

TABLE OF CONTENTS

Certified Crop Adviser Program for Colorado	1
Planting Tips for Dry Beans II . . .	2
Potential Exists for Corn Damping Off and Seed Rot	3
Corn Plant Populations	3
Yellow Wheat not Virus	4
"The Incubator" for New Crop Development	4
Revisions to Worker Protection Standard	6
1994 Eastern Colorado Wheat and Crop Management Field Days . . .	7

CERTIFIED CROP ADVISER PROGRAM FOR COLORADO

The Certified Crop Adviser (CCA) program is a voluntary national certification program open to anyone who provides crop management recommendations to growers. The goal of this program is to enhance the credibility of the profession by establishing standards of knowledge and experience, as well as subscribing to a code of ethics for the conduct of business.

Cooperative Extension is actively involved in establishing this program for Colorado. First, a state CCA Board of Directors must be appointed to administer the program. Organizations

which would be represented on the Board include Cooperative Extension, the Rocky Mountain Plant Food and Agricultural Chemicals Association (RMPF&ACA), the Colorado State Departments of Agriculture and Health, the USDA Soil Conservation Service, the Independent Agricultural Consultants of Colorado, and the Aerial Applicators Association. The RMPF&ACA has appointed a CCA committee to work on initiation of this program.

Over 35 states, including most of the major agricultural states, now have established this program. The USDA,

The nearest locations for the next national exam for CCA certification are in Grand Island, NE or Salina, KS. The test will be given on August 6. Application forms are available through the Extension Agronomy office (303)491-6201.

EPA, and most of the major fertilizer and agrichemical companies and related organizations have strongly endorsed the program. The certification process requires application for eligibility, passing national and state examinations, and subscribing to a code of ethics. However, the heart of this certification is the experience, credibility, ethical conduct, and commitment to continuing education of those certified. Public credibility of the agricultural industry is the main motivation for pursuing this program. County Extension agents and specialists in other states also are becoming CCA certified to enhance their personal credentials.

The next national examination will be given on August 6, 1994. Those wishing to take this exam would have to apply to the American Society of Agronomy, Madison, Wisconsin (Tom Hall @ (608)273-8080) by July 1 and take the exam in another state. The nearest locations will be in Salina, Kansas and Grand Island, Nebraska. Application forms for the CCA examination are available at the CSU Extension Agronomy office (303)491-6201. If Colorado initiates this program, the earliest possible test date to take the state and national exams in Colorado will be in February 1995.

□Mortvedt and Waskom

PLANTING TIPS FOR DRY BEANS II

Dry beans should be planted in a firm seedbed when morning soil temperatures reach 60° at planting depth, or about 2 inches deep in most soils. This soil temperature occurs between May 25 and June 10 in most parts of Colorado. The minimum temperature required for uniform bean

seed germination is lower than 60°; however, planting should be delayed until the soil warms to 60° because seedling development is slower in cool soils. Rapid seedling development enables the seedling roots to grow through the upper 2 to 4 inches of soil which may contain pre-emergence herbicide or dry out rapidly. Since the bean root is extremely sensitive to herbicide damage, rapid early root growth enables the plant to grow through the zone of herbicide and minimize injury. Herbicide injury, combined with chilling injury, can be severe when a long period of cold weather occurs immediately following seed germination. Delayed planting until the soil reaches 60° will also minimize the probability of a prolonged cold period. If chilling/herbicide injury occurs, and more than 50% of the plants show serious injury, it is often best to replant the crop.

Planting time is also a time to consider the need for legume inoculant. Dry beans are known to fix between 20 and 50 lbs of nitrogen from the symbiotic relationship between *Rhizobium* bacteria and the plant roots. Considering that a 2,400 lb bean crop only utilizes about 52 lbs of total nitrogen, the crop does not have a high requirement for nitrogen. The need to apply inoculant depends on many factors. In general, inoculant may show a benefit on fields that have not had beans previously or in the recent past. Soils which are strongly acidic or alkaline may benefit from inoculum, since the nitrogen fixing bacteria do not survive well in those environments. If dry beans have been grown in the field recently and were well nodulated, inoculation is probably not necessary. Soils which have high levels of available nitrogen inhibit nodule formations;

hence, they are also not benefited from the inoculum. If you choose to inoculate your beans, remember a few tips.

- 1) Keep the inoculum in a cool (below 60°) dry environment. The bacteria in the inoculum can be killed in a matter of hours if placed in direct sunlight on the dashboard of a pickup truck.
- 2) Since most bean seed is pre-treated with the bactericide streptomycin, inoculum cannot be mixed with the seed directly, and must be applied as a band at the side of the row.
- 3) Use fresh inoculum purchased from a reputable seedsman or dealer. Most inoculum manufacturers put an expiration date on the package. Therefore, do not purchase outdated inoculum since the bacterial population may have declined significantly after that date. □Brick

It is best to delay planting dry beans until the soil temperature is 60°. Seedling development is more rapid and therefore helps minimize injury from cold weather or herbicide treatment.

POTENTIAL EXISTS FOR CORN DAMPING OFF AND SEED ROT

Corn planting in Colorado is almost complete. However, with the cold, wet weather we have been experiencing, we may see more pre-emergence damping off in the earliest planted fields. While seed treatments help, if that type of weather continues, the effectiveness of the seed treatments will wear out. The thiram, captan, and other materials used for corn seed treatments are surface protectants and not absorbed into the seed. Therefore, under these conditions, effectiveness is reduced and seed protection is reduced.

As soon as corn can be rowed, cultivation to improve soil aeration will improve growing conditions.

□Brown and Croissant

CORN PLANT POPULATIONS

Desired and acceptable plant populations in corn vary just like Colorado temperatures. However, there are guidelines that everyone should follow. Desirable plant populations vary depending on crop use and other factors such as early or late maturing varieties, difficult emergence after hard soil crusting, or stand loss from a freeze or hail storm. This method is useful to determine if replanting is necessary. Experimental research has provided information for the development of such models to help make decisions. To have maximum accuracy, a table like this should be developed for every condition.

Decision making questions:

1. What are the best planting dates?
2. Should populations change according to planting date?
3. Do hybrids differ in response to plant populations?

One can assess yield losses and make better decisions about replanting with the help of the Table 1. To use the table for a replant decision:

Decide what your projected yield would have been from your original planting date and initial plant population. By reading the chart, determine the percentage your yield would increase or decrease if a full stand were re-established by replanting on a given date. If this difference in expected yield will return more money than the cost of replanting, then replanting should be considered.

Table 1. Expected Corn Yield Reduction with Different Planting Dates and Plant Populations.

Planting Date	PLANT POPULATION (thousands per acre)					
	10	15	20	25	30	35
	----- Percent of Maximum Yield -----					
10 Apr	62	76	86	92	94	93
20 Apr	67	81	91	97	99	97
30 Apr	68	82	92	98	100	98
9 May	65	79	89	95	97	96
19 May	59	73	83	89	91	89
29 May	49	63	73	79	81	79

EXAMPLE:

A field is planted on April 30 to obtain 30,000 plants/acre for an expected yield of 175 bu/acre. Due to severe crusting from a rainstorm, the actual population is 15,000 plants/acre on May 19th. The expected yield now would be 82 % X 175 equals 144 bu/acre. At \$3.00/bu, then the value of the yield is \$432 per acre.

If we replanted on May 19th at 30,000 plants/acre, the expected yield would be 91 % X 175 equals 159 bu/acre. The value of this yield is \$477 per acre.

The difference of \$45 per acre would have to be greater than planting costs to justify replanting. Don't forget the cost of added chemicals as well as possible higher moisture corn in the fall if you replanted.

This table also shows yield declines by planting later than the optimum date. For example, if the 30th of April plantings yielded 100 percent, than at the same population, a 29th of May planting is expected to yield 19 percent less.

From these data, you can evaluate the "rule of thumb" loss of a bushel per acre for each day delay in planting. This model shows yield losses closer to one-half bushel per acre per day delay in planting.

Reference: JPA 1994. Vol 7:59-62

YELLOW WHEAT NOT VIRUS

Samples of yellowed wheat originating in southeast Colorado have been showing up in the CSU plant clinic. These samples are not Barley Yellow Dwarf. The yellowing is uniform and there is no stunting. The probable cause of the symptoms is nitrogen deficiency caused by low soil temperatures (60° F or less) but abundant leaf growth. The roots cannot keep up with the leaves. This can be seen when soils are cool (less than 60°), wet, or a combination of both. If this continues and root growth is restricted as well, expect to see problems when the weather becomes favorable for growth.

If we get a break in the weather (who knows when?), the symptoms should disappear.

□Brown

**"THE INCUBATOR"
FOR NEW CROP DEVELOPMENT**

New crop development possibilities in the Bent County area are exciting. The following enterprises were discussed during 1993 development activities.

Starting with a proposal using a waxy, naked (hullless) barley for starch and

barley beta glucan (protein), an extraction plant could be located in Las Animas and easily expanded to include barley processing, making puffed and flaked barley breakfast cereals, a biodegradable foam for packing, and extruded food products. From the beta glucans, we could manufacture diet food components. The puffing and flaking facilities could be used for quinoa coming from the San Luis Valley, wheat and millet from the north and east, and local corn.

Colorado businesses have since added a number of other ideas which could make Bent County a focal point in the food processing industry.

Processing edamame soybeans (a green bean-flash freezer operation) and associated frozen vegetables and fruit could be included. Another option would include processing safflower from eastern Colorado and canola from the San Luis Valley. The cost of development seemed to be the single major obstacle. The cost to develop seven potential industries (mentioned above) is probably beyond economic reality for a single new crop venture, let alone seven.

The solution is to develop a new crop "incubator". An incubator is a single facility designed to allow new businesses to develop by sharing their resources. The incubator basically requires state and local support by providing tax incentives to new small companies and a general processing facility which is shared by the participants. Individual companies provide some capitalization for specific equipment needed. The incubator provides a facility, transportation center (loading dock), packaging and general operating administration, secretarial help, telephone, maintenance, and marketing. The new company can

evaluate its product in a safe, low cost, and relatively low risk environment. When the company grows, it moves to its own facility and the space in the incubator becomes available for another startup company. This concept has been used with other small companies in Pueblo and has been successful. The cause of greatest failure in new companies is the lack of knowledge in management and the incubator concept should provide time to develop these skills.

The Bent County Economic Development Foundation, by fostering an incubator for Colorado Agricultural products, management, and labor, should also spawn new enterprises which will generate new tax revenues, hire more people, and draw associated businesses into the community. Right now, the concept is still in its own incubator. Colorado State University Cooperative Extension and the Bent County Economic Development Foundation are looking for startup funding to initiate the purchase of a building and repairs to bring it to "food grade" status. □Johnson

CSU 1994 Eastern Colorado Wheat/ Crop Management Field Days

The schedule for Winter Wheat Field Days in eastern Colorado is included on the last page of the newsletter. We are in the process of developing an agenda that will be of great interest to all wheat producers. The agenda will include potential new winter wheat varieties, Russian wheat aphid control, as well as the wheat production factors. A representative from the Soil Conservation Service will be on the program to address issues pertaining to the SCS conservation tillage requirements for compliance in farm programs. □Shanahan

Incubator: An apparatus by which eggs, ideas, or businesses are hatched.

The last two pages of this newsletter are produced separately so that they can be used independently if necessary.

The first is a table provided by Kathryn Apley regarding the Revisions to Worker Protection Standard-Requirements for Agricultural Employers.

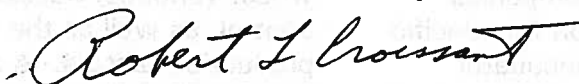
The last page is the CSU 1994 Eastern Colorado Wheat and Crop Management Field Day schedule.

Where trade names are used, no discrimination is intended, and no endorsement by the Cooperative Extension Service is implied.

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Sincerely,



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Revisions to Worker Protection Standard

The following table is part of an April 1994 publication from the United States Environmental Protection Agency entitled "EPA Questions & Answers, The Worker Protection Standard: 1994 Legislative Changes - A Guide for Agricultural Employers". Legislation (S. 1913) signed into law by President Clinton on April 6, 1994 maintains the April 15, 1994 compliance deadline for some items and delays compliance for other items until January 1, 1995.

1994 Worker Protection Standard (WPS) -- Requirements for Agricultural Employers

Requirement	Applies in 1994	Applies after 1/1/95	Notes
Restricted Entry Interval (REI)	Yes	Yes	The REI is specified on the label.
Early Entry Activities involving contact with treated surfaces	Yes - no time limits	Yes - time limits	No entry for first four hours after application and inhalation levels/ventilation criteria met. PPE required. No hand labor. Until 1/1/95, no limit on worker time in treated area. After 1/1/95, usually one hour/day. See How to Comply manual for exceptions to limitations.
Personal Protective Equipment (PPE) for Handlers	Yes	Yes	PPE specified in Precautionary Statements portion of the label must be used. See the How to comply manual for additional employer duties for providing, cleaning, maintaining PPE after 1/1/95.
PPE for Early Entry Workers involving contact with treated surfaces	Yes	Yes	PPE must be provided by the employer and must be in clean and operating condition. See the How to Comply manual for additional employer duties for providing, cleaning, maintaining PPE after 1/1/95.
Early Entry Irrigation Workers Choice of PPE	Yes	No	Until 1/1/95, early entry PPE or coveralls plus chemical-resistant gloves and chemical-resistant footwear if there is pesticide contact only to the feet, lower legs, hands, arms. After 1/1/95, use PPE on label for early entry.
Notification of Agricultural Workers about Applications	No	Yes	Required after 1/1/95. In most cases, employer can choose oral notification or posting, unless both are required by the label. Greenhouse uses--posting required. See the How to Comply manual.
Double Notification Oral and Posted Warnings required on the label for most toxic products	Yes	Yes	In 1994, employer must post and warn. After 1/1/95, must use the WPS field warning sign and follow WPS specifications for posting or for oral notification. See the How to Comply manual.
Protections for Crop Advisors	No	Yes	Until 1/1/95, WPS does not apply.
Pesticide Safety Training for Pesticide Handlers and Agricultural Workers	No	Yes	WPS requires basic safety training for workers and more detailed training for handlers. See the How to Comply manual and EPA training handbooks.
Additional WPS Protections including - Display of a Safety Poster - Pesticide Application Display - Decontamination Sites - Emergency Assistance - Monitoring Handlers - Employer Information Exchange	No	Yes	These and other WPS requirements are delayed until 1/1/95. This delay gives employers an opportunity to learn about the requirements and integrate them into work operations.

**COLORADO STATE UNIVERSITY
1994 EASTERN COLORADO WHEAT AND CROP MANAGEMENT FIELD DAYS**

DATE	TIME	COOPERATOR	COUNTY	DIRECTIONS TO THE FARM
June 13	5:30 p.m.	Research Center	Baca	WALSH - 1/8 W, 4 N, 1 W
June 14	8:00 a.m.	John Stulp	Prowers	LAMAR - 6 S on Hwy 287
June 14	5:00 p.m.	Eugene Splitter	Kiowa	SHERIDAN LAKE - 3/4 W on 385, 3 S
June 15	8:00 a.m.	Barry Hinkhouse	Kit Carson	BURLINGTON (DRY) - 2 S of Burlington on Hwy 385
June 15	4:00 p.m.	Harold/Jerry McArthur	Kit Carson	BURLINGTON (IRR) - 1/4 W of Burlington on Hwy 24
June 16	8:00 a.m.	Roy Andersen	Lincoln	GENOA - 9 N, 3 E
June 16*	5:00 p.m.	Miltenberger Bros.	Kit Carson	STRATTON - 4 E on Hwy 24
June 20	9:00 a.m.	Stan Cass	Weld	BRIGGSDALE - 4 S on 392, 1/2 E on 84
June 20	5:00 p.m.	John Sauter	Adams	BENNETT - Brighton on Bromley Ln. 13 E, 1 S, 6 1/2 E
June 21	8:00 a.m.	Research Center	Washington	AKRON - 4 E, 1/4 S, 1/8 W
June 21*	5:00 p.m.	Gilbert Lindstrom	Logan	STERLING - 1/4 S of Intersec. of Co. Rd 6 & 59
June 22	8:00 a.m.	Jim Carlson	Sedgwick	OVID - I-76 to Ovid Rd. 5 S to Co. Rd 14
June 24	8:30 a.m.	Univ of Neb Research Center		SIDNEY, NEBRASKA 5 N on 385, 2 W, 1/2 N

*Gary Peterson's and Dwayne Westfall's Crop Management Study