECEMBER STOCKPILED FESCUE AND ORCHARDGRASS CULTIVARS IN SOUTHERN OHIO

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Two Endophyte infected, nine low or endophyte free tall fescue (*Festuca arundinacea*, Schreb) and two orchardgrass (*Dactylis glomerata* L.) cultivars were evaluated for yield, crude protein (CP), ADF and NDF on 12/13/96 (planted 9/5/95). Each cultivar was replicated three times using a randomized complete block design. On 8/14/96, plots were fertilized with 150#/A 34-0-0 and stockpiling was initiated. Yields ranged from 0.810 tons dry matter (DM)/A to 0.233 tons DM/A with AU Triumph fescue significantly higher than 11 other cultivars ($P > F = .07$), LSD (0.05). Benchmark and Warrior orchardgrass had significantly higher CP (13.447% & 13.380%) than six of the tall fescue cultivars ($P > F = .08$), LSD (0.05). There were no significant differences in ADF and AU Triumph fescue had significantly higher NDF than 10 other cultivars. The two orchardgrass cultivars demonstrate the potential to stockpile orchardgrass for late autumn ruminant livestock grazing.

RENOVATION OF CHANDLER STRAWBERRIES ON PLASTIC MULCH

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Four methods of strawberry renovation were compared in a randomized complete block design at the Rutgers Research and Development Center near Bridgeton, NJ. The treatments compared were: mowing, thinning, mowing and thinning, and mowing with plastic mulch removal. These technologies were applied to a one year old 'Chandler' strawberry plot in early Summer. The test was set up to see which treatment yielded the largest berries the following year and to compare the marketable yields.

The results showed that thinning, or mowing and thinning were the best renovation treatments. Fruit size was not affected by the treatments. Removing the plastic mulch increased the total cull weight above the control of no renovation. Marketable yields were good in all treatments and maintaining 'Chandler' strawberries for a second harvest season seems acceptable.

SPRING NO-TILL ESTABLISHMENT OF ALFALFA IN FESCUE SOD

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Establishing no-till alfalfa into fescue sod has been accomplished in the past primarily following a fall burn-down herbicide program and sequential spring herbicide application prior to seeding. Spring burn-down applications as the only source of fescue control has received only minimal attention.

Herbicide plots were initiated to explore the feasibility of establishing alfalfa into fescue sod in the spring without the aid of a fall herbicide application. Eight different spring applied herbicide combinations were used in these plots during the 1995 & 1996 growing seasons. Each treatment was either a burn-down, or postemergence product, and replicated four times.

Chemical effectiveness was evaluated by taking alfalfa and fescue stem counts in each of the replicated plots. Statistical analysis was performed on the collected data.