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BEAN FIELD DAY FOR AUGUST 1997

I would like to revitalize bean field days this year by organizing an all-day tour on August 19. Each of the three 1997 pinto bean variety performance trial locations will be visited. The CSU personnel involved will include Howard Schwartz, Jerry Johnson, Mark Brick as well as Cooperative Extension agents with whom we cooperate to conduct bean variety testing.

The field day will begin at Holyoke and end at Sterling. We will meet with interested growers and industry representatives at 8:00 a.m. in Holyoke and talk about the variety trial over coffee and donuts. Everyone will be responsible for their own transportation during the field day. Howard Schwartz will lead us to additional stops along the way to Julesburg that will be of interest to many of the people on the tour, and we plan on arriving at the Ovid trial around 11:30 a.m. Mark Brick, CSU bean breeder, will give a brief description of varieties in each trial, and Howard Schwartz will answer questions related to bean pathology. We expect to make some arrangements for lunch at Ovid or Julesburg. After lunch, we will go to Sterling, visit points of bean interest along the way, and plan to arrive at the Sterling location at 2:30 p.m. After the Sterling visit,

the official field day will be concluded, but we may want to get together for an early dinner in the Sterling area.

☛ J. Johnson

NEW RECORD BOOK AVAILABLE FOR PRIVATE APPLICATORS

A new tool is available to help Colorado private applicators keep USDA required records for Restricted Use Pesticide (RUP) applications. This pocket-sized record book is designed to make RUP record keeping more convenient, straight forward, and portable for private applicators. Since May 10, 1993, certified private applicators have been required to maintain records of RUP applications. More than 90 RUP's are registered for use in Colorado, and the Colorado Department of Agriculture performs random inspections for the USDA on approximately 150 to 200 private applicators every year. Using guidelines provided in the record book, private applicators will have all records required by USDA inspectors. The booklet, which is designed for the 1997 and 1998 field seasons is going to be distributed free while supplies last. It should be available by May 16, at which time we plan to send 25 copies to each County Extension office. If you need more copies please let us know [(970) 491-6201].

☛ Bauder

SHOULD PRODUCERS USE PAM THIS YEAR?

The use of polyacrylamide (PAM) in furrow irrigation is probably the fastest growing soil and water conservation technology in irrigated agriculture today. The irrigation season is about to get started in earnest here in Colorado, and producers need to decide if they want to try PAM on their farms this year.



PAM is an environmentally safe flocculent that is widely used in municipal water treatment, paper manufacturing, food processing, and other industrial applications. In agriculture, it has been shown to greatly reduce irrigation-induced erosion. Many claims are being made about increased crop yields, reduced water needs, and increased seedling emergence. However, farmers making an initial PAM decision should probably first evaluate it on the basis of reducing soil loss and the potential labor savings associated with cleaning silted tailwater ditches and structures. The other benefits of PAM vary by field and irrigation system, so producers will have to evaluate them on a field by field basis.



How PAM Works

PAM is available commercially as a dry granular or liquid product. It works because its large molecules carry negative charge that acts as a bridge between water molecules and soil particles. This bridge causes increased soil cohesion and strengthens soil aggregation in the irrigation furrows, resulting in greatly reduced detachment and transport of soil sediments. From a surface water quality point of view, the reduction in transported nutrients and particles attached to soil sediments is a significant benefit of PAM.

Because PAM only treats the wetted perimeter of furrows, and since PAM penetrates the soil only a few millimeters, very small application rates are effective. Several suppliers are marketing PAM in Colorado. Typically, granular PAM costs \$4-5 per acre for 1 application at a rate of 1 lb/acre or 10 ppm in irrigation water. Liquid PAM runs \$8 - 10 per application for the same rate. Usually, the supplier can also provide low cost automated head-ditch applicators and technical assistance to get started. Producers should plan on at least two applications for best results. An application during the initial irrigation and another after the final cultivation pass works well for some farmers. Erosion reduction seems to be more effective on medium textured, silty soils than on sandy soil. The economic benefits of saving topsoil are hard to quantify, but we know that sustaining soil quality is essential for long term profitability. In the initial crop season, many producers are seeing a direct economic benefit from increased yields and labor savings.

When applying PAM, it is important that no untreated water wet the furrows ahead of the PAM-treated flow because the untreated water will destroy soil structure before PAM can stabilize it, reducing PAM's effect. If there is a significant amount of suspended sediment in the ditch water, PAM will cause it to settle out almost immediately. Increasing flow rate can help move sediments out of tubes and away from the head end of furrows. Research in Idaho showed that you can double inflow rates with PAM and achieve greater overall field uniformity.

Once treated water has reached the end of the furrow, addition of PAM at the head ditch is stopped. Untreated water is used for the remainder of the irrigation and flow rates should be reduced to sustain minimal runoff. Erosion protection declines on the ensuing irrigations, but still is significantly better than non-treated furrows. Furrows disturbed by traffic or cultivation must be retreated. The number of PAM treatments per year will vary with crop and producer objectives, but it is common in Colorado to make 2 to 3 applications at 1 lb/acre during a typical growing season.

The improvement in irrigation uniformity and stand establishment achieved with PAM has been shown to improve crop yields in some cases. Potato yield and grade have been improved in Idaho with PAM treatments. Reports of wheat and tomato yield improvement are also in the literature. Jim Valliant, Extension Irrigation Specialist in the Arkansas Valley has shown alfalfa, onions, pepper and tomato yield increases in PAM treated fields compared to non-treated controls. Jim has seen particularly good results combining surge irrigation with PAM treatments.

Sediment loss (lb/A)

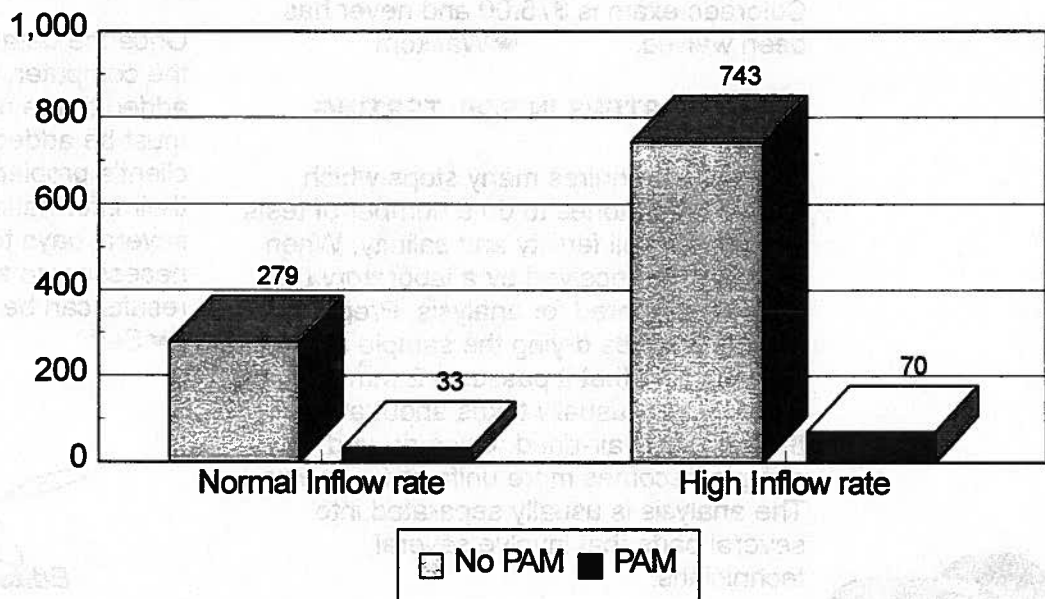


Figure 1. Sediment losses in PAM vs. untreated irrigation water return flows at two inflow rates. From: Sojka and Lenz, 1997.

So far, no negative impacts have been documented with PAM usage, and producers are adopting the technology with fervor. The environmental benefits of reduced erosion and contaminant transport have been phenomenal in test studies. Improved infiltration and lateral wetting rates seen with PAM can also help conserve one of our most precious resources - water.

Still Not Convinced?

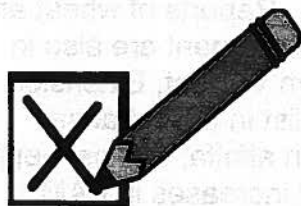
If you are still not sure PAM is right for your operation, several PAM demos are being conducted around the state. You might also want to try your own on-farm

test on a limited acreage where you have erosion problems. Places you can see PAM in action this summer include:

- Thompson Valley Young Farmers, Loveland (contact Mark Crookston at 970-667-6907)
- CSU ARDEC farm north of Fort Collins (contact Reg Koll at 970-491-2405)
- CSU Irrigation Water Management Tour - June 26th, Rocky Ford (contact Jim Valliant at 719-254-7608)

•Waskom

CCA EXAM DEADLINE JUNE 13



The next Certified Crop Adviser (CCA) exam will be held Friday, August 1, at the University of Southern Colorado student center in Pueblo. The deadline for registration for this exam is June 13. To request registration materials, call the CCA office in Madison, Wisconsin (608-273-8090, ext. 310). Registration materials are also available at the Soil and Crop Sciences Extension office (970-491-6201). Study guides for the Colorado Exam are available from Ron Schimer (303-236-2903, ext. 246).

This is the last time that the registration fee of \$100.00 will be waived for government employees. The registration fee for the Colorado exam is \$75.00 and never has been waived. **Waskom**

THE STEPS IN SOIL TESTING

Soil testing requires many steps which enable laboratories to do a number of tests to evaluate soil fertility and salinity. When samples are received by a laboratory they must be prepared for analysis. Preparation usually involves drying the sample and then grinding it so that it passes a 2 mm (No. 10) sieve. Drying usually takes about a day if the sample is air-dried. Once ground, the sample becomes more uniform for analysis. The analysis is usually separated into several parts that involve several technicians.

One technician usually takes part of the sample and analyzes it for pH, electrical conductivity (EC), lime estimate, and texture estimate. The pH and EC are usually done on a 1:1 basis. One part soil is mixed with one part water and stirred for 30 minutes, and then the mixture is measured for pH and EC. If the pH is high and/or the EC is high, then the soil must be further analyzed for salts by making a soil-water paste. The paste is measured for pH, and then the water is extracted from it. The extract is then measured for EC. If the EC or pH is high, the extract is then measured for calcium, magnesium, and sodium so that a sodium adsorption ratio (SAR) can be calculated. If the SAR is high, then a gypsum requirement is determined. The gypsum measurement requires that the soil be extracted with a larger quantity of water



to evaluate how much gypsum is potentially soluble at a higher moisture content. With the amount of gypsum determined in the soil, a recommendation for gypsum application can be made.

Additional testing for macro and micro-nutrients requires that another technician takes another part of the sample and extracts it with ammonium bicarbonate-DTPA. The extract is then analyzed for phosphorus, nitrate, potassium and micronutrients using separate tests. Phosphorus, for example, is measured using the molybdate-blue method on a colorimeter. Nitrate is measured using a flow-injection analyzer. Micronutrients and potassium are measured using inductively-coupled plasma spectrometry.

Once the data is collected, it is entered into the computer, and fertilizer suggestions are added to the reports. Additional comments must be added to address an individual client's problems that they have outlined on their information sheet. All of the tests take several days to complete which makes it necessary to submit samples early so that results can be returned in a timely manner.

Self

Sincerely,

Jessica Davis
Editor and Soil Scientist

CONTRIBUTING AUTHORS

Brick, Mark A.,
Extension Agronomist - Bean Production
Davis, Jessica G.,
Extension Agronomist - Soils
Johnson, Duane L.,
Extension Agronomist - New Crops
Johnson, Jerry J.,
Extension Agronomist - Crop Production
McDonald, Sandra K.,
Extension Agronomist - Pesticides
Self, James T.,
Manager - Soil Testing Laboratory
Waskom, Reagan M.,
Extension Agronomist - Water Quality

CSU Wheat Field Days 1997

★ Stratton(1)	June 9 (Mon)	5:00 p.m. at Miltenberger Bros. farm, Kit Carson County
★ Sterling	June 10 (Tue)	5:00 p.m. at Gilbert Lindstrom farm, Logan County
Walsh	June 16 (Mon)	9:00 a.m. at Plainsman Research Center
Lamar	June 16 (Mon)	1:00 p.m. at John Stulp's in Prowers County
Sheridan Lake	June 16 (Mon)	5:00 p.m. at Eugene Splitter's in Kiowa County
Akron	June 17 (Tue)	8:00 a.m. at Research Station in Washington County
Yuma	June 17 (Tue)	5:00 p.m. at Irrigation Research Foundation Farm
Burlington	June 18 (Wed)	8:00 a.m. at Barry Hinkhouse's in Kit Carson County
Stratton(2)	June 18 (Wed)	10:00 a.m. at Kenny Pottorff's in Kit Carson County
Genoa	June 18 (Wed)	5:00 p.m. at Roy Anderson's in Lincoln County
Briggsdale	June 19 (Thur)	9:00 a.m. at Cary Wickstrom's in NW Morgan County
Ovid	June 19 (Thur)	5:00 p.m. at O.J. Johnson's in Sedgwick County
Bennett	June 23 (Mon)	5:00 p.m. at John Sauter's in Adams County
Sidney, NE	June 26 (Thur)	9:00 a.m. at Univ. Nebraska Research Center

