FROM THE GROUND UP

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AGRONOMY NEWS

Volume 12, Number 8 August 1992

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DRY BEAN FIELD DAYS

Field Days at the dry bean research sites are set for 18 and 19 August at Burlington, Holyoke, and Eaton, Colorado.

TIMES AND LOCATIONS

Date	Time	Cooperator	Directions to Plot
18 Aug	10:00AM	Louis Nider	12 mi south of Burlington on H. 385, then 1 ½ mi east on Rd G
18 Aug	4:00PM	Mark Schlactor	1 ½ mi south of Holyoke (6 & 385 Junction), then ¼ mi east
19 Aug	10:00AM	Ed Croissant	2 mi south of Eaton on H. 85 to Rd 70, then ¾ mi west

Colorado State University

Mark your calendars:

August 18 and August 19 for Dry Bean Field Days

The field day events are sponsored by the Colorado State University Cooperative Extension, the Colorado Dry Bean Advisory Board, the Colorado Dry Bean Advisory Committee, and local bean dealers. Coffee and doughnuts will be provided by the CDBAB.

PROGRAM

- Mexican bean beetle and other insects
- Soil fertility - bean needs and responses
- Production and pest management records
- Herbicide research
- Bean varieties and row spacing studies
- Bean diseases and pest management

Available for examination at each site are experiments consisting of 18 different pinto bean varieties, 9 varieties of white beans, 6 varieties of light red kidney beans, 9 varieties of various classes of colored beans, and special observation plantings. CSU scientists will be presenting the program.

Questions should be directed to Bob Croissant, 303/491-6201.

DRY BEAN HARVEST TIPS

Dry bean harvest procedures must be done at critical seed moisture contents to minimize field losses and damaged seed. Estimates of field losses in Nebraska due to cutting and windrowing alone averaged 1.4% of the total yield. To minimize losses, beans can be cut and windrowed when the seed moisture content is 40 to 50%. At this stage, at least 80% of the pods should be yellow and/or ripe. If the seeds and pods are too dry, harvest losses from shattering and mechanical damage may be excessive.

There are many ways to minimize field loss and seed damage. Cutting and threshing beans before they become too dry can significantly increase yield and seed quality. Studies in California indicate that cutting and threshing bean seed early (higher seed moisture) improved seed germination and quality. It also enabled the grower to complete harvest operation 4 to 7 days earlier. The cutting and windrowing operations should be done early in the morning or when the plants are damp with dew to further reduce shatter losses. Windrows should be as large as can be threshed by the combine. Large windrows offer the seed protection from weathering due to the sun and dew; however, they may be moved by strong winds. The windrow will usually dry within 5-10 days depending upon market class and seed size. Seed moisture should decline to approximately 14-16% before threshing. The optimum moisture type and content for threshing will vary depending upon the seed type and size. Seed damage will increase proportionally as the moisture content decreases. Hence, it is important to prevent excessive drying in the windrow. Seeds which are threshed at high moisture should be dried to 14-16% moisture prior to short term storage or 11-14% for long term storage, depending upon storage conditions.

There are three basic types of combines that thresh beans: 1) a bean combine equipped with a series of three threshing cylinders with increasing cylinder speed from front to rear, 2) an axial flow combine which moves the crop through the machine parallel to the rotor axis, and 3) a conventional single cylinder/concave combine which is used for most grain crop threshing. Each combine has specific advantages and disadvantages and will do a good job of threshing beans if adjusted properly. There are several important features which enable operators to adjust the combine to minimize seed damage. The cylinder speed and concave-cylinder clearance are critical adjustments to minimize seed damage. Cylinder speeds between 150-300 RPM are satisfactory for most situations; however, the speed should be minimized to the point of effective threshing and protection of seed quality. Seed moisture content, seed size, and windrow density influence selection of the optimum cylinder speed. Cylinder speed should be slowed for seed which are dry. Another important adjustment is the concave-cylinder clearance. It should be wide enough (5/16 to 3/4 inch clearance) to allow seed to pass through without damage (i.e. slightly greater than the seed size). A cylinder clearance that is too large will result in unthreshed pods. If there is evidence of seed injury or splitting, adjustments must be made immediately. Since seed and pods dry from morning to evening, an adjustment in the cylinder speed, cleaning fan and sieves may be necessary during the day as threshing proceeds.

Cutting and threshing beans before they become too dry can significantly increase yield and seed quality.

To minimize damage to beans as they pass through the combine, keep the flow of material at full capacity during operation. This can be done by adjusting ground speed or windrow size. The grain tank should be checked periodically to assess seed damage so that proper adjustments can be made if damage is evident. Seed coat damage is not always visible; however, there is a quick and easy test for this during threshing. The test requires water, a container, and a dipper that will hold about 100 beans. Remove a 100-bean sample out of the combine bin and place the complete sample in the container with water and soak for five minutes. Pour off the water and spread the sample on a flat surface to observe the intact beans. Mechanically damaged beans will absorb water quicker than others and the damaged coats on the swollen seed are more visible. Stop the combine and make adjustments if more than 5 out of 100 beans show visual swelling. The bean straw should also be checked to determine threshing effectiveness and reduce field losses. Field losses can be quite high even when there are relatively few seeds left on the ground behind the combine. For example, if there is an average of 1 pinto seed per square foot on the ground, the field loss is approximately 36 lbs/acre.

The direct harvest method for dry beans has been successfully used in several areas of the U.S. This method employs a combine equipped with a cutter-head to harvest the beans directly out of the field, thereby eliminating the need to cut, rod, and windrow. Several factors are important to the success of direct harvest. First, the variety used should be limited to upright types with uniform maturity and dry enough to thresh directly. However, sodium chlorate is registered for use as a desiccant in dry beans for later-maturing varieties. The commercial compound (Defol 6) can be applied at one gallon per acre in 5-10 gallons of water by air, or 10-20 gallons of water with ground application. It should be applied 7-10 days before harvest to assure proper dry down. Premature pod splitting and shelling (especially with cranberry, kidney, and black varieties) may be reduced with pre-harvest aids such as Spodnam. Bean fields which are to be direct harvested are often planted using narrow row spacing or in solid stands. This, in effect, crowds the plants, forcing them to grow more erect and set pods higher off the soil surface. Direct harvest has the obvious advantages of reducing field operations (consequently the cost) and the risk of weather damage of beans in the windrow. This is especially true for white beans which are prone to staining and weather damage. Direct harvest requires a good herbicide program since cultivation is not possible during the growing season. ▫Brick

CHECK STORED WHEAT FOR MOISTURE

Winter wheat harvest is over in the southeast part of Colorado, is in the clean up stages in northern Colorado, and hasn't yet begun in the northwest. Most of the harvested wheat is stored on the farm and quality must be maintained by the grower.

Every year, we experience different growing and harvesting conditions, and 1992 is no exception. Because of drought, light rains, freezing temperatures, and other stresses, there is considerable unevenness in height and maturity in wheat fields. Some heads are mature while sucker tillers on the same plant may be green at harvest time. These green kernels carry excessive moisture into grain storage which may cause problems.

Green kernels and weed pieces are sources that could cause rapid spoilage and losses in the grain bin.

Summer rains during the last two weeks also delayed harvest, allowing weeds to grow. The results are ground up weed pieces that are difficult to separate from the grain and unwanted moisture taken into storage. Green kernels and weed pieces are sources that could cause rapid spoilage and losses in the grain bin.

Stored grain goes through an initial sweat period. This is the time when all the moisture in grain, foreign material, and other matter arrives at an equilibrium. Even though grain moisture meters include the average of material tested, some parcels of the lot, such as weed pieces, will be high and other parts of the lot will be low. If grain was stored at moisture levels near 14%, then the resulting level may be somewhat different. In large bins, moisture migration will occur and result in higher, and sometimes dangerous, levels. Moisture migration is described as an air circulation pattern driven by temperature changes within the bin. Wheat is stored at relative warm, summertime temperatures and will remain that way until outside, average temperatures cool. This cooling causes the air next to the bin edge to move down. As the air warms and moves up through the center of the bin, it picks up moisture. At the top or cooling point, moisture is released, causing moisture levels above 14%, which results in conditions favorable for mold and insect activity. Probing, sampling, using thermometers or electronic devices, or aerating can be used to detect these "hot spots" . Storage problems are less severe in very small bins.

Aeration can prevent serious grain spoilage problems. If aeration equipment is not available in your bins, grain that is sweating and heating may need to be moved and/or blended with drier lots. For additional information, see **Service In Action sheet No. 0.117, Managing Stored Grain.**

During recent years, moldy grain has been suspected of containing aflatoxins. The mold that produces aflatoxins can infect important food and grain crops before, during, and after harvest. These fungi, especially Aspergillus flavus, A. parasiticus, are normal soil borne inhabitants in our environment, growing on both living and decaying plant matter. More information can be obtained from **Service In Action sheet No. 0.306, Aflatoxins Produced From Grain.** ▫Croissant

WHEAT FARMERS - TEST SOIL NOW

With harvest complete, it is time to soil test in preparation for next year's wheat crop. The economic realities make it essential that each crop be produced as efficiently as possible. This does not mean that input should be eliminated, just be sure that they are justified.

Soil testing should be coupled with the farmer's experience and research results available for his area of the state.

Although new, higher-yielding varieties are available to farmers, too often yields are limited by the soil's lack of nutrients. Soil testing is the cornerstone of a sound fertility program regardless of the crop. However, too many wheat areas are not tested at all. Nitrogen is the major nutrient required by wheat. Nitrogen fertilization without determining soil N levels is a guessing game.

Soil phosphorus is also frequently deficient for dryland wheat. Soils likely to be phosphorus-deficient include severely eroded areas, soil with low organic matter content, and soils that contain large amounts of free calcium carbonate or lime.

Those deficiencies can be predicted by soil testing. Summer fallow wheat growers should be thinking about sampling the fallow ground so that phosphorus can be applied on the fallow early enough to incorporate it by tillage, since phosphorus does not move in soils.

Soil should be sampled soon after harvest to allow enough time to get results and make fertilizer decisions. Early sampling also helps farmers avoid the rush of soil samples that most labs experience in late August, just prior to wheat planting.

Fertilizing wheat with sulfur, potassium,and micronutrients such as zinc is not usually profitable because of native high soil fertility or low crop response. Soil testing can identify those few situations where it would be justified.

As important as it is, soil testing alone will not enable farmers to make the correct decision all of the time. Soil testing should be coupled with the farmer's experience and research results available for his area of the state. ▫Follett

WATER QUALITY REGULATIONS FROM HERE TO ETERNITY

Agriculture and water quality issues are inseparably linked because agriculture uses the major share of our land and water. Approximately 88% of Colorado water and over 50% of the State's land is devoted to agricultural production. Farming and livestock operations are known to be a potential source of sediment, pesticides, bacteria, and nutrients which can contaminate water supplies. According to public opinion polls, most U.S. citizens are seriously concerned about the environment. As a result, many law makers are also interested in environmental issues and support changes in public policy. A number of laws are now in effect at the state and national level that regulate agricultural degradation of the environment and water resources. Presently, much of this legislation encourages farmers to voluntarily adopt practices which minimize non-point source pollution.

Last month, some of the components of the new Colorado feedlot regulations for water quality were outlined in the newsletter. Regulations are an unpopular subject with farmers, but there is no reason to believe that current trends towards increasing regulation will abate soon - especially in times of plentiful, cheap food. The prevailing philosophy at the EPA and other such agencies is that "the polluter pays" for environmental costs associated with their operation. The agricultural community must seriously consider how it can deal with its negative environmental image or be prepared for more legislative action.

Agriculture and water quality issues are inseparably linked because agriculture uses the major share of our land and water. In Colorado, approximately 88% of the water and over 50% of the land is devoted to agricultural production.

One of the most significant pieces of water quality legislation in progress is the reauthorization of the Clean Water Act. This act is being hotly debated by environmentalists and agricultural interest groups. The current version of this bill pending in the Senate Environmental Committee (S 1081 by Sen. Max Baucus, D-MT) provides that the primary purpose of the act would be to "comprehensively protect the ecological integrity of water bodies." If the Baucus bill is approved as it now stands, the EPA will be empowered to impose new regulations on how commercial fertilizers are used. Writers of this bill apparently feel that the voluntary approach taken in the past has not demonstrably reduced water pollution resulting from agricultural activities. Groups such as the Northern Colorado Water Conservancy District believe that this bill will significantly impair water rights as they now function in Colorado. Farmer groups may want to track the development of this legislation as it is debated this fall.

A brief summary of the major water quality legislation now in effect is summarized below to familiarize readers with current laws.

Federal Statutes Regulating Agricultural Pollution

The 1987 Clean Water Act acknowledged agriculture's role in non-point source pollution and empowers the U.S. Environmental Protection Agency to administer mitigation programs through Section 319.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) gives EPA authority to restrict chemicals that pose a threat to the environment, wildlife, and groundwater supplies.

The Safe Drinking Water Act authorizes the EPA to set and enforce drinking water standards for contaminants such as pesticides and nutrients.

The 1985 Food Security Act implements conservation measures which indirectly address water quality concerns. This bill established the conservation reserve program, sodbuster and swampbuster provisions of the farm bill.

The 1990 Food, Agriculture, Conservation and Trade Act expanded USDA role in water quality protection by extending the conservation compliance, sodbuster, and swampbuster provisions. It also established a new program - the Agricultural Water Quality Protection Program to assist farmers in developing water quality protection plans and to provide cost sharing incentives. Mandatory recordkeeping for restricted-use pesticides is also required.

Colorado Statutes Regulating Agricultural Pollution

The 1990 Agricultural Chemicals and Groundwater Protection Act funds and authorizes groundwater monitoring for agricultural chemicals and the establishment of best management practices for Colorado. It authorizes the Commissioner of Agriculture to implement regulatory measures to protect groundwater supplies.

The Colorado Chemigation Act mandates the use of backflow prevention devices where chemicals are injected in irrigation waters.

▫Waskom

CROP PRODUCTION AND PEST MANAGEMENT FIELD RECORDS

Additional Crop Production and Pest Management Field Records are available upon request from Bob Croissant, Agronomy Department.

Copies of the crop production management record field sheets have been printed and are being distributed to Extension offices, bean dealers, and others. These record forms are to be used to record all necessary information required by the 1990 farm bill on restricted use pesticides. Other information should be recorded to complete the record keeping system for each field. You will receive an instruction sheet along with each four page record system. Additional record pages are available on request from Bob Croissant, Agronomy Department.

The record keeping system does not involve financial transactions. It is just a place to record all required information in an organized manner. It is suggested that users draw their farm on the farm map, number their fields, and complete a record for each field every year.

Financial assistance was provided by the Colorado Dry Bean Advisory Board for initial publication costs. ▫Croissant

HAY SAMPLING DEVICES AND CERTIFIED LABORATORIES

Laboratory analysis is necessary for accurately determining the feeding value of hays. Two key steps are involved in obtaining useful lab results. First, hay must be sampled properly, and then one must select a lab that provides results similar to other labs doing the same kind of analysis. This article addresses topics important to both these issues.

If proper sampling procedures are not observed, the lab results are not reliable. Recommended lot identification and sampling techniques are designed to group hay into relatively uniform lots and then obtain samples that are representative of these lots. For each individual uniform lot, there should be one representative sample. Complete guidelines for defining and sampling lots, including information on core sampling devices, are presented in the **Service-In-Action sheet No. .704**.

Sources for core samplers

Nasco West
1524 Princeton Ave.
Modesto, CA 95352
(209) 529-6957

Forageurs Corp.
P.O. Box 564
Lakeville, MN 55044
(612) 469-2596

Hart Machine Co.
1216 Southwest Hart St.
Madras, OR 97741
(503) 475-3107

The final step in sampling is to submit the sample to a laboratory for analysis. Past experience indicates that there is significant variation in forage testing results among laboratories across the US. A private organization called the National Forage Testing Association works with private and public forage testing laboratories to maintain consistency in methods so that comparable results can be obtained when similar samples are sent to different labs. This is done through a laboratory certification program. Under this program, labs are certified if they provide results comparable to most other labs after analyzing a standard sample. Certification has to be renewed on an annual basis. Five commercial laboratories in Colorado are certified for 1992.

Keys to useful lab results in hay sampling:

- ***proper sampling***
- ***certified labs***

Certified Colorado Laboratories

Colorado Analytical Laboratory
P. O. Box 507
Brighton, CO 80601
(303) 659-2313

Denver Grain Inspection
Analytical Services
P. O. Box 1519
Lamar, CO 81052
(719) 336-4794

Fas-Test Forage Laboratory
P. O. Box 520
Windsor, CO 80550
(303) 686-5421

Monfort Laboratory
P. O. Box "G"
Greeley, CO 80634
(303) 351-6344

Weld Laboratories, Inc.
1527 First Avenue
Greeley, CO 80631
(303) 353-8118

□Smith

WINTER WHEAT VARIETY TRIAL RESULTS FOR 1992

In 1992, CSU winter wheat variety trials were conducted at ten dryland locations and three irrigated sites in eastern Colorado. The dryland sites at Briggsdale and Sheridan Lake were not harvested because of erratic stands (due to winter injury). Results of the high moisture, low moisture, and irrigated variety trials are provide in three separate tables (see last pages of newsletter.) The tables contain yields for each variety at each location that a particular study was conducted. Varieties are shown in each table ranked (highest to lowest) according to average location yields. Additionally, averages for yield index ratio (YIR), grain test weight, stand survival, disease resistance, and lodging under irrigation are given in the tables. Producers are encouraged to evaluate the data in each table carefully, as there is a considerable amount of data. Please keep in mind that these results represent only the 1992 growing season. Varieties which perform consistently across many locations and years can only be identified when comparing over several years and sites. More detailed information regarding variety performance at each location as well as a summary of performance across

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

years can be obtained from local Extension offices .

The 1992 growing season, as usual, presented some unique challenges for winter wheat production. The season began with generally favorable moisture conditions for planting. Fall growth conditions were also favorable, until the late October cold snap. These early season subzero temperatures were, in some cases, too extreme for the crop to tolerate, particularly for late-planted wheat which did not have adequate time to grow and harden. Furthermore, winter snow cover was minimal throughout most areas of the state, increasing the exposure of plants to desiccating winds. Thus, some portions of the state experienced erratic stands from winter kill. The spring survival evaluations made at Ovid and Willard are evidence that varieties reacted differently to the winter stress. For example, varieties such as Arapahoe, Scout 66, the Quantum hybrids, Hawk, and TAM 107, were essentially unaffected by the stress. Conversely, varieties like Vona, Yuma, and TAM 200 were more severely injured by the cold stress and consequently had more depleted stands.

Moisture conditions were extremely dry during spring growth (April and May) across most of the state, so vegetative growth was greatly reduced. Lodging was not a problem at any of the dryland sites. Because of the dry spring conditions, foliar diseases were generally not a problem around the state either. Late-spring frost events occurred in extreme eastern Colorado. However, frost injury was not observed at any of the plots. Moisture conditions during late-season growth and grain filling improved considerably.

TAM 107 still continues to produce consistently high yields across the state. It possesses many desirable agronomic traits such as emergence strength, winter hardiness, straw strength, earliness, stress tolerance, and resistance to vectors of the wheat streak mosaic virus. Its major deficiencies continue to be lack of resistance to leaf rust and marginal grain quality. The leaf rust disease is primarily a potential problem only in the northeastern portion of the state and under irrigation. The taller varieties, Sandy and Lamar, also continue to be a consistent producers across the state. Results from this year strongly suggest that varieties like Vona, Yuma, TAM 109, and TAM 200 may be subject to a greater risk of winter injury when grown in northeastern Colorado. Regarding the commercial varieties in the table, Hawk and the Quantum hybrids also continue to show good performance over a wide region of the state. Finally, TAM 200 and Yuma appear to produce consistently high yields under irrigation. ▫Shanahan

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1992 EASTERN COLORADO WINTER WHEAT HIGHER MOISTURE VARIETY TRIALS

	LOCATION YIELDS						YLD*	YIR*	TW*	WS**
ENTRY	Akron	Burlington	Bennett	Genoa	Ovid	Willard	AVG	AVG	AVG	AVG
	BU/AC							%	LB/BU	(1-9)
CO880210	35.6	50.9	74.3	47.0	33.1	57.4	49.7	124	59.9	8
CO860094	41.8	28.8	77.4	55.0	47.9	44.1	49.2	123	55.9	9
CO880181	33.5	41.0	73.7	48.5	38.6	50.1	47.6	118	58.9	8
TAM 107	38.7	48.9	58.1	50.3	31.1	50.3	46.2	118	59.0	9
CO870258	29.4	43.1	60.3	48.5	39.8	54.1	45.9	116	57.4	8
SANDY	34.7	38.4	63.3	44.7	40.0	45.9	44.5	113	58.4	8
CO890065	35.3	35.2	75.5	48.9	36.5	39.8	45.2	112	58.7	8
TAM 200	32.9	46.6	70.0	44.3	24.8	47.7	44.4	110	59.7	5
NE 87615	29.6	33.3	79.0	47.6	36.3	43.9	45.0	110	57.5	9
AGRIPRO HAWK	33.1	32.1	66.5	45.8	38.0	44.9	43.4	108	57.9	9
CO880240	28.2	31.4	59.5	47.6	37.5	53.4	42.9	107	57.3	8
QUANTUM 549	25.7	26.9	69.1	45.1	44.5	44.8	42.7	105	56.9	9
LAMAR	24.2	35.6	66.3	47.6	36.0	42.6	42.1	104	58.9	8
TAM 109	41.5	29.5	69.3	42.3	23.2	44.7	41.8	103	54.1	6
CO880054	26.4	37.4	74.0	43.0	25.9	49.6	42.7	103	58.3	5
CO870310	29.5	32.7	72.8	42.6	25.6	48.3	41.9	101	57.1	6
CO880126	31.5	36.6	59.4	41.4	32.0	38.7	39.9	101	57.4	9
SCOUT 66	31.6	30.2	57.5	39.4	34.2	39.7	38.8	98	58.3	9
QUANTUM 562	22.7	27.4	67.0	39.1	37.3	41.8	39.2	96	57.4	9
AGRIPRO SIERRA	25.9	25.6	65.9	40.7	29.3	49.1	39.4	96	58.3	6
CO880169	23.2	29.0	62.6	44.3	25.7	44.8	38.3	93	57.4	8
YUMA	25.3	29.4	62.4	42.0	19.7	49.9	38.1	92	57.0	4
AGRIPRO BRONCO	25.4	29.8	60.2	41.1	28.0	39.4	37.3	92	57.7	8
SIOUXLAND	21.5	34.6	63.7	30.2	23.8	43.3	36.2	88	56.0	6
PI 2163	18.4	37.5	76.3	32.9	16.3	42.6	37.3	87	55.3	6
ARAPAHOE	24.4	26.3	60.9	38.3	30.9	29.0	35.0	86	55.2	9
AGRIPRO TOMAHAWK	22.0	28.7	63.7	37.0	21.0	42.2	35.8	86	57.5	8
RAWHIDE	21.4	28.2	63.2	36.5	23.0	41.1	35.6	85	56.7	7
VONA	24.7	25.6	66.1	35.2	15.9	47.9	35.9	85	57.4	5
WICHITA	19.5	32.7	48.8	33.2	20.1	35.0	31.6	78	57.8	7
AVERAGE	28.0	32.7	65.9	42.4	30.4	44.7	40.7	100	57.4	7

* Yield index ratio determined by dividing entry yield by location average yield. YLD, YIR AND TW average of six locations.

** Winter survival (WS) stand evaluations made at Ovid and Willard in spring, using 1-9 scale with 1 worst and 9 best.

1992 EASTERN COLORADO WINTER WHEAT LOWER MOISTURE VARIETY TRIALS

ENTRY	LOCATION YIELDS Lamar	LOCATION YIELDS Walsh	YIELD AVG	YIR* AVG	TW AVG
	BU/AC			%	LB/BU
CO890323	39.6	26.3	33.0	119	58.7
CO880210	39.5	25.3	32.4	116	57.1
LAMAR	39.5	24.7	32.1	115	59.5
CO890329	38.1	25.5	31.8	115	59.0
QUANTUM 542	41.0	22.9	32.0	113	55.9
CO880170	39.1	22.1	30.6	108	57.2
CO880169	38.4	21.9	30.2	107	57.2
CO880181	36.1	23.0	29.6	106	55.1
CO880240	34.7	23.9	29.3	106	58.3
CO860094	37.4	21.8	29.6	105	55.7
CO890317	34.2	22.7	28.5	102	57.9
SANDY	33.0	23.4	28.2	102	59.1
TAM 107	32.6	23.5	28.1	102	56.4
YUMA	34.1	22.2	28.2	101	57.5
CO880054	34.1	21.8	28.0	100	56.5
TAM 200	34.0	21.8	27.9	100	56.2
CO870310	33.2	22.3	27.8	100	56.9
AGRIPRO HAWK	34.1	21.6	27.9	100	57.1
BACA	31.1	22.3	26.7	97	55.9
ARAPAHOE	31.5	21.0	26.3	95	55.1
VONA	27.7	22.5	25.1	92	57.2
TAM 109	32.1	17.4	24.8	87	52.9
WICHITA	29.3	18.4	23.9	85	58.9
SIOUXLAND	28.9	17.2	23.1	82	56.7
AVERAGE	33.6	22.0	27.8	100	56.8

* Yield index ratio determined by dividing entry yield by location average yield. Yield, YIR, and TW averages for both locations.

1992 EASTERN COLORADO WINTER WHEAT IRRIGATED TRIALS

ENTRY	LOCATION YIELDS Burlington	Ft. Collins	Walsh	YIELD AVG	YIR* AVG	TW AVG	LODGE** AVG	L R*** AVG
	BU/AC				%	BU/AC	(1-9)	(1-9)
TAM 200	106.3	94.7	71.4	90.8	108	58.1	1.0	0
YUMA	105.0	88.5	76.9	90.1	108	59.0	1.8	1
CO880169	101.5	85.9	77.1	88.2	106	58.8	2.0	0
CO890128	97.1	83.5	82.3	87.6	106	58.6	1.7	0
CO890446	97.3	85.2	80.4	87.6	105	58.9	1.7	0
CO880054	96.9	89.7	76.3	87.6	105	59.2	1.7	1
CO880210	96.1	84.8	76.2	85.7	103	63.9	2.0	0
NE 87615	97.0	77.4	81.1	85.2	103	56.8	3.0	0
CO870449	97.4	85.8	73.7	85.6	103	58.7	1.7	0
CO880126	88.9	93.4	73.4	85.2	102	57.6	2.3	3
TAM 107	98.8	89.8	68.6	85.7	102	56.4	2.0	3
VONA	104.4	83.2	69.8	85.8	102	56.8	1.7	2
WI87-018	99.9	86.6	62.3	82.9	98	56.8	1.7	0
QUANTUM 562	93.1	79.2	73.0	81.8	98	58.1	1.7	2
QUANTUM 589	100.8	81.6	63.8	82.1	97	58.2	1.7	3
AGRIPRO SIERRA	102.0	84.2	60.6	82.3	97	58.0	1.3	0
CO870310	87.4	81.5	73.4	80.8	97	59.3	1.7	0
CO860094	81.4	91.2	69.2	80.6	97	56.3	2.3	0
CO890393	97.7	82.3	64.2	81.4	97	57.7	1.7	1
QUANTUM 588A	101.6	82.3	59.8	81.2	96	58.4	1.7	1
AGRIPRO TOMAHAWK	100.0	85.3	56.0	80.4	95	56.4	1.7	0
AGRIPRO HAWK	101.0	80.9	56.0	79.3	93	55.7	1.7	1
PI 2163	98.2	73.0	64.1	78.4	93	55.6	1.7	1
AVERAGE	95.7	84.5	70.7	83.6	100	57.7	1.8	1

* Yield index ratio determined by dividing entry yield by location average yield. Yield, YIR, TW averages of three locations.
**Lodging scale 1-9, with 1 least lodging and 9 most lodging.
***Leaf rust (LR) scale 1-9, with 1 having least infestation and 9 most.

Sincerely,

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