FROM THE GROUND UP

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# AGRONOMY NEWS

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## SHANAHAN ON SABBATICAL

Yes, John Shanahan has temporarily jumped ship. He will be on sabbatical from January through June 1997, and Jessica Davis will be filling in as extension coordinator for the department. If you have questions you'd like to ask John, that's tough, he's not available! Here's a list of who to call with your crop-related questions:

Forages - Dan Smith
970/491-6371
Cropping Systems - Gary Peterson
970/491-6804
Corn - Gary Peterson
970/491-6804
Sunflower - Ron Meyer
719/346-5571
Millet - Gary Peterson
970/491-6804
David Baltensperger
308/632-1261 (NE)
Small Grains - Jerry Johnson
970/491-1454
Jim Quick
970/491-6501
Plant Physiology - John Hendrix
970/491-5124

☛Davis

## KIRK IVERSEN TO COORDINATE MANURE PROJECT

Kirk Iversen has been hired as the research associate for the Sustainable Agriculture project on feedlot manure management. Kirk has a B.S. from California State-Fullerton and an M.S. from Penn State. He was a research assistant at Penn State on the Chesapeake Bay Project which aimed to improve nutrient management on farms in Pennsylvania and reduce nutrient loss into the Chesapeake Bay. Kirk has also served as extension agronomist with a USAID farming systems project in Swaziland and as soils instructor at Penn State. Kirk brings a breadth of experience which will be of great benefit to our manure management program. He is married and enjoys bicycling and volleyball. Welcome, Kirk! ☛Davis

Colorado State University

## USDA'S ENVIRONMENTAL QUALITY INCENTIVES PROGRAM (EQIP)

The '96 Farm Bill established EQIP in order to combine the functions of the Agricultural Conservation Program, Water Quality Incentives Program, Great Plains Conservation Program, and the Colorado River Basin Salinity Control Program. The purpose of this program is to assist crop and livestock producers in dealing with environmental and conservation improvements on farm. EQIP is funded at $130 million in FY96 and $200 million annually for the following six years. Livestock related conservation programs will receive 50% of the funding. This portion of the '96 Farm Bill:

***Livestock related conservation programs will receive 50% of the $130 million in the EQIP program in FY96.***

- Establishes conservation priority areas in cooperation with state and federal agencies and with the state technical committees.
- Gives higher priority to areas where state or local governments offer financial or technical assistance or where agricultural improvements will help meet water quality objectives.
- Provides for five to 10-year contracts for technical assistance and for payments of up to 75% of the costs of conservation practices.
- Exempts large livestock operations from eligibility for cost-share assistance for animal waste management facilities but does make them eligible for technical assistance.
- Requires activities under the contract to be implemented according to a conservation plan.
- Limits total cost-share and incentive payments to any person to $10,000 annually and to $50,000 over the course of the contract.

NRCS will implement the EQIP program. However, local priorities for cost sharing will be established by work groups convened by the Soil Conservation Districts. Cooperative Extension does not have a mandatory role, but is considered to be a partner in the process. To fulfill this role we must be "at the table" when local priorities are set. Our place may be to help facilitate discussions or as technical support. I would encourage all County Staff to find out what is going on in your local SCD and offer support. The Colorado Association of Soil Conservation Districts has designed 12 area meetings to help build local conservation partnership groups. These will be all-day meetings he from 9:00 am to 4:00 pm. Extension Staff are welcome and encouraged to attend one of the meetings in your area.

AREA TRAINING FOR LOCAL CONSERVATION GROUPS

| | |
|---|---|
| La Junta | February 5, 1997<br>Quality Inn<br>Contact: Don Hardin |
| Canon City | February 4, 1997<br>Canyon Inn<br>Contact: Bob Miner |
| Durango | March 12, 1997<br>Rio Grande Best Western<br>Contact: Lee Campbell |
| Alamosa | March 6, 1997<br>Holiday Inn<br>Contact: Gerald Mathes |
| Greeley | March 13, 1997<br>"The Bunkhouse"<br>Island Grove Park<br>Contact: Richard Foose |
| Glenwood Springs | March 5, 1997<br>County Courthouse<br>Commissioners' Room<br>Contact: Willa Holgate |
| Craig | February 27, 1997<br>Holiday Inn<br>Contact: Charlie Sloan |
| Flagler | February 25, 1997<br>Senior Center<br>Contact: Randy Loutzenhiser |
| Simla | February 12, 1997<br>Old Waterbed Company Off.<br>Contact: Bob Cordova |
| Montrose | March 13, 1997<br>Friendship Hall, 1001 N. 2nd<br>Contact: Fred Miller |
| Sterling | February 12, 1997<br>Ramada Inn, I-76 and Hwy<br>Contact: Harley Ernst |

Denver February 24, 1997
Plains Conservation Center
21901 E. Hampden
Contact: Dan Parker

☛Waskom

## DAVIS WINS AWARD FOR NITROGEN GAME

Those of you who attended the 1995 Integrated Crop Management Workshops in La Junta or Montrose, the 1996 Nitrogen and Irrigation Management Workshop in Alamosa, or the 1996 Field Day at ARDEC may have already had the opportunity to play (or watch someone else play) the nitrogen cycling game developed by Jessica Davis. The game is a cross between Chutes and Ladders and Twister and teaches the concepts of nitrogen transformations and losses to groundwater, surface water, and air. The goal of the game is to be transformed from organic nitrogen to nitrate and ultimately to make it into the crop without being lost to air or water. The game won an award in the Educational Materials Awards Program at the American Society of Agronomy meeting in Indianapolis this past November. Congratulations, Jessica!

***A new fact sheet is available entitled, "Horse Manure: The Renewable Resource."***

## NEW HORSE MANURE FACT SHEET AVAILABLE

Jessica Davis and Ann Swinker have recently completed a fact sheet on horse manure management which may be useful to many of you. The fact sheet is included on the newly updated CD-ROM, or can be accessed on the extension webpage (http://www.colostate.edu/Depts/CoopExt/), or can be sent to you from the Resource Center (970-491-6198). Thanks to Larry Benner, Ron Jepson, and Dave McManus for reviewing the fact sheet, and to Debbie Weitzel for preparing it for publication!
☛Davis

## SOIL TEXTURE

Soil texture is an important part of any soil test. Along with nutrient analysis, texture helps to determine how fertilizers may be applied, whether water will be retained by the soil or not, or what types of crops may be grown effectively. Soil texture may be tested using several different methods. The easiest method is to estimate textures by placing the soil in the hand and determining how gritty or smooth the soil feels. With the soil wet, a ribbon can be produced using the thumb and forefinger. The length of the ribbon can determine how much clay the sample contains. Gritty samples can range from sand to sandy clay. Smooth textures can range from silt loams to clays.

Another technique to determine textures is by using the hydrometer method. Soil is shaken with a dispersing agent to break down the clods and separate the sand and clay. The soil solution is then poured into a one liter cylinder. The sample is then stirred for 20 seconds, and a hydrometer is placed into it to get a reading after an additional 40 seconds to obtain grams of colloids per liter. Another reading is taken at 2 hours. The sand, silt and clay are then calculated using the hydrometer readings.

Soil texture can also be determined by using the pipet method. Again, soil is mixed with a dispersing agent and placed in a one liter cylinder; the soil solution is then stirred. At specific times, a pipet is placed into the soil solution at a specific depth and a portion of the suspended soil solution is removed. The quantity of soil removed is determined; and using calculations, the size of the fraction is recorded. Pipets can be used to determine different sizes of silt and clay fractions.

Soil texture is an important part of any soil test since it can help in making proper fertilizer recommendations. For example, applications of fertilizer may have to be split on sandy soils, or drainage may have to be improved in clay soils. Texture can also help explain other problems such as overwatering or poor root development.
☛Self

## BEANCOFT 1996 COLLABORATIVE ON-FARM TESTS OF PINTO BEAN VARIETIES

***Thirty-one tests were conducted in northeastern Colorado and western Nebraska during the 1996 growing season to assess the performance of new pinto bean varieties under farm conditions.***

As part of what may have been the largest dry bean variety testing effort ever undertaken in the region, thirty-one tests were conducted in northeastern Colorado and western Nebraska during the 1996 growing season to assess the performance of new pinto bean varieties under farm conditions. The main objective was to help bean producers make better variety decisions based on unbiased and reliable variety performance information obtained under commercial field conditions. The second objective was to encourage cooperation among bean seed companies, bean processing companies, university personnel, and bean producers for testing appropriate technologies, including new varieties.

Two general observations characterized the BEANCOFT results: 1) varieties responded differently at each location, and 2) there was little difference among variety yields *averaged* over locations. Grain yields are reported in pounds per acre adjusted to 14% moisture content. Figure 1 is a line graph showing yields over nine Colorado locations. This figure graphically illustrates how dramatically varieties changed rank over locations. Based on the yield data, the large variation in variety yields over locations makes it difficult for Colorado bean producers to choose a single best variety.

Figure 2 is a graphic comparison of average yields over the nine Colorado locations. The least significant difference (LSD) is generally used to decide if yields are significantly different from one variety to another. If the difference in yield between two varieties is greater than the LSD value, they are judged to be significantly different from one another. Figure 2 shows that there was no significant yield difference among varieties over the nine Colorado locations. Figure 3 graphically depicts the average yield of the five varieties over all 31 BEANCOFT tests. Chase, RNK 179, and Vision, were significantly higher yielding than Apache and Bill Z. Nevertheless, there was much variation among varieties from location to location (Fig. 1). This comparison of average yields using LSDs is not very useful for making future predictions.

A probability approach to the analysis is more revealing because it combines the average yield with a measure of variability in yield from location to location (standard deviation of each variety) to obtain an estimate of future variety performance based on the probability of obtaining different yield levels. The results of this approach when applied to the yield data for all 31 locations are shown in Table 1. In low yielding environments, RNK 179 has the highest probability, 97.5% chance, of yielding 1500 lb/ac or more. In the same environments, Apache has the lowest probability, 91%, of yielding 1500 lb/ac or more. A change in probability rank becomes obvious at different yield levels. For example, Chase has the highest probability of producing 2400 lb/ac or more, and Bill Z has the lowest probability. At the 3000 lb/ac level, Vision has the highest probability. To use this approach for variety selection, bean producers are encouraged to find the yield level that best approximates their long-term average yield and to compare variety probabilities at that level, keeping in mind that these comparisons a based only on yield and may neglect important quality or local environmental or disease considerations.

In conclusion, all of the varieties entered in BEANCOFT 1996 are good varieties. There were no clear winners and no clear losers because of so much variation in yield among varieties from location to location.

BEANCOFT 1996 was a pilot project that was highly rewarding but more expensive and time-consuming than expected. There are no plans to re-conduct BEANCOFT trials until new varieties are developed that warrant this level of effort.

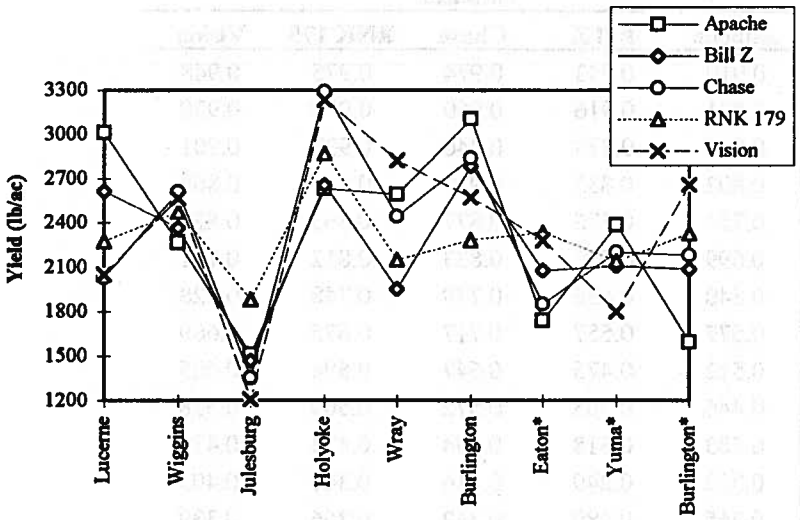


**Figure 1. Yields of five pinto bean varieties at each of nine Colorado test locations.**

**(The three small-plot trial locations are designated with an asterisk.)**

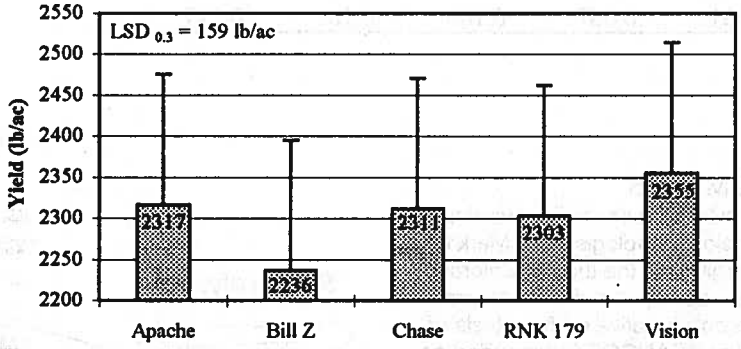


**Figure 2. Average yields of five pinto bean varieties over the nine Colorado locations.**

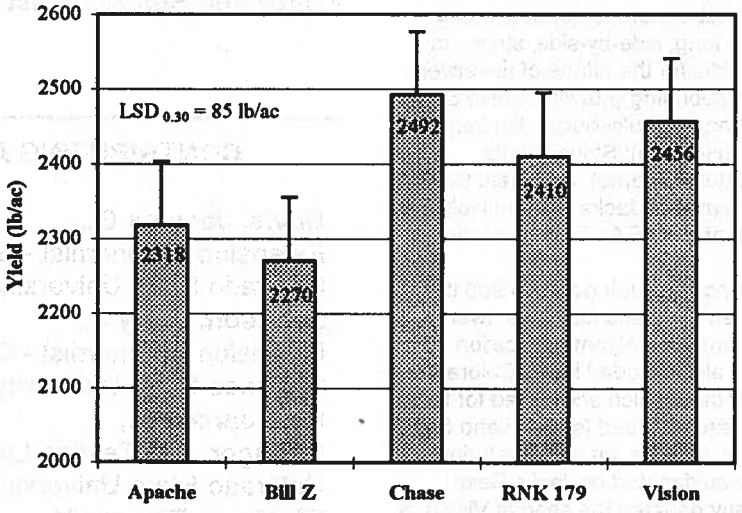


**Figure 3. Average yield of five pinto bean varieties over all 31 BEANCOFT locations.**

**Table 1. Probabilities of obtaining or exceeding yield level by variety.**

| Yield Level | Varieties | | | | |
|---|---|---|---|---|---|
| (lb/ac) | Apache | Bill Z | Chase | RNK 179 | Vision |
| 1500 | 0.910 | 0.943 | 0.974 | 0.975 | 0.948 |
| 1600 | 0.881 | 0.916 | 0.960 | 0.960 | 0.928 |
| 1700 | 0.845 | 0.879 | 0.940 | 0.937 | 0.901 |
| 1800 | 0.802 | 0.833 | 0.913 | 0.906 | 0.868 |
| 1900 | 0.754 | 0.776 | 0.877 | 0.865 | 0.828 |
| 2000 | 0.699 | 0.710 | 0.833 | 0.812 | 0.781 |
| 2100 | 0.640 | 0.636 | 0.779 | 0.748 | 0.728 |
| 2200 | 0.577 | 0.557 | 0.717 | 0.675 | 0.669 |
| 2300 | 0.512 | 0.475 | 0.647 | 0.594 | 0.605 |
| 2400 | 0.446 | 0.395 | 0.572 | 0.509 | 0.538 |
| 2500 | 0.383 | 0.318 | 0.494 | 0.423 | 0.470 |
| 2600 | 0.322 | 0.249 | 0.416 | 0.341 | 0.403 |
| 2700 | 0.265 | 0.189 | 0.342 | 0.266 | 0.339 |
| 2800 | 0.214 | 0.138 | 0.273 | 0.200 | 0.279 |
| 2900 | 0.170 | 0.098 | 0.212 | 0.145 | 0.225 |
| 3000 | 0.131 | 0.067 | 0.160 | 0.101 | 0.177 |


## ACKNOWLEDGEMENTS

Jerry Johnson, CSU extension specialist, Howard Schwartz, CSU extension pathologist, and Mark Brick, CSU bean breeder, organized the trials in Colorado while David Nuland headed up the effort in Nebraska. The success of these collaborative on-farm tests of bean varieties, acronym BEANCOFT, depended on Colorado State University Cooperative Extension agents Ron Meyer, Bruce Bosley, Jerry Alldredge, Jim Zizz, and Gary Lancaster who identified and worked with bean producer collaborators to conduct these single-replicate tests in long, side-by-side, strips. In Colorado, we are thankful for the efforts of the seven 1996 BEANCOFT collaborating growers: Steve Scott (Burlington); Rod Rehnquist (Julesburg); Jim Lenz (Wray); Dallas Shafer (Holyoke); Steve Bruntz (Wiggins); Leonard Ditter (Lucerne); and Mark Spaier (Johnstown). Jerry Haynes of Jacks Bean in Holyoke was also very instrumental in BEANCOFT success.

***Success of BEANCOFT depended on collaboration with many growers and seed companies.***

Three bean seed companies each donated 900 lbs of seed for testing in seven Colorado locations, twenty-one Nebraska farms, and one Wyoming location. The five varieties were also included in the Colorado small-plot bean variety trials which accounted for three of the nine Colorado results. Seed for the Idaho Seed Bean Company variety, Apache, an early-maturing, rust-resistant variety was donated by Jacks Bean. Asgrow Seed Company donated the seed of Vision, a full-season, rust-resistant variety. Rogers Brothers furnished the seed of RNK 179, a full-season variety resistant to bacterial brown spot. The seed of Chase and Bill Z, two public varieties, was provided by University of Nebraska researchers. Chase is a full-season, rust-resistant variety that has performed well in Colorado performance trials. Bill Z is a pinto bean industry standard, susceptible to many prevalent strains of rust. ☛JJohnson


***Sincerely,***

***Jessica Davis***
***Editor and Soil Scientist***


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