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Poster Session Abstracts

Applied Research Category

IMPROVING THE PROFITABILITY OF SOYBEAN PRODUCTION IN SOUTHEAST MINNESOTA

Behnken*, L.M.¹, Arlt*, T.², Carlson*, B.³, and Schwartau*, B.⁴

¹University of Minnesota Extension Service, Olmsted County, Rochester, MN 55904-7947

²University of Minnesota Extension Service, Steele County, Owatonna, MN 55060-0890

³University of Minnesota Extension Service, Rice County, Faribault, MN 55021-6143

⁴University of Minnesota Extension Service, Dodge County, Dodge Center, MN 55927-0159

Soybean producers have raised questions and concerns about growing soybeans profitably in southeast Minnesota. The top concerns identified from 1998-2000 were:

1) Performance of Roundup Ready soybean varieties, 2) Using manure as a fertilizer in soybean, 3) Managing soybean cyst nematode and variety resistance, 4) Managing white mold in soybean, 5) Soybean response to potassium fertilizer, 6) Growing value-added soybean, 7) Raising organic soybean, and 8) Soybean root rots. In an effort to seek practical answers to these concerns, the University of Minnesota Extension Service and the Minnesota Soybean Research and Promotion Council joined efforts to develop and implement a research and educational program for soybean growers. The project featured a series of replicated and randomized cooperator assisted demonstration and research plots established throughout southeast Minnesota. Summer field days were held for producers at several of the project sites. The results of each research project have been published in a written report and distributed to approximately 1000 individuals each year. Power point presentations explaining the results of the project have also been given at numerous educational meetings throughout southern Minnesota.

IN-DEPTH FARM RENT & LEASING EDUCATIONAL PROJECT

Breece, Donald J.¹, Fleming, Robert D.²

¹S.W. District Specialist – Farm Management, Suite 208, 303 Corporate Center Drive, Vandalia, Ohio 45377.

²N.W. District Specialist – Farm Management, 952 Lima Avenue, Box C, Findlay, Ohio 45840.

The in-depth Farm Rent & Leasing Educational Project provided comprehensive, research based information to Ohio Agricultural Agents. Nearly one-half of the Ohio farmland is rented. Agents indicated that questions concerning the topic are most common and frequent among requests for farm management information. The project began with an e-mail survey of agents to determine needs and priorities for rental education. Extension publications and university research materials were collected from N.C. states. Twenty factsheets were written or are in the process of publication. A CD-Rom for agents was developed, and will be periodically updated, with information teaching outlines and reference materials including N.C.R. publications concerning farm rents and leasing. A two-day statewide inservice for Ohio agricultural agents was also conducted in April, 2001, featuring the latest research based information, computer software and teaching materials.

COMPOSTING RAINBOW TROUT WASTE AS A DISPOSAL ALTERNATIVE

Brewer,*R.N. Jr.

Towns County Extension Coordinator, Towns County Extension Service, P.O. Box 369, Hiawassee GA. 30546

The disposal of Rainbow trout waste can be problematic for the fish processor, regardless of their size. Composting offers a solution to this waste disposal problem.

The first of its kind in Georgia, this study takes waste which has traditionally been lost to disposal pit burial and transforms it into a usable and potentially profitable by-product.

Low maintenance and ease of operation makes this form of disposal attractive. The technology is similar to dead poultry composting and employs a three bin composter which can be constructed to fit the size needs of the processor.

Sawdust or, in this case, used litter from a swine operation is used as the bulking agent. The trout waste is then layered in and completely covered for composting. Additional moisture and aeration is added as needed.

This is an efficient means of disposal and can be easily adapted to any fish processing operation.

ADDING THE POWER OF REPLICATION THROUGH ON-FARM RESEARCH GROUPS

Christiansen*, A.P.¹, Burr, C. A.², Hejny, T. A.³, and Zoubek, G.L.⁴

¹University of Nebraska Cooperative Extension, Hamilton County, Box 308, Aurora, NE 68818

²University of Nebraska Cooperative Extension, Clay County, 111 W. Fairfield, Clay Center, NE 69833

³University of Nebraska Cooperative Extension, Fillmore County, 972 G. St., Geneva, NE 68361

⁴University of Nebraska Cooperative Extension, York County, 2345 Nebr Ave., York, NE 68467

Farmers and Extension Educators have pooled resources to take advantage of the research potential that exists on farms. This cooperative approach utilizes yield monitors to conduct replicated, large-scale field research on topics not currently under investigation by UNL. The group investigated the effect of chloride on stalk rot in corn during 2000. Fourteen farmers had 3 replications each of the following 3 treatments: 1) 73 lbs KCl, 2) 74 lbs K₂SO₄, 3) none. Twenty stalks per strip (840/treatment) were split and examined for stalk rot. Data was analyzed using a mixed procedure for differences in least square means. There was no effect of treatment on stalk rot (KCl=19%, K₂SO₄=19%, none=23%) and there was no effect on yield (KCl=191 bu/ac, K₂SO₄=190 bu/ac, none=190 bu/ac).

The group also tested the movement of pollen to answer the question, "is it possible to harvest corn to meet a contract specifying less than 1% Bt?" Three farmers planted a Bt corn variety through the middle of non-Bt fields, and one farmer planted yellow corn adjacent to white corn. Ten ears were collected from 50' intervals away from either side of the Bt strip or yellow corn, to a distance of 200', for a total of 80 ears per field. Grain was analyzed using the Eliza strip test for presence of Bt. Yellow kernels were counted on white corn ears, showing percent pollen contamination. There were no ears found with greater than .6% yellow contamination at 200' from the source of yellow pollen.

APOGEE™ WATER CONDITIONING TRIAL FOR APPLE

Cowgill*, W.P., Jr.¹, Compton, J.²

¹ Hunterdon County Agricultural Agent, Rutgers Cooperative Extension

4 Gauntt Place, Flemington, NJ 08822

²Plant and Soil Science Technician, NJAES, Rutgers Snyder Farm

140 Locust Grove Road, Pittstown, NJ 08822

Apogee® (BASF Corp.) is a new Plant Growth Regulator for fireblight suppression and vegetative growth control of apples allowing for a balance between canopy development and fruit production. The chemical ingredient, prohexadione calcium, blocks the synthesis of active gibberellins, the plant hormone that in part regulates shoot growth. The active ingredient in Apogee is calcium based, and therefore hard water should be buffered for Apogee applications. Calcium rich (hard) water if utilized in the spray solution can adversely affect performance of Apogee. Three water conditioning agents; Ammonium Sulfate (AMS), Quest and Choice, were evaluated for efficacy in overcoming hard water spray solution conditions and their ability to enhance the performance of Apogee. Hard water (calcium rich) was standardized with the addition of Calcium Chloride Flake (77- 80%) utilizing a Digital Titrator (Model #16900), Hatch Co. to calculate water hardness. Shoot growth was significantly reduced by all treatments compared to the Untreated Control. All water conditioning treatments significantly reduced shoot length (vegetative growth) as compared to the untreated control with no conditioning agent. All three water conditioning treatments, when combined with Apogee, reduced shoot growth 50% or greater. The test was considered definitive. The efficacy of Apogee™ can be greatly enhanced with the addition of water conditioning agents in high calcium hardness conditions.

RESULTS OF TASTE TESTING OF SWEET CORN AND SUPER SWEET CORN VARIETIES

Cummings*, Mickey P.

UGA Cooperative Extension Service-Union County, 185 Welborn Street, Blairsville, Ga. 30512

Union County Sweet Corn producers grow predominantly Silver Queen sweet corn. Their markets include local, Gainesville, Atlanta and

Asheville markets. These producers have been encouraged to start producing Super Sweet varieties of sweet corn. This has failed due to the fact that their markets demand Silver Queen. The question is "Should Union County producers be growing Super Sweets or Silver Queen?"

In the spring of 2000 5 varieties of Super Sweets were planted. The Super Sweets and Silver Queen were delivered to North Georgia Technical School and were cooked on August 22, 2000.

Corn buyers, Sweet Corn producers and consumers were invited to come to the Technical School on August 22nd. Participants were divided into 2 groups and then each participant was asked to sample 4 varieties and fill out a survey about each variety. The surveys asked participants to rank each variety from 1 to 9 for it's Sweetness, Flavor, Acceptability, Moisture, Hardness, Starchiness and Color. After each sample was tasted the participant was given a salt free soda cracker and 2 ounces of apple juice.

Data from these taste tests revealed that a variety called GSS-0966 was slightly preferred over the Silver Queen and others.

It was concluded that producers should produce varieties based on their market. Silver Queen locally and Super Sweets for distant markets.

EFFECT OF TILLAGE ON IRRIGATED CORN YIELD, DEPTH TO HARDPAN AND PLANT HEIGHT

Ethredge, *W. J. Jr., Nunnery, J. D.², Lee, R. D.³

^{*},² Univ. of Georgia, Seminole County Ext. Service, Donalsonville, GA

³Univ. of Georgia, Feed Grains Scientist, Tifton , GA

Seminole County has more corn acreage than any county in Georgia. It's predominately Center Pivot irrigated, and many growers are moving to conservation tillage. Questions arise as to what effect different types of tillage have and how we can cut fuel costs with less tillage. This preliminary study includes 4 tillage treatments in an undisturbed field of last years' corn stover and winter weeds. Treatments were Planting Only, Deep Ripping, Surface Tillage, Surface Tillage and Deep Ripping. At 50 days after planting plant height differences were noted with the plant only treatment shortest. Just prior to harvest, hardpan depth measurements were taken and where the ground was ripped it was 10 inches deep and otherwise it was 2 inches deep. Yields were similar

between treatments but the plant only treatment yielded less.

ALFALFA YIELD AND SOIL TEST RESPONSE TO POTASSIUM FERTILIZATION ON LOW K-TESTING SOILS*

Richard T. Koenig, James V. Barnhill and Jody A. Gale

Plants, Soils and Biometeorology Department and Cooperative Extension, Utah State University, Logan, Utah 84322-4820

Alfalfa (*Medicago Sativa*) is an important forage and cash crop in Utah and the Western U.S. In the past 20 years, incidences of potassium (K) deficiency in Utah alfalfa have increased. Building on previous K research, a K fertilizer rate study was conducted in 1999 and 2000 to determine alfalfa yield and soil and tissue test responses to fertilization on low K-testing soils. Potassium (as potassium chloride, 0-0-60) was applied at rates of 0, 200, 400, and 600 lbs. K₂O/acre in early spring to established alfalfa at one site in 1999, and applied at rates of 0, 100, 200, 400, and 600 lbs. K₂O in early spring 2000 at three sites. A split application treatment consisting of 300 lbs. K₂O/acre applied in early spring followed by 300 lbs. K₂O/acre after the first or second cutting was also included at all sites. The effect of fertilizer application rate on alfalfa yield and soil and tissue K concentrations was measured each year. Soil test K increased 1 part per million (ppm) for each 5 lbs. K₂O/acre applied at the Cache site in both years, and each 12.5 lbs. K₂O/acre applied at the Weber and Sevier sites in 2000. Alfalfa responded to K fertilization in all site-years, with yield responses ranging from 1.0 to 3.2 tons/acre. Yield was reduced with the 600 lbs. K₂O/acre single application rate at two of the three sites, while split application of the 600 K₂O/acre rate did not reduce yield. There were relationships between soil test potassium and a) relative yield and b) tissue potassium concentration at these sites, while the relationship between tissue potassium concentration and relative yield was poor. These results show that alfalfa may respond to high rates of potassium fertilizer on low K-testing soils. Relatively high rates of potassium are necessary to increase soil test potassium to adequate levels on low K-testing soils. Rates of potassium chloride fertilizer exceeding 400 lbs. K₂O/acre, however, may need to be applied in split treatments to prevent yield reductions.

INTEGRATED PEST MANAGEMENT TO CONTROL FLIES ON ARKANSAS DAIRIES

Griffin,* D.J.¹, Andrews, M.C.², Johnson, D.R.³, and Pennington, J.A.³

¹Searcy County Extension Office, P.O. Box 628 Marshall, AR 72650

²Van Buren County Extension Office, P.O. Box 157 Clinton, AR 72031

³University of Arkansas, Division of Agriculture Cooperative Extension Service, PO Box 391, Little Rock, AR 72203

An integrated pest management demonstration was conducted on four dairy farms in Searcy and Van Buren counties in Arkansas. Fly control on dairy farms becomes a problem due to flies developing a resistance to frequently used chemicals. With the realization of not being able to totally eliminate chemicals, an integrated approach to fly control was introduced on the dairy farms. Dairies 1 and 2 were located in Van Buren county where both herds milked 65 Holstein cows averaging 55 lbs. milk/cow/day and 60 lbs. milk/cow/day, respectively. Dairies 1 and 2 used methoprene at the recommended rate in the dairy feed. Dairy 1 also used one Cutter Gold ear tag, and one 8 oz bottle of Tempo[®] in the milking parlor. Dairy 2 used one 8 oz. bottle of Tempo[®] and Co-Ral[®] applied topically as an exit spray in addition to the methoprene. Eighteen weeks of fly control on dairy 1 cost \$6.37/cow and on dairy 2 cost \$6.67/cow (methoprene was fed to dry cows and heifers on dairy 2). Average fly control was 49.1 spots per card the first four weeks and 9.1 spots per card the last 8 weeks. Cow fly counts averaged 13.3 horn flies/cow and 1.4 face flies per cow on dairies 1 and 2; a control dairy herd using traditional chemical treatments for fly control and no methoprene averaged 58.2 horn flies/cow and 9.0 face flies/cow. Dairies 3 and 4 were located in Searcy County milking 60 Holstein cows averaging 55 lbs. milk/cow/day and 100 Holstein cows averaging 60 lbs. milk/cow/day, respectively. Dairies 3 and 4 both utilized fly parasites and two Cutter Gold ear tags per cow for fly control. Dairy 3 also used one 8 oz. bottle of Tempo[®] and dairy 4 used one and one-half 8 oz. bottles of Tempo[®] in the milking parlor. Cost of the 18 weeks of fly control on dairy three averaged \$7.05/cow and on dairy four averaged \$6.51/cow. Average fly control was 231 spots/ card for the first week, 75.5 spots/card weeks 2-11, and 21.2 spots/card weeks 12-16. Cow fly counts averaged 16.7 horn flies/cow and 2 face flies/cow on dairies 3 and 4 while a control herd

had 33.4 horn flies/cow and 4 face flies/cow. In summary, both methods used in this demonstration were both cost-effective and efficient in controlling flies during a typical fly season in Arkansas.

EVALUATION OF NOVEL SELF-FED SUPPLEMENTS

Beck, P. A.¹, Gunter, S.A.¹, Helms*, B.A.², and McCarter, D.M.³

¹Southwest Research and Extension Center, Hope, AR 71801.

²University of Arkansas, Cooperative Extension Service, Nashville, AR 71852,

³University of Arkansas, Cooperative Extension Service, Murfreesboro, AR 71958, and

Gypsum (calcium sulfate) is a by-product available from a local wallboard manufacturing plant. It does a satisfactory job of regulating the intake of self-fed supplements for stocker cattle; however, the high concentration of sulfur in gypsum can result in toxic concentrations in the diet (> 0.3% of dry matter). Toxic levels of sulfur result in an increased incidence of diarrhea and polioencephalomalacia. Sulfur and copper will ionically bond in the rumen to form copper sulfide. It is possible that copper supplementation might decrease the digestibility of sulfur and protect the cattle from health risk. Treatments were applied using a 3 x 3 Latin Square design with a three-week adaptation period before blood sampling. The three treatments were corn-based supplements constructed using one of the following intake regulators: 1) salt, 2) gypsum, or 3) gypsum plus copper carbonate. Blood samples and body weights were collected for serum and performance analysis. Blood serum copper concentration should be indicative of copper binding to sulfur. Results will be presented.

CONSERVATION TILLAGE, WIREWORM CONTROL ON STRIP-TILL PEANUTS

Jordan*, E.L.¹, Brown, S.L.²

¹ Cooperative Extension Service, Baker County, P.O. Box 220, Newton GA 31770

²Cooperative Extension Service, Department of Entomology, RDC, P.O. Box 1209, Tifton, GA 31793

Two bushels of oats were planted in November 1999.

Last Week of April 2000, the field was sprayed with 1 quart Roundup and 1 quart Prowl. The field was planted June 1, 2000. A strip-till planter was used. Six seeds per foot were planted of the Georgia Green variety. Five pounds of Temik was applied in furrow for thrip control. Three 36 row strips were sprayed broadcast with 2 quarts Chlorpyrifos for wireworm control. The field was planted in good moisture and irrigated the second day after planting to activate the Chlorpyrifos. The peanuts were worked in a professional matter. At 58 days after planting, Chlorpyrifos granules were applied to the test. All plots were separated to evaluate wireworm control and yield. The peanuts were harvested in late fall and the plot weights and grades taken. The results were given to Steve Brown for statistical evaluation. The wireworm pressure was light all year. The results from this test were not statistically different. Another test next year is planned.

HERBACEOUS WEED CONTROL IN NEWLY-PLANTED SLASH PINES

Kichler, J.M.^{1*}, Riddle, P.C.², Bridges, D. C.³

¹ University of Georgia Cooperative Extension Service, Laurens County Extension Agent, Dublin, GA 31040

² University of Georgia Cooperative Extension Service, Laurens County Extension Coordinator, Dublin, GA 31040

³ Department of Crop and Soil Sciences, University of Georgia, Griffin, GA 30223

Due to the low commodity prices in recent years, farmers and landowners have taken thousands of acres out of crop production and planted pine trees. It has been estimated that nearly a million acres of Georgia farmland may have been planted in pines in the past three years. These farmers and landowners should consider a weed control plan for sites taken out of agricultural production.

This study was done to evaluate the currently available herbicide treatments in slash pines *Pinus elliotii*. Sixteen treatments were replicated three times and arranged in a randomized block. The treatments consisted of labeled herbicides: Arsenal, Atrazine, Oust, Oustar, Pendulum and Velpar, applied at different rates and combinations. Each plot was 6 feet by 200 feet. The weed spectrum consisted of horseweed, cutleaf evening primrose, yellow nutsedge, carolina geranium, and coffee senna. Stocking and survival rates were taken of each plot. Seedling height

and caliper measurements were taken on 10 seedlings in each plot.

Data shows that slash pines were sensitive to higher rates of Arsenal. This was evident in visual injury, survival, height, and diameter data. Weed control was better with tank mixes than with single component treatments. Survival was lower in the untreated checks and in the plots where higher treatments of Arsenal were used. However, the magnitude of differences was not as great as would be expected under more normal climatic conditions.

COMPARISON OF SOILBORNE DISEASE CONTROL PROGRAMS IN PEANUT

Komar*, S.J.¹, Wigley, P.D.¹, Kemerait, B.C.²

¹Calhoun County Extension Service, The University of Georgia, Morgan GA 31766. ² The University of Georgia, Tifton GA 31793.

Experiments were conducted to evaluate four fungicide programs for soil borne disease control in peanut. Abound, Folicur, Moncut, and Montero programs were used during the 2000 growing season in Calhoun County, Georgia. Among treatments, Abound provided greater control of peg, pod and limb rot ($P < .05$). No differences were observed in leaf spot control. White mold pressure was low (< 1 hit per 100' of row) in all treatments. Abound provided the greatest increase in yield. All other treatments performed the same as the control (*chlorothalonil* alone). Similar results were obtained in a non-replicated study conducted in 1999.

FESCUE RESPONSE TO VARIABLE RATES OF NITROGEN FERTILIZATION

Little*, R.C.¹, McCutcheon*, J.², Penrose*, C.³

¹County Agriculture and Natural Resources Agent, The Ohio State University, Guernsey County, 1112 Wheeling Avenue, Cambridge, Ohio 43725

²County Agriculture and Natural Resources Agent, The Ohio State University, Perry County, 104 South Columbus Street, Somerset, Ohio 43783

³County Agriculture and 4-H Agent, The Ohio State University, Morgan County, 6AW Main Street, McConnellsville, Ohio 43756

Nitrogen fertilization is essential to maximize production of intensively managed grass swards. The current economic and environmental cost of nitrogen fertilization are major factors influencing farm profitability and water quality. The objectives of every

forage producer are to apply nutrients efficiently to maximize forage production while minimizing risks to the environment. Our objective in this study was to evaluate three levels of nitrogen fertilization on fescue: 125, 100, and 75 pounds of actual nitrogen per acre and control plots. Nitrogen was split applied, half after first cutting and the remainder in August. All plots received recommended levels of phosphorus and potassium, according to soil tests. The results indicated that on these plots in year 2000 we would have maximized our profits per acre by applying only 75 units of nitrogen per acre.

EVALUATION OF INSECTICIDE BAITS AGAINST RED IMPORTED FIRE ANTS IN SOUTHERN ARKANSAS

Loftin, K.M.¹, Shanklin, D.R.², and Gavin, J.C.³

¹Fire Ant Management Specialist, Environmental and Natural Resources Section, University of Arkansas Cooperative Extension Service, P.O. Box 391, Little Rock, Arkansas, 72203

²Fire Ant Management Specialist, Environmental and Natural Resources Section, University of Arkansas Cooperative Extension Service, P.O. Box 3468, Monticello, Arkansas, 71656

³County Extension Agent-Agriculture, University of Arkansas Cooperative Extension Service, Agriculture Building, Warren, Arkansas, 71671

The efficacy of Distance® fire ant bait (rate = 1.0 and 1.5 lb./acre, 0.5% pyriproxyfen), Amdro® fire ant bait (rate = 1.0 lb./acre, 0.73% hydramethylnon), Award™ fire ant bait (1.0 lb./acre, 1.0% fenoxycarb) and Distance® fire ant bait (rate = 1.0 lb./acre, 0.5% pyriproxyfen) with an Orthene® TTO spray (97% acephate) follow-up treatment against red imported fire ants (*Solenopsis invicta*) was evaluated in southern Arkansas. Efficacy was determined by collecting foraging red imported fire ants with bait stations from the various treatment plots at 0, 3, 15, 28, 58 and 114 days post-treatment. At day 3, Amdro® demonstrated the highest level of control, followed by Distance®, and Varsity™. Results from Award™ did not differ significantly ($p = .05$) from the control at day 3. Amdro®, Distance® (1.5 lb./acre) and Distance® (1.0 lb./acre) plus Orthene® TTO achieved the greatest percent control throughout most of the study. However, by day 114 Distance® (1.0 lb./acre), Distance® (1.5 lb./acre), Distance® (1.0 lb./acre) plus Orthene® TTO, and Award™ were the only treatments that showed significant reduction when compared to the control.

DISTRIBUTION OF THE RED IMPORTED FIRE ANT, *SOLENOPSIS INVICTA* BUREN (HYMENOPTERA: FORMICIDAE) UNDER VARYING CROPPING PRACTICES

Manley*, D. G.¹, Bauer, P. J.², Busscher, W. J.², and Frederick, J. R.³

¹Department of Entomology, Clemson University, Pee Dee Research and Education Center, 2200 Pocket Road, Florence, SC 29506

²USDA, ARS, 2611 W. Lucas Street, Florence, SC 29502

³Department of Crop and Soil Environmental Science, Clemson University, Pee Dee Research and Education Center, 2200 Pocket Road, Florence, SC 29506

The agroecology team at Clemson University's Pee Dee Research and Education Center set out to determine the effects of various cropping practices on the environment by splitting a 14 acre field down the middle and farming one half using conventional practices and the other half using innovative practices. Conventional practices included disking and cultivating, bulk soil sampling, wide rows, and conventional varieties. Innovative practices included no surface tillage, precision soil sampling and fertilizer application, narrow rows, and transgenic varieties. One portion of this project was to determine the effects of the various cropping practices on mound size and distribution of the red imported fire ant, *Solenopsis invicta* Buren. By mapping all mounds in the field using GPS, over time, preliminary results show that the innovative cropping practices, while beneficial to the environment, result in increased fire ant density. Colony size is also larger under the innovative practices, as determined by soil disruption.

EVALUATION OF A YEAR LONG WEED CONTROL PROGRAM FOR CONTAINER GROWN ORNAMENTALS

Mickler* K.D.¹ and Ruter, J.M.²

¹Grady County Cooperative Extension Service, University of Georgia, Cairo, Ga, 31728

²Department of Horticulture, University of Georgia, Tifton, GA 31793

This study evaluated two weed control programs; Regal 0-0 followed by RegalStar G, and Gallery 75DF mixed with Ronstar 50WP followed by Snapshot 2.5 TG. On February 8, 1999 and February 9, 2000 # 7 plastic containers were planted with *Lagerstroemia*

indica x *fauriei* 'Tuscarora' and *Magnolia grandiflora* 'Mgtig', respectively. The following herbicide combinations were applied February 15 and October 15, 1999 and 2000: Regal 0-0 or Gallery 75 DF mixed with Ronstar 50 WP. On April 15, June 15, and August 16, 1999 and 2000 these herbicide combinations were applied: RegalStar G (following Regal O-O) and Snapshot 2.5 TG (following Gallery + Ronstar). Plants were arranged using a completely randomized block design with four replications each having five samples per replication. Visual ratings for percent surface weed coverage (1 = 0% surface weed coverage; 2 = less than 26%; 3 = 26 to 50%; 4 = 51 to 75%; and 5 = 76 to 100%) were performed at 30 and 60 days after treatment (DAT). Weeds were harvested every 60 DAT for dry weights. Percent surface weed coverage and weed dry weights were different for both herbicide programs when compared with the control in 1999 and 2000. Regal herbicides provided the best weed control in 1999. There were no differences between the two weed control programs in 2000.

ORGANIC MANAGEMENT OF TURFGRASS: A COMPARISON OF COMPOSTS IN MONROE, NASSAU, TOMPKINS, AND TIOGA COUNTIES

Lamboy, J.¹, Grant J.¹, Eshenaur, B.², Nelson*, W.³, Yeh, T.⁴

¹Extension Associates, New York State IPM Program, NYS Agriculture Experiment Station, Geneva NY 14456

² Cornell Cooperative Extension, Monroe County, 249Highland Ave. Rochester NY 14620

³ Cornell Cooperative Extension, Chemung County, 425 Pennsylvania Ave., Elmira NY 14904

⁴ Cornell Cooperative Extension, Nassau County, 1425 Old County Road, Building J. Louise Spangle Ext., Plainview NY 11803

The application of composts for improvement of athletic fields is being demonstrated in the New York counties: Monroe, Nassau, Tioga, and Tompkins. Several composted materials were applied at varied rates in the spring and fall of 2000. Turfgrass quality, soil nutrients, disease suppressiveness, nematode populations and pest occurrence are being monitored. Significant differences among treatments were not seen in the first season, but are expected within the next two years. Valuable information was gained in 2000 on application techniques.

Cooperative Extension stakeholders ask Cooperative Extension offices for organic turf

maintenance suggestions. The value of active organic matter, such as composts containing beneficial microbes and plant nutrients has long been accepted in production horticulture and vegetable gardens. However, protocols must be developed for the use of composts for lawns and athletic fields. Studies at Cornell have indicated advantages in turfgrass disease suppression with specific composted materials. The main goal of this project is to demonstrate the long-term effects of topdressing lawns and athletic fields with active composts. In the process, we will compare local and regional compost products, rates, and application techniques.

Objectives: (Evaluate the effects of topdressing with composts from varied sources in a natural organic lawn care program. (Incorporate NOFA guidelines and suggestions from resources such as North Country Organics and Rodale Press into a simplified format for organic IPM of turfgrass in New York conditions. (Develop an integrated demonstration program that links research faculty from Cornell University, extension educators, and industry innovators.

The project was successfully initiated in 2000. The most significant result to date has been improved information on application techniques. We expect clear differences in turfgrass quality, based on compost materials and application rates, will become evident in the second or third year.

STABILITY OF SOIL TEST pH, PHOSPHORUS AND POTASSIUM IN A GRID SOIL TEST SYSTEM

Prochaska, Steven C.

Associate Professor and Extension Agent, Ohio State University Extension, 117 East Mansfield Street, Bucyrus, OH 44820

Grid soil sampling (GSS) has recently been implemented by a number of Ohio farmers with the purpose to gather soil test information on small areas of a field. By GSS, field points are geo-referenced thus permitting mitigating treatments of fertilizer or lime to be applied. Further, by GSS, geographic information systems (GIS) can be built by overlaying yield maps, soil type maps, topographic maps, etc. Traditional agricultural crop soil tests (most were of 10 acres in size or larger) and their concomitant results were often quite variable. Thus GSS on .33 acre grids was conducted to examine the stability of soil test P, K, and pH. Variable rates P and K (low 200 lbs./acres to 500 lbs./acre) of 18-46-0 and 0-0-60 were applied 4/23/97 after initial grid soil testing. Six grids were

randomly selected from 15 total grids to be further analyzed. Soil samples were taken in the middle of the grid (4 soil probes 8" deep around the all-terrain vehicle equipped with global positioning system equipment) for each test in 1997 and 1998. P soil test levels went up in every grid; K soil test levels actually went down in 3 grids. Average phosphorus values went up 13.3 ppm P/acre and average potassium values went up by 14 ppm K/acre in the area of variable rate fertilizer applications. The increase in P was significant. Soil pH did not change significantly. GSS may allow for more precise applications of fertilizer and lime and thus better protect the environment while improving farm profitability.

TEMPERATURE BASED PASTURE FERTILIZATION FOR EARLY FORAGE PRODUCTION IN COOS COUNTY, OREGON

Ruddell, A.P.¹ and Hart, J.M.²

¹Oregon State University Extension Service, 290 N. Central, Coquille, OR 97423

²Oregon State University Extension Service, 3017 Ag Life Sciences, Corvallis, OR 97331.

Forage production is of primary importance to Oregon's livestock enterprises and agricultural economy. Livestock producers traditionally apply a single application of nitrogen (N) fertilizer to pastures just prior to peak growth. The problem is that additional forage is not needed during peak growth but is desirable earlier in the grazing season. Early forage production would extend the grazing season and thus reduce supplemental feeding. Studies in Europe, the United Kingdom, and Western Canada found increased early pasture forage production by timing the first N application according to cumulative heat units starting January 1. Nitrogen was applied when air temperatures above 0 C from January 1 reach a total of 200 C (T-Sum 200). Our objective was to determine whether or not this method would work in coastal southwestern Oregon. Treatments were 1) 60 lb./a N as urea (46-0-0) applied at T-Sum 200, 2) a later (traditional) application, and 3) a no N control. Plots were clipped to simulate grazing. Forage was economically produced by the early N application, at less than half the cost of comparable hay. A significantly higher quantity (1024 lb. DM) and quality (10.5% CP) of forage was produced from the T-Sum 200 application than from traditional fertilizer timing. Application of N at T-Sum 200 increased early forage production and increased the length of the grazing season.

PRELIMINARY LEAFHOPPER SURVEY IN LUMPKIN AND WHITE COUNTY, GEORGIA VINEFERA VINEYARDS

Sheppard*, G.A.¹, Harris, J.M.², Moore, L.M.³, Horton, D.H.⁴, and Smith, C.S.⁵

¹Lumpkin County Extension Coordinator/County Agricultural Agent, University of Georgia Cooperative Extension Service, Hoke Smith Building, Athens, GA 30602

²White County Extension Coordinator/County Agricultural Agent, University of Georgia Cooperative Extension Service, Hoke Smith Building, Athens, GA 30602

³Graduate Assistant, Warnell School of Forest Resources, University of Georgia College of Agriculture and Environmental Sciences, Athens, GA 30602

^{4,5}Department of Entomology, University of Georgia College of Agriculture and Environmental Sciences, Athens, GA 30602

Pierce's Disease (PD) is a serious bacterial disease of grapes. PD-infected vines serve as disease reservoirs for leafhoppers to move PD from vine to vine. *Xylella fastidiosa*, the causal organism, is a xylem-limited bacterium. Leafhoppers of several species are the key vectors for *X. fastidiosa*. PD-infected vines often become unproductive and die within two to three years. PD is endemic in the Southeast on native grape species that have natural resistance to the pathogen. Unfortunately, the European wine grape, *Vitis vinifera*, is extremely sensitive to PD. A small wine grape industry has established itself in North Georgia's upper piedmont and mountains, centering primarily in Lumpkin and White counties. It has been presumed that reduced abundance of key leafhopper vectors in the cooler regions of the state would result in lower PD risk to the vines. The leafhopper fauna of North Georgia grapes have not been studied. A leafhopper survey was conducted in two vineyards in White and Lumpkin counties. Trapping was conducted by placing six 3 1/2" x 5" yellow sticky traps in two vineyard blocks, where they remained for one week. From this preliminary assessment three species of leafhoppers were identified. These included *Homalodisca coagulata* (glassy-winged sharpshooter), *Graphocephala coccinea* (scarlet-green), and *Draeculacephala portola* (no common name).

This study will be followed by a more comprehensive multiple-year survey to establish the abundance of leafhoppers in North Georgia.

COMPARISON OF TEMPERATURE MONITORING METHODS FOR GDD ACCUMULATION

Suchanic, *D.J., Caron, D.M.¹, Richardson, M.L.²

*County Agricultural Extension Agent, Penn State Cooperative Extension of Montgomery County, 1015 Bridge Road, Suite H, Colledgeville, PA 19426-1179

¹Extension Specialist, Department of Entomology and Applied Ecology, University of Delaware, 250 Townsend Hall, Newark, DE 19717-1303

²Science and Engineering Scholar, Department of Entomology and Applied Ecology, University of Delaware, 250 Townsend Hall, Newark, DE 19717-1303

Growing degree-days (GDDs) are a tool to measure accumulated heat units. We can use GDD units in integrated pest management (IPM) programs (Caron 1999). Accurate measurement of temperature assists in detection and monitoring of pests and in following their population growth. GDDs are a highly accurate measure of heat accumulation and much better than relying on traditional calendar date since weather varies from year to year. With a cooler year, an insect will not develop as rapidly and may not develop until later in the season than during a warmer year. Using a pest's temperature-driven rate of development to time control measures allows more accurate timing of spray applications (Lehman, 1992) optimizing pesticide application when the pests are more vulnerable (Gempler's, 1999).

There are many different instruments/services that can be employed to calculate and measure GDDs. This study describes several instruments and services used by cooperators in Delaware and Southeast Pennsylvania in a cooperative ornamental pest IPM program. Data was gathered and analyzed through comparative use of several instruments/services at the University of Delaware and by professionals at Keystone Tree Experts in Doylestown, PA and Walter's Nursery in Point Pleasant, PA.

Instruments used in the study were: Wescor Biophenometer Datalogger, Avatel Harvest Guard, Avatel Datascribe Junior, The Davis Monitor II and Skybit (weather information service).

USING A CRIMSON CLOVER COVER CROP AS A NITROGEN SOURCE FOR STRIP-TILL COTTON

Tucker*, J.B.¹, Harris, G.H.¹

¹Cooperative Extension Service, College of Agricultural and Environmental Sciences, University of Georgia,

Athens, GA 30602

Conservation tillage cotton continues to increase in Georgia and the Southeast. Most strip-till cotton growers use small grain winter cover crops because they are inexpensive to establish and easy to control in the spring. Even though legume cover crops can provide valuable nitrogen, they are used to a much lesser extent. Reasons for this include the higher cost of establishment, more difficulty controlling in the spring and a fear of creating or aggravating nematode problems. The objective of this study was to evaluate an early maturing legume cover crop that would be easy to control in the spring, has the potential to reseed, and will serve as a nitrogen source for cotton.

An on-farm research study was conducted between 1997 and 2000 in Cook County Georgia. Soil type was a Tifton sandy loam and the site was non-irrigated. AU Robin crimson clover was seeded in Fall 1997 using a no-till drill provided by the Natural Resources Conservation Service. After the clover reached physiological maturity in late-April 1998, cotton was planted using a strip-till planter. Replicated plots were established to evaluate sidedress N rates of 0, 30 and 60 lb. N/a on cotton yield. In 1998 following on year of clover, the optimum sidedress N rates was 30 lb. N/a.

Due to a poor cotton stand as a result of a spring drought, the study was not repeated in 1999. The clover had reseeded, however, and reseeded again during the winter of 1999/00. Therefore the study was repeated in 2000. This time, after three years of clover, the optimum sidedress N rate was 0 lb. N/a most likely due to a buildup of residual N in the soil organic matter. Other observations during the study included the ease of control of the clover in the spring and no extraordinary weed control problems. In addition, no problems with nematodes were observed during all three years of the study.

EFFECTS OF LIME AND RE-CAL 2 ON SOIL PH AND RYEGRASS FORAGE YIELD

Twidwell, *E.K.¹, Devillier, J.E.¹, and Funderburg, E.R.²

¹Extension Specialist and Extension Agent, respectively, LSU AgCenter, Baton Rouge, LA 70894-5100

²Soils Specialist, The Noble Foundation, Ardmore, OK 73402

A study was initiated in the fall of 1999 to determine the effects of agricultural limestone and Re-Cal 2 on soil pH and ryegrass (*Lolium multiflorum* L.)

forage yield. The study was conducted at the Idlewild Research Station located near Clinton, LA. Re-Cal 2 is a by-product liming material from a local chemical company (Novartis). This material is given away at no charge to producers. The calcium carbonate equivalency (CCE) of the agricultural limestone was 102% and the CCE of the Re-Cal 2 was 77%. Both products were applied at rates of 0, 1, 2, and 3 tons per acre. The treatments were replicated 4 times each in a randomized complete block design. The products were surface-applied and not incorporated. Both the Re-Cal 2 and agricultural lime increased soil pH. Agricultural lime reduced soil acidity more quickly than Re-Cal 2 in the samplings which occurred 1 month and 3 months after application. Both products showed the same liming benefits in the sampling, which occurred 7 months after application. The total harvest yields of ryegrass showed no statistical differences among treatments. The Re-Cal 2 material has positive benefits for producers in the area, especially since it is given away at no cost by Novartis.

COMPARISON OF LEAF SPOT CONTROL PROGRAMS IN PEANUT

Wigley*, P.D.¹, Komar, S.J.¹, Kemerait, B.C.²

¹Calhoun County Extension Service, The University of Georgia, Morgan, GA 31766

²The University of Georgia, Tifton, GA 31793

Field experiments were conducted to evaluate three early season fungicide programs for leaf spot *cercospora arachidicola* control in peanut. Bravo (*chlorothalonil*) BravoKocide (*chlorothalonil+copper hydroxide*) and Tilt-Bravo (*chlorothalonil+propiconazole*) were applied during the first two fungicide sprays of a conventional Bravo-Folicur eight spray fungicide program. All three programs provided significantly greater ($P=.05$) control of leaf spot than the non-treated plots resulting in as much as 70% less defoliation. Among treatments, Tilt-Bravo and Bravo alone provided significantly greater leaf spot control than Bravo/Kocide. Future research is needed to determine the effects of early season fungicide tank mixes on yield and grade.

MAGGOTS FOR LUNCH... NO MORE

Zilliox, L. J.*

University of Minnesota Extension Service, Douglas County

720 Fillmore Suites B90, Alexandria, MN 56308-1763

Apple maggots are a major insect problem for many homeowners. The few apple trees in their backyard are attacked relentlessly throughout the summer. Spraying insecticides has been a chore and not always that successful.

An applied research project is looking at applying plastic bags over the apples to prevent the laying of apple maggot eggs. The results from over a thousand bagged apples have shown that it effectively prevents apple maggot damage. Several different types of plastic bags have been used in the project. Care must be used in applying the bags as several varieties are easily knocked off.

Homeowners can now bag, in a relatively short time, the number of apples they will need for apple pies and other apple treats and be assured that they will have a quality apple in the fall. The rest of the apples can remain on the tree, but should be picked up and discarded when they fall off to prevent the build up of apple maggots in the area.

This project has produced a video demonstrating the process. It will be distributed through the University of Minnesota Extension Service, Distribution Center. It is number AG-VH-7655.