

## Bean History in Colorado

Mark McMillan, Colorado State University

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Dry beans (*Phaseolus vulgaris* L.) have been grown in Colorado for several hundred years. There is evidence that pre-Columbian people in the southwestern United States cultivated dry beans and corn as early as 1600 years ago in the Verde Valley in northeastern Arizona and over 800 years ago from Arizona to New York. More recently, commercial and seed production has occurred in regions of Colorado since the turn of the century. Beans were grown as land races, brought into Colorado by ancient people from its center of origin in southern Mexico and Central America. Land races were commonly grown in Colorado until the mid 1940's.

Colorado currently ranks as the fifth largest dry bean producer, and some years ranks third or fourth. Seed production began in the Greeley district when eastern seed houses contracted nearly 3,000 acres of seed production in 1916. Colorado yields at the time were 1,675 to 1,900 lbs / acre because of favorable environmental conditions, irrigation, and lack of diseases such as anthracnose (*Colletotrichum lindemuthianum*) and rust (*Uromyces appendiculatus*). Cultivars prior to the mid 1940's belonged to many bean market classes including pinto, great northern, and navy. However, pinto beans became the major market class in Colorado by the mid 1940's. Today, the majority of beans produced in Colorado are pintos (80 to 85%), with light red kidney, great northern, black and navy beans providing the remaining acreage. Limited amounts of other non-phaseolus bean classes are grown in Colorado, including mung, garbanzo, and black-eyed pea. Colorado farmers plant between 120,000 to 160,000 acres of dry beans annually, with production ranging between 112,000 to 136,000 tons, with a market value between 40 to 80 million dollars.

Colorado's diverse environment and the pinto bean's wide adaptation result in wide ranging yields of 120 to 400 lbs / acre for dryland production and 1,275 to 2,950 lbs / acre under irrigated production. The majority of beans grown in Colorado are produced under irrigation in the northeast, and dryland production traditionally occurs in the southwest part of the state. However, a new irrigation project activated in the late 1980's in the southwest region resulted in the conversion of many dryland acres to irrigated production.

As irrigated dry bean acreage increased around Greeley, many pathogens became common and eventually forced the dry bean seed industry to the western part of the state, where drier climates and natural mountain barriers to wind-blown inoculum result in less disease. Continuous cropping and irrigation have also impacted commercial bean production in eastern Colorado as diseases which were seldom or never observed in the early years of bean production have gradually become constant threats in the 1980's and 1990's. Examples include; bacterial brown spot (*Pseudomonas syringae* pv. *syringae*), halo blight (*Pseudomonas syringae* pv. *phaseolicola*), common bacterial blight (*Xanthomonas campestris* pv. *phaseoli*), white mold (*Sclerotinia sclerotiorum*), and rust.

### MAILING LABEL UPDATE

Please send changes to:

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The **Colorado Bean News** is supported in part by your voluntary check-off dollars administered by the **Colorado Dry Bean Administrative Committee** with headquarters at 1155 So. Havana Street - Suite 11-368, Aurora, CO 80012 (303-639-9600) (800-318-8049)

**Colorado Dry Bean Administrative Committee Update  
CDBAC HIGHLIGHTS**

Provided by Robert Schork, CDBAC Manager

The next scheduled board meeting of the CDBAC is November 2, 1998 at the Adams County Fairground at 9 am. The board will develop a plan to fill vacancies and define the goals/mission of the CDBAC. Your input and participation are welcomed and essential to the continued success of the Colorado bean industry.

CDBAC Budget (as of July 31):	1998	YTD Actual
<b>Income:</b>		
Assessments	125,000	82,576
Interest	2,000	1001
<b>TOTAL Income:</b>	<b>127,000</b>	<b>83,577</b>
<b>Expenses:</b>		
Promotional	7,500	9,881
Administrative	20,000	10,805
CSU Research & Education	49,000	49,000
Refunds	1,200	348
Meetings/Travel	10,000	2,972
Legal/Audit	1,000	825
Colorado Bean Newsletter	8,000	8,000
National Dry Bean Council	25,000	12,500
<b>TOTAL Expenses</b>	<b>121,700</b>	<b>94,331</b>
Excess (Shortage)	5,300	(10,754)
<b>TOTAL Surplus</b>	<b>65,123</b>	

[Note: Budget year = January 1 to December 31]

**Colorado Checkoff Summary - CDBAC  
Report of 08/23/98**

Market Class/Crop Year - CWT (\$ 0.04/cwt grower + \$ 0.02/cwt processor)

	PINTO	Lt Red Kid	Gr. North.	OTHER*	TOTAL
1988	1,966,727	38,113	785	46,148	2,051,773
1989	2,524,825	72,934	3,722	28,921	2,630,402
1990	3,580,157	16,475	4,648	26,041	3,627,321
1991	2,494,438	41,874	2,415	18,901	2,557,628
1992	2,346,493	70,784	30,170	32,565	2,491,291
1993	2,387,002	63,776	320	40,193	2,491,278
1994	2,485,876	123,064	3,228	11,686	2,623,856
1995	2,188,120	232,610	36,645	27,577	2,484,952
1996	1,673,844	79,360	40,762	6,271	1,800,237
1997	1,515,312	116,754	0	2,512	1,634,578
<b>TOTAL:</b>	<b>23,152,794</b>	<b>855,744</b>	<b>122,695</b>	<b>240,817</b>	<b>24,382,050</b>

Other = total of navy, black, pink, Anasazi, small white, small red, and Mayocoba beans  
Based on the \$ 0.04 + \$ 0.02 assessment on 24.38 million cwt since 1988, Colorado growers and handlers have invested over 1.4 million dollars in the future of their dry bean industry.

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## *American Dry Bean Board - Bean Flash*

Susan M. Hays, Executive Secretary

**F**oodservice Media Placement - BEAN has achieved a placement of the "Back to Bean Basics" in the September issue of School Foodservice & Nutrition (circulation: 62,790).

"Back to Bean Basics" is BEAN's series of tips for preparation of dry packaged beans. It includes soaking, cooking, storing, and measurement information. It's also available on our website: [www.americanbean.org](http://www.americanbean.org).

Food Industry Outreach is a 1998-99 national program activity of BEAN involving editors of major foodservice publications. Its purpose is to expand the audience for our messages to the foodservice industry.

BEAN will be participating in the International Food Editorial Council annual meeting this fall. We'll give you more details later!

## *2 Magazines Feature Beans in October Issues!*

Susan M. Hays, Executive Secretary

**W**oman's Day (Circulation 4,600,000) - "Bravo for Beans" appears this month. BEAN's ongoing relationship with Woman's Day Special Issues has helped establish us as a valuable resource for food and nutrition editors at Woman's Day. The issue is on newsstands now.

**P**arenting (Circulation 70,000) - "Bean Cuisine" is the title of this article in the October 1998 issue. The story is a result of BEAN's New York media tour with Debi Thomas. The article includes several recipes and BEAN information on nutrition, bean varieties, soaking and cooking times. This issue is on newsstands now.

## *CDBAC Membership*

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**COLORADO BEAN NEWS** is published quarterly by the Colorado Bean Network, a non-profit organization which supports the dry bean industry in Colorado. Address all editorial, advertising and mailing materials to: H.F. Schwartz, Dept of Bioag. Sci. & Pest Mgmt. Colorado State University, Fort Collins, CO 80523-1177, or call (970) 491-7846.

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**Publication Material Due Dates:**

Fall Issue	[Market Emphasis]	Sep. 7
Winter Issue	[Promotion, Nutrition Emphasis]	Dec. 7
Spring Issue	[Planting, Production Emphasis]	Apr. 7
Summer Issue	[Pest Mgmt., Harvest Emphasis]	June 7

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1/2 Page (7.0"x4.5")	B/W	\$180*
Full Page (7.0"x9.0")	B/W	\$350*
Back Page	B/W	\$400*
	Each Additional Color	\$75

**Art Work Specifications:**

\*PMT's - 85 lines preferred  
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Terms of payment are U.S. Currency, Net in 30 days.

Please provide Camera-ready Copy. Make check payable to the Colorado Bean News. Send to Howard F. Schwartz, Colorado Bean News, E207 Plant Sciences Building, Colorado State University, Fort Collins, CO 80523-1177

**Colorado Bean Network Update  
BEAN MARKET PRICE TRENDS**

Excerpts from the USDA Agr. Market Service - Bean Market News

Northern Colorado GROWER MONTHLY AVERAGE PRICE - per cwt by crop year Fob

P I N T O	1993-94	1994-95	1995-96	1996-97	1997-98
Sep	22.75	16.38	16.25	24.75	15.50
Oct	29.00	17.00	16.60	22.80	15.25
Nov	29.50	17.00	15.00	22.50	17.38
Dec	29.00	16.00	15.00	21.33	19.00
Jan	29.63	15.10	15.20	20.25	21.50
Feb	30.00	15.00	16.50	20.00	22.38
Mar	28.20	15.75	18.00	19.25	21.80
Apr	28.00	16.00	21.80	18.50	21.00
May	28.13	16.60	26.88	18.75	21.00
Jun	27.75	17.00	27.00	19.38	21.00
Jul	23.00	16.75	25.80	18.40	21.00
Aug	20.70	15.90	24.75	17.50	18.00
Average	27.14	16.21	19.90	20.28	21.32

[ Pinto price as of 9/22/98 was \$ 16.00/cwt ]

Northern Colorado GROWER MONTHLY AVERAGE PRICE - per cwt by crop year Fob

Lt Red Kidney	1993-94	1994-95	1995-96	1996-97	1997-98
Sep	23.17	24.00	22.63	29.63	19.60
Oct	24.13	23.13	22.80	31.70	19.50
Nov	25.50	23.00	22.00	32.00	20.25
Dec	26.00	23.00	21.33	32.00	20.00
Jan	26.00	23.00	20.00	31.88	20.75
Feb	26.00	23.38	20.38	31.75	21.38
Mar	26.00	22.63	20.50	32.00	22.30
Apr	26.00	22.50	23.05	32.00	B I
May	26.00	21.70	25.75	31.88	B I
Jun	26.00	21.50	26.00	29.00	B I
Jul	B I	21.63	26.00	28.00	B I
Aug	B I	22.00	26.00	N E	N E
Average	25.48	22.62	23.04	31.08	20.54

[ Light red kidney price as of 9/22/98 was \$ 24.00/cwt ; BI = Bought In, NE = Not Established]

**BEAN PRICE TRENDS & PATTERNS**

By K. Liang, D. M. Feuz and R. G. Taylor - Excerpts from Nebr. Coop. Ext. Circ. EC97-825-D

**SUMMARY:**

This Extension Circular has been a price analysis study of grower prices for pinto and great northern beans with focus on western Nebraska - eastern Wyoming markets. A simple compilation of actual grower prices does not adequately reveal seasonal trends, variation, or price ranges necessary for farmer marketing decisions. Thus, graphical presentations were portrayed and seasonal indices and measures of variation were calculated. Four major points emerge from this price analysis:

See Trends on page 5

Trends from page 4

Neither pintos nor great northern are consistently higher priced for an extended time period.

The price for pintos increases seasonally 20 % over the harvest price, in contrast to northern which have no seasonal pattern.

Pinto prices exhibit greater variation and range than great northern prices.

For both pinto and northern prices, the short-term high price swings far exceed in magnitude the short-term dips in prices.

With a 13-year average price of pintos equal to \$ 19.75 and northern equal to \$ 19.93, further price analysis is needed to formulate unique marketing plans for different bean varieties. There are several management/marketing implications from this study:

With less variation in prices, there is less price risk in growing northern.

On average, the price indices indicate there is no benefit to storing northern.

Given a seasonal pattern of a 20 % increase in prices for pinto storage may be profitable.

If a multi-year storage is done in anticipation of a substantial up-tick in prices, there is a potential for higher returns with pintos.

Given that the magnitude of the high price swing exceeds the magnitude for the low price dips, there is a greater opportunity for substantial positive returns over substantial losses in storing both pinto and northern beans.

The average monthly price (\$ / cwt) for pinto and great northern beans in western Nebraska and eastern Wyoming from 1983-84 to 1995-96:

Month	Pinto	Northern
Sep	17.18	19.46
Oct	19.12	19.80
Nov	18.93	20.01
Dec	18.58	19.79
Jan	18.82	20.18
Feb	19.36	20.05
Mar	19.76	19.74
Apr	20.15	19.47
May	21.11	20.07
Jun	21.61	19.93
Jul	21.57	20.06
Aug	20.76	19.25
Average	\$19.75	\$19.93

## DISEASE OBSERVATIONS FOR PINTO VARIETIES IN COLORADO'S 1998 BEAN PERFORMANCE TRIALS

Variety	Burlington		Eaton	Brush
	% White Mold	Common Blt.	% Yellow Canopy	% Yellow Canopy
ROG 214	7	S	5	20
CO 45185	29	MS	1	5
CO 46322	21	MS-S	10	5
ELIZABETH	20	S	70	20
CHASE	7	MR-R	30	5
APACHE	19	S-VS	70	10
CO 46329	20	S	20	20
KODIAK	7	S	30	5
BILL Z	16	MS-S	10	20
5051	16	S	20	5
CO 51715	25	MS	20	10
CO 46343	25	MS-S	50	10
CO 46348	25	MS	60	20
CO 49220	34	S	30	10
VISION	20	MR-R	20	5
USPT 73	2	S	30	5
ROG 261	18	VS	30	20
UI 320	6	S	40	40
BURKE	10	MS-S	20	10
CO 45188	28	MR	20	5

Note: % White mold intensity (incidence x severity) of 100 plants in 2 reps recorded 9/1/98; Common bacterial blight reaction defined as R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible and VS = very susceptible; % canopy yellowing recorded 8/18/98 as a response to Fusarium yellows and other root rot problems.

There was no evidence of rust infection on susceptible varieties at any CSU Variety Performance location. However, rust resistant varieties like Apache, Burke, Chase and Vision were effective against the local races of rust in commercial fields in eastern and southern Colorado and surrounding states.

Disease observations made by Dr. Howard F. Schwartz, CSU Plant Pathologist.

# Colorado State University

**COLORADO STATE UNIVERSITY** provides comprehensive support for production, pest management and processing of dry beans in Colorado.

## Research Personnel:

<b>Howard Schwartz</b>	Plant Pathology
<b>Mark McMillan</b>	Plant Pathology
<b>Kris Otto</b>	Plant Pathology
<b>Mark Brick</b>	Plant Breeding
<b>Barry Ogg</b>	Plant Breeding
<b>Jerry Johnson</b>	Variety Testing
<b>Jim Hain</b>	Variety Testing
<b>Jessica Davis</b>	Agronomy
<b>Scott Nissen</b>	Weed Science
<b>Frank Peairs</b>	Entomology
<b>Stan Pilcher</b>	Entomology
<b>Pat Kendall</b>	Food Science & Nutrition
<b>Frank Schweissing</b>	Arkansas Valley
<b>Mike Bartolo</b>	Arkansas Valley
<b>Abdel Berrada</b>	Southwest
<b>Mark Stack</b>	Southwest
<b>Calvin Pearson</b>	West Slope
<b>Fred Judson</b>	West Slope

## Extension Personnel:

Jerry Alldredge, Paul Aravis, Bruce Bosley, Randy Buhler, Wayne Cooley, Dan Fernandez, Bob Hamblen, Charles Hart, Bill Hancock, Ron Jepson, Gary Lancaster, Ron Meyer, Ken Smith, Brent Young.

## Websites of interest to bean growers

**CSU VegNet**  
[www.colostate.edu/Orgs/VegNet](http://www.colostate.edu/Orgs/VegNet)

**CSU Variety Trial Results**  
[www.colostate.edu/Depts/SoilCrop/extens.html](http://www.colostate.edu/Depts/SoilCrop/extens.html)

**Ag Stats**  
[www.usda.gov/nass/](http://www.usda.gov/nass/)

**American Dry Bean Board**  
[www.prairieweb.com/bean/bean\\_beans.htm](http://www.prairieweb.com/bean/bean_beans.htm)

**BeanGenes**  
[beangenesis.cws.ndsu.edu](http://beangenesis.cws.ndsu.edu)

**BeanRef**  
[www.ba.cnr.it/Beanref](http://www.ba.cnr.it/Beanref)

**Colorado Bean Company**  
[www.info2000.net/~colobean/contus.htm](http://www.info2000.net/~colobean/contus.htm)

**Colorado Department of Agriculture**  
[www.ag.state.co.us/DP1](http://www.ag.state.co.us/DP1)

**Idaho Bean Commission**  
[www2.state.id.us/bean](http://www2.state.id.us/bean)

**Jacks Bean Company**  
[www.jacksbean.com](http://www.jacksbean.com)

**Michigan Dry Beans**  
[www.concentric.net/~Mbsa](http://www.concentric.net/~Mbsa)

**Nebraska Dry Bean Commission**  
[www.nebraskadrybean.com](http://www.nebraskadrybean.com)

**Nutrient Data Lab**  
[www.nal.usda.gov/fnic/foodcomp](http://www.nal.usda.gov/fnic/foodcomp)

**Ontario White Bean Producers**  
[www.wwdc.com/whitepeabeans/](http://www.wwdc.com/whitepeabeans/)

**University of Nebraska, Lincoln IANR**  
[ianr.wais.unl.edu/cgi-bin/websearch](http://ianr.wais.unl.edu/cgi-bin/websearch)  
 (type "dry edible beans" to begin search)

## Colorado State University Update BEAN BYTES

### 1998 CSU Variety Trial Field Days:

A series of field days was hosted in eastern Colorado during August 18 to 19 by Colorado State University research and extension personnel, in addition to the Colorado Dry Bean Administrative Committee and various bean elevators. There was good turnout and ample time for interaction between specialists and participants at Eaton, ARDEC-Fort Collins, Wiggins, Burlington and Yuma. CSU specialists included Howard Schwartz, Mark Brick, Jerry Johnson and Jessica Davis; in addition to extension agents Jerry Alldredge, Bruce Bosley and Ron Meyer.

We gratefully acknowledge the following growers/sites for the field days: Eaton - Rod Weimer; Fort Collins - Agricultural Research, Development and Education Center; Wiggins - Duane Pope; Burlington - Pete Pratt; Yuma - Irrigated Agriculture Research Farm.

In addition to the CDBAC and Colorado Bean Network, the following bean elevators donated their time and refreshments for the participants: Northern Feed & Bean - Lucerne, Walton Bean Growers - Wiggins, Agland Inc. - Eaton, Burlington Marketing Corp. - Burlington, Western International Grain - Burlington, Central Bean Company - Quincy, Red Beard Bean - Delta.

Look for the varietal results of the 1998 Annual Variety Trial Report on DTN, the internet and Winter Issue of COLORADO BEAN NEWS later this fall.

### CSU Agronomy News Flash:

A long-time supporter of bean research and extension projects in Colorado has left Colorado State University for new challenges and opportunities in Nebraska. John Shanahan has accepted a research agronomist position with the USDA-ARS at Lincoln, Nebraska. We will all miss John's accumulated wisdom on the workings of CSU, and his general enthusiasm for life. John and Shelly and children have family in eastern Nebraska, and have left Fort Collins with our best wishes and gratitude for his professional contributions to the bean industry and lasting personal friendship.

### Dry Bean Management Clinic:

Be sure and register early for the January 5 - 7, 1999 bean clinic on the campus of Colorado State University. Complete information is available on the last page of this issue of Colorado Bean News.

### Plains Farmers Form Cooperative:

The July-August 1998 Issue of Northharvest Bean Grower reports that farmers in the southern Great Plains have formed a dry bean processing cooperative. The 21st Century Alliance consists of 750 farmers in Kansas, Colorado, Texas, Nebraska and Oklahoma. The Cooperative plans to purchase Bean Acres Inc., a dry bean processing facility whose corporate office is located in Sharon Springs, Kansas.

The co-op will start by cleaning and bagging pinto beans. Other types of beans could be added later, says Mark Meabon, chief executive officer of the bean cooperative. Other cooperatives under the 21st Century Alliance have purchased a New Mexico flour mill and started a dairy.

### **Spanish-language Bean Promotional Materials:**

The September-October 1998 Issue of Northarvest Bean Grower reported that the Northarvest Bean Growers Association recently completed a project translating some of its promotional projects into Spanish. The brochures and video explains where the Northarvest region is located in the U. S., what beans Northarvest farmers produce, and how the industry can ship Northarvest production all over the world. The printed material also includes a list of Northarvest bean suppliers. Because Spanish-speaking countries are importing more dry beans, it is important that promotion materials are available in their native language.

### **New Great Northern Variety:**

The Fall 1998 Issue of The Bean Bag announced the release of a new great northern variety called 'GN Weihing'. All of the presently grown GN dry bean varieties grown in Nebraska are susceptible to the presently occurring strains of rust. These varieties have a vining plant habit causing difficulties for furrow irrigation and cultivation. The most widely grown variety GN Beryl has small seed which is considered undesirable in some markets.

There is a need to release a larger seeded GN variety with a more upright plant habit combined with resistance to rust and bacterial pathogens. GNWM3-94-9 dry bean breeding line, to be released with the variety name 'Weihing', was developed in the Nebraska dry bean breeding program. It has an upright plant habit and is resistant to the prevailing strains of rust and common bacterial blight in Nebraska. Its seed size is larger than that of Beryl.

## **DRY BEAN STATISTICS**

Excerpts from Bean Market News, August - 1998

State	Area Harvested (000 acres)		Yield (lbs/acre)		Production (000 cwt)	
	<u>1997</u>	<u>1998*</u>	<u>1997</u>	<u>1998*</u>	<u>1997</u>	<u>1998*</u>
California	132.0	105.0	2250	2100	2970	2200
<b>Colorado</b>	120.0	160.0	1900	1700	2280	2720
Idaho	103.0	103.0	2150	2100	2215	2163
Kansas	20.0	19.0	1900	1800	380	342
Michigan	305.0	290.0	1650	1500	5033	4350
Minnesota	155.0	175.0	1550	1450	2403	2538
Montana	11.7	12.0	2200	2200	257	264
Nebraska	180.0	185.0	2060	2050	3708	3793
New Mexico	12.0	10.5	1700	1900	204	200
New York	39.5	30.0	1560	1500	617	450
North Dakota	530.0	700.0	1300	1250	6890	8750
Oregon	10.9	8.5	2060	1910	224	162
Texas	14.0	11.0	1020	900	143	99
Utah	5.6	5.7	700	540	39	31
Washington	38.0	40.0	2240	2100	850	840
Wisconsin	8.5	8.2	1800	1500	153	123
Wyoming	35.0	41.0	2260	2100	790	861
USA Totals	1720.2	1903.9	1695	1570	29,156	29,886

\* Harvest estimates for the 1998 crop

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## **A PRIZE PINTO, A BETTER BEAN**

By Jan Suszkiw, USDA/ARS  
Excerpts reprinted from *Agricultural Research*, July 1998

When it comes to survival, Burke is a real scrapper. The latest pinto bean cultivar from Agricultural Research Service and Washington State University (WSU) scientists, Burke fends off several harmful viruses and fungi that can fell a lesser plant.

Scientists bred the cultivar with a potent genetic package conferring high levels of disease resistance. This should give commercial growers added insurance against culprits like the bean common mosaic virus and bean common necrosis virus. Both can cause yield losses of up to 60 percent. A third menace, the curly top virus, is a "regional problem - mainly in the Pacific Northwest, where seed stock is produced," says Phillip N. Miklas, a geneticist in ARS' Vegetable and Forage Crops Production Research Unit at Prosser, Washington.

He is part of a bean-breeding team that includes ARS plant pathologists Matt J. Silbernagel and J. Rennie Stavely and WSU colleague An N. Hang. Their prized pinto debuts this summer for production in western states including Colorado, Idaho, Washington, and Wyoming.

Besides viruses, the new cultivar also resists U. S. forms of the rust fungus. Unchecked by chemical fungicide or other measures, rust causes a rust-colored blight on the

leaves of susceptible bean plants. Severe outbreaks may wipe out an entire crop. But with Burke, the fungus never gains a firm toehold in the rest of the plant, so it doesn't cause serious disease. The cultivar also withstands *Pythium* and *Fusarium* fungi, soil-dwelling microbes that can inflict costly root rots.

Farmers planting the hardy cultivar will get semi-upright plants that mature in 89 to 95 days. Burke produces large, firm, tan-colored seeds that cook and store nicely without turning into a crumbly, unappealing mush. That's important, considering how fond American consumers are of pinto beans - eating more than 3 pounds per person each year, according to USDA's Economic Research Service.

The new pinto line also earned higher ratings for canning quality in tests conducted by ARS' George Hosfield at Michigan State University. Encouraged by test results, Miklas' group applied for plant variety protection on Burke. This will help ensure the cultivar's genetic purity and longevity as it goes into commercial production.

[Editor's Note: Burke has performed very well in Colorado State University test plots in recent years. It is susceptible to bacterial diseases and white mold, and will benefit from a sound Integrated Pest Management program that includes a 3-year crop rotation, soil ripping, early-season copper-bactericide treatment, irrigation water management, and timely application of white

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## **WILD RELATIVES TO THE RESCUE**

Excerpts from *CIAT IN PERSPECTIVE*: 1997-98

The common bean (*Phaseolus vulgaris*) has been a staple in the developing world for quite a while. Carbon dating of beans found in a cave in Mexico shows that they were in domestic use at about 5000 BC. Since then, the diversity of cultivated beans has become seemingly limitless, as have market and consumer preferences for different varieties.

But the genetic diversity of the world's third most important legume, after soybean and groundnut, is not always enough to overcome its susceptibility to insect pests, drought, and several diseases. The severe damage caused by these problems has led CIAT scientists on a continuous search for germplasm that can be used to breed better beans.

"The gene bank at CIAT [in Cali, Colombia, South America] has about 35,000 accessions of beans," says CIAT bean breeder Shree Singh, "of which more than 28,000 are common beans. Of these about 26,500 accessions represent cultivated varieties, and 1,315 are wild types. We've already evaluated these accessions for

major agronomic characteristics. The germplasm bank here is not a seed museum, but an active resource for germplasm research."

The list of characteristics that bean growers want in a flagship variety is extensive, and it differs greatly by region and goes far beyond seed color and shape. CIAT has winnowed the list down to 11 qualities it considers of strategic importance in order for the germplasm to be useful worldwide. They are tolerance of drought and low soil fertility, high yield, early maturity, new plant types, and resistance to common bacterial blight, bean common mosaic, bean golden mosaic, anthracnose, angular leaf spot and leafhopper.

Genes may freely exchange within the common bean's primary gene pool, and much of CIAT's work in beans has taken advantage of this fact, using classical breeding techniques to move useful genes from one variety to another. Three further groups of beans - the secondary, tertiary, and quaternary gene pools - include species that are distantly related to the common bean.

Singh explains that *P. acutifolius*, the tepary bean, is one of those species that contains

See Wild on page 9

Wild from page 8

attributes that would benefit the common bean: "extremely high resistance to bacterial blight, which is the most widespread disease of beans, as well as resistance to leafhoppers and storage bruchids. And they are the most drought resistant beans of all."

CIAT uses a method known as embryo rescue to effectively combine the desirable qualities of these two normally incompatible species. The technique can be used when an embryo produced from the cross of common and tepary bean cannot survive if left in the mother plant. The hybrid embryo is rescued and nurtured in an artificial gel-like bed of nutrients until it grows into a complete seedling. CIAT has improved the embryo rescue technique for large-scale production of hybrids between common and tepary bean.

Is it fanciful to think that all or even most of the characteristics people want in beans can eventually be combined into one plant? "It's not improbable at all," replies Singh. "Doing it depends on making maximum use of the genetic diversity available. That determines our ability to transfer wild genes into a form that can be grown in farmer's fields." Biotechnology, says Singh, can speed up the process tremendously - perhaps cut it in half.

[Note: Dr. Singh recently joined the University of Idaho as their new bean breeder]



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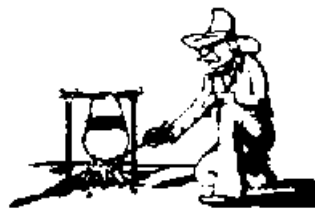
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## BEAN APPETIT!

Excerpts from *Norharvest Bean Grower*, July-August 1998

The Northharvest Bean Growers Association recently completed a phase of promotion geared to increased bean consumption in the U. S. It created an educational guide to beans for chefs and distributed it to more than 250 cooking schools nationwide.

The guide includes a three-ring binder titled "Bean Appetit, A Chef's Guide to Cooking With Beans." The guide features information on bean heritage and nutrition; how to cook, prepare and use beans in recipes; a reference guide to the bean classes; and 13 recipes from several well-known U. S. chefs.

"Beans are an important part of many cultures," says Bobby Flay, chef at Mesa Grill, New York, N.Y., in a press release accompanying the guide. "The increasing popularity of regional and ethnic cuisines means beans will be a big part of restaurant menus."

Health-minded diners who demand more low-fat and meatless options on restaurant menus are also driving a renewed interest in beans. Beans satisfy our desire for healthful food that tastes indulgent," says Katy Keck,

See Appetit on page 10

Appetit from page 9

chef New World Grill, New York, N. Y. "They're ideal for chefs because beans are a low-fat way to bring taste, texture and color to a dish."

"Cooking school instructors expressed the desire for information on preparing and menuing beans," says George McDonald, president of the Northarvest Bean Growers Association. "Bean Appetit! is a great tool to teach bean basics to tomorrow's top chefs and inspire them to incorporate beans into dishes they create."

## CHEFS RECIPES FEATURES BEANS

Excerpts from Northarvest Bean Grower, July-August 1998

From Mesa Grill in New York City to La Limes in Berkeley, California, more and more chefs are using beans to create exciting dishes. Here is a list of the recipes included in the Northarvest Bean Growers Association's Bean Appetit!, a guide distributed recently to the nation's culinary schools:

- Sweet Potato Ravioli with White Bean and Poblano Relish, Mushroom Essence and Balsamic Glaze - Chef Bobby Flay, Mesa Grill, BOLO, Mesa City, New York.
- Roasted Halibut with Wine Bean Crust and Pancetta - Capri, Venice, California.
- Southwestern Pinto Bean and Pork Stew - Chef Katy Keck, New World Grill, New York City, N. Y.
- Crawfish Rellenos with Red Bean Sauce - Chef Emeril Lagasse, Emeril's and NOLA, New Orleans, Louisiana.
- Crispy Black Bean-Bacon Tacos with Tangy Romaine Salad - Chef Rick Bayless, Fontera Grill and Topoloampo, Chicago, Illinois.
- Drunken Pintos with Cilantro and Bacon - Chef Rick Bayless, Fontera Grill and Topoloampo, Chicago, Illinois.
- White Bean and Chorizo Soup - TriBeCa Grill, New York City, N. Y.
- Tuesday's Red Bean Soup - Chef Emeril Lagasse, Emeril's and NOLA, New Orleans, Louisiana.
- Not Yo' Mama's Red Beans - Chef Paul Prudhomme, Chef Paul's Louisiana Kitchen, New Orleans, Louisiana.
- Asian Black Beans - Chef Katy Keck, New World Grill, New York City, N. Y.
- Pinto Three Chile Salsa - Chef Mark Miller, Coyote Café, Santa Fe, New Mexico.
- Black Bean Corn Salsa - Chef Katy Keck, New World Grill, New York City, N. Y.

If you would like copies of the recipes, call the Northarvest Bean Growers Association office at 218-334-6351.

## CHEF'S SEE BEAN DESSERTS AS NEXT BIG TREND

Excerpts from Northarvest Bean Grower, September-October, 1998

The Northarvest Bean Growers Association learned that dry beans are being used in a variety of ways in the nation's restaurants, and are appearing more often on menus than ever before. The Association draws these conclusions from a survey of chefs attending the recent American Culinary Federation national convention in Anaheim, California.

Specifically, the survey showed that:

- 75 % of the respondents used black beans most often, followed by pintos, 51 %; kidneys, 43 %; and navies, 40 %.
- Other beans mentioned included cranberry, great northern, fava, white and blackeye.
- Most chefs said bean desserts would be the next big bean food trend.
- Bean wraps, bean burgers and vegetarian dishes were also cited.
- Other trends mentioned included beans as a protein substitute, Asian fusion cooking using beans, South American cuisine and beans for breakfast.
- Mexican cuisine was the favorite ethnic food involving beans of 48 % of the respondents. Mediterranean cuisine was cited by 37 %; Southwestern, 29 %; and Latin American, 16 %.

The survey was conducted by Manning, Selvage and Lee, a Chicago, Illinois public relations agency assisting the Northarvest Bean Growers Association in its promotion efforts.

## FOOD SAFETY, SUFFICIENCY & SECURITY

By Kayleen A. Niyo, Managing Scientific Editor  
Excerpts from CAST, June 1998

The U. S. population is complacent with the quantity of their food supply, but less so with its quality. Having the best food supply in the world is not good enough; they worry increasingly about food safety and nutritional content as well as about water quality. They are environmentally minded but lack knowledge about agricultural production practices. They want some regulation in the food production/safety arena but also want to remain internationally competitive.

Biotechnology offers enormous potential for benefiting humankind. Well-focused research and new forms of collaboration among people and institutions are needed to

address the larger questions of food safety regulations. A high level of leadership from the food industry will continue to be needed. Microbial pathogens dominate food safety concerns in the 1990s, and consumers need information on the risks involved.

**Food Security: International Dimensions**

It is impossible to separate U. S. food security issues from international ones. The situation differs on each continent.

- Asia has a much larger fraction of the world's population than of its arable land. Projections suggest crop yields in China might be increased considerably. If India's current economic growth accelerates, diets may change there and India will be placing even greater demand on the world food system. Asia in general is likely to import greater quantities of food.
- Africa has experienced rapid population growth and slow economic growth. Its per capita food production has declined for three decades. For various reasons, it is not currently profitable for farmers to adopt improved technologies in many parts of Africa. Still, Africa could produce much more of its own food supply, though it will continue to be a net food importer well into the twenty-first century.
- Western Europe's expected growth in food consumption is limited. Agricultural productivity there is high; however, intensive crop and livestock production has led to adverse environmental consequences. Partly because of reduced export subsidies, agricultural export prospects will be limited.
- In Central and Eastern Europe, agricultural productivity has been low by international standards relative to its potential. Privatization has begun and eventually this region will play an important role in addressing world food needs.
- South America has the largest arable land area available for agricultural production relative to its population without causing deforestation or other environmental damage. But distribution of wealth is more skewed there than in other regions of the world. If the poor's income there increases, a larger proportion of their production will be consumed internally. Nevertheless, the continent likely will supply a much larger volume of agricultural exports in the next century.
- Australia and New Zealand historically have been strong agricultural exporters, and they are expected to continue in this role, although with limited expansion potential.
- North America has a mature, high-income, slowly growing market for agricultural output. However, agriculture here also is undergoing significant changes. Canada will become an even larger exporter of both bulk commodities and higher-valued products. In the United States, 1996 agricultural policy changes increased farmers' planting flexibility and responsiveness to world market demand. A larger fraction of its meats and other animal products likely will be exported in the future.

**Hunger and Poverty**

The real food crisis today is hunger caused by poverty. Despite a 55% increase in worldwide food production from 1970 to 1995, the number of malnourished people worldwide dropped by only 15%, and 800 million people (an estimated 20% of the world's population) remain hungry. The International Food Policy Research Institute, the Food and Agriculture Organization of the United Nations, the World Bank, and the U. S. Department of Agriculture (USDA) make the following projections:

- The supply of food will have to increase by 30 to 50% to meet demand in the year 2020.
- Population growth and economic growth will determine demand for food.
- The world's farmers will be able to respond to the challenge and expand production to meet this growing demand.
- Food production is expected to increase both in absolute terms and on a per capita basis.
- Production will not grow equally throughout the world; much of the capacity to expand the supply of food will be in North America and other major grain-producing regions.
- Trade in food will become increasingly important in balancing regional differences between supply and demand.

**Potential Solutions**

The World Food Programme has spearheaded the U. N.'s largest relief effort to date. The

See Safety on page 13



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## BEAN RECIPES

By Anna Aughenbaugh - Starlite Publications, Fort Collins, CO

It is harvest time and you are tired, not just tired, but exhausted - but you will have to get a nourishing meal on the table to renew your energy. Just as you have to put the right fuel into the tractors, trucks, and combines, your body requires lots of proteins and carbohydrates to keep up the pace.

Bean growers know they are harvesting one of the most nutritional foods available. Served with any grain product, such as rice, cornbread or crackers, you get a com-

### **Pinto Cookies** - "No, you can't taste the beans!"

3/4	cup	cooked pintos, mashed
1	cup	brown sugar
1/2	cup	shortening
2		eggs
3/4	cup	apple sauce
1	t	baking soda
1	t	baking powder
2 1/4	cups	flour
1/2	t	cinnamon
1/2	t	cloves
1/2	cup	chopped nuts
1/2	cup	raisins

Cream sugar, shortening and eggs. Add pintos and apple sauce; beat until fluffy. Add dry ingredients; beat until smooth. Stir in nuts and raisins. Drop by teaspoon onto greased cookie sheet. Bake at 375 degrees for 15 - 20 minutes or until golden brown. Makes about 36 cookies.

Option: Substitute chocolate chips for raisins.

### **Barbecued Bean Soup**

2 1/2	cups	pinto beans
8	cups	water
2	cups	chopped carrots
1	cup	chopped onion
1	can	16 oz, tomatoes
1/4	cup	vinegar
2	T	brown sugar
2	T	Worcestershire sauce
2	t	prepared mustard

Wash and soak beans. Cook with water, carrots, onion and hambone for 2.5 hours. Add the rest of ingredients and cook 30 minutes more or until beans are tender. Remove hambone; cut meat off of it and return meat to soup. Mash some of the beans in the blender to help thicken soup. Makes 8 to 10 servings.

Option: Use 7 cups canned beans. Use crockpot; turn on high to get first ingredients very hot, then turn to low. Add remaining ingredients and let soup simmer all night or all day.

plete protein, plus many of the vitamins you need. Get out your crockpot, put in the ingredients for soup and let it cook all day. If you want soup for lunch, put on the crockpot at night before you hit the hay. Serve big steaming bowls of soup with a tossed salad or apple salad, and some cookies.

Quick soak the beans by boiling for 2 minutes, turn off heat and let set for 1 hour. Drain off soaking water to remove some of the complex sugars that cause the gas problem and cook according to recipe directions.

### **Black Bean Veggie Soup**

1 1/2	cups	black beans
3	cups	water
3/4	cup	chopped celery
3/4	cup	chopped onion
1/2	cup	chopped carrot
6	cups	beef broth or bouillon
1	can	8 oz, tomato sauce
1/2	cup	uncooked rice
1		hamhock
1/2	t	oregano
1	t	pepper
2	t	garlic
1/4	t	cloves
1		bay leaf

(Note: black beans don't need to be soaked, but will hold their shape and not be mushy.)

Wash beans. Simmer all ingredients in a large kettle 2 hours. Add tomato sauce and rice. Cook another 30 minutes or until beans are tender. Cut meat off bone and return meat to soup. Makes 2.5 quarts.

Option: Cook in crockpot on high until very hot; turn to low and let it simmer all night or day.

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Safety from page 11

needs of countries negatively affected by El Nino also are being considered. Local solutions to food insecurity can be identified, provided that (1) the people involved are consulted, (2) the value of their knowledge is recognized, and (3) external knowledge is used to complement local knowledge. In addition, global food availability might be increased in the following ways:

- The land area planted can be modestly increased, as can yield per hectare.
- To alleviate food insecurity internally, developing countries might increase agricultural productivity and/or economic development activities in rural areas, invest in agricultural research, and refrain from implementing "cheap food" policies.
- Good national policy should include a transparent legal framework, gender equality, environmental protection, and attention to susceptible populations.
- South America, North America, and Eastern Europe should effectively use available arable land, increase investment in agricultural research, and disseminate information.
- Declining food aid must be restored to previous levels to support countries that cannot afford to participate in the international market.

**Research in the Twenty-first Century**

Technologies must add to rather than deplete the earth's resources, be environmentally friendly, apply to farms of all sizes, and be sparing of capital, management, and nonrenewable resources. Stable, high-yield production is needed. Some conventional research priorities that will require increased attention include plant and animal breeding and resistance to environmental stress; improved efficiency of production of crops and livestock; pest management; human, animal and plant health; weather and climate; irrigation and water management; soil and fertilizer management; environmental quality; aquatic food sources; postharvest losses and storage; basic biological research; integrated production systems; market expansion; food policy issues; and information systems.

Two newer areas of research needing increased support are biotechnology as a tool to maximize productivity, and development of new food plants by genetic engineering to help prevent diet-related diseases of humans.

[Editor's Note: The entire 78-page publication no. 21 entitled, "Food Safety, Sufficiency and Security" is available for \$ 26.00 + \$ 3.00 p/h from CAST, 4420 West Lincoln Way, Ames, IA 50014-3447]

**FOOD QUALITY PROTECTION ACT:**

**Putting the Pieces Together**

Excerpts from The Bottom Line, Summer 1998, Dow AgroSciences LLC

The Food Quality Protection Act (FQPA), passed by Congress in August 1996, contains far-reaching provisions to revise the tolerance standards pesticides must meet to be approved for use by the U. S. Environmental Protection Agency (EPA). Indications are that the EPA is establishing policies that needlessly put the future of many valuable pesticides in jeopardy without any corresponding improvement in food safety or children's health.

Every pesticide product brought to the market today is subjected to more than 120 separate tests, a process that ensures human safety and environmental responsibility. Effective pest control keeps lice and ticks off our kids, roaches and fleas out of our houses, and allows our farmers to continue to grow the safest, most abundant and affordable food in the world.

See Quality on page 14



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irradiation from page 13

**FQPA - Other Aspects of the Law**

The guiding principal of the FQPA is that there be a reasonable certainty of no harm. Other aspects of the law include:

**Food Safety for Infants and Children** - The EPA may add up to a ten-fold additional safety factor to ensure that residue tolerances protect infants and children.

**Aggregate and Cumulative Exposure** - Potential aggregate exposure from food, drinking water and non-occupational residential sources, as well as the cumulative exposures from different pesticides that the EPA believes may have a similar impact, are to be included when setting pesticide tolerances.

**Consumer Right to Know** - The EPA must publish a consumer friendly brochure for use in grocery stores that discusses the risks and benefits of pesticides.

**Endocrine Disrupters** - A comprehensive screening program must be developed and implemented specifically for estrogenic and other endocrine effects.

**Implementing the FQPA**

Questions about FQPA implementation prompted Vice President Al Gore to take action. In an April 1998 memo to the U. S. Department of Agriculture and the EPA, Gore asked the two agencies to work together to properly implement the FQPA. Proper implementation must include:

**Sound Science in Protecting Public Health** - The agencies must base decisions on the best science and data available. They should seek peer and public review of their methods and approaches for analyzing potential risk.

**Transparency** - The agencies must clearly and fully communicate their approaches to affected groups, facilitating informed review. All alternatives or competing

approaches or interpretations should be fully explained. The public must be made aware of decisions to seek or not to seek additional data and the reasons why.

**Reasonable Transition for Agriculture** - The agencies should ensure that affected pesticide users and other affected groups have the time and support needed for transition to new pest management strategies. They should expedite approval of products that may serve as safe and effective substitutes for products considered to present unacceptable risks. The process for responding to emergency pest management challenges should be streamlined.

**Consultation with the Public and Other Agencies** - The agencies should establish effective ways to consult user groups, pesticide manufacturers, environmental and public health organizations and others concerned with FQPA implementation.

Gore makes it clear that implementation of the Food Quality Protection Act is a complex process that must be approached in a sober and scientific manner. The situation changes daily, but the message is clear. Science and health decisions must not be politicized.

**Speak Out**

Dr. Bob Gravani, Department of Food Sciences at Cornell University, stated, "Our food has an excellent track record of safety. Consumers don't realize that when you look at the actual numbers for pesticide residues on food, they are very, very small and within the tolerance levels set by EPA. Test data from the FDA, USDA and individual states such as New York and California do not support the opinion of many who believe there is a problem with levels of chemicals in our food. Many states have adopted Integrated Pest Management practices to reduce the dependence on pesticides and to continue to provide abundant, high quality and safe fruits and vegetables to consumers."

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## **PRESCRIPTION PESTICIDE USE IN THE U. S.**

CAST Issue Paper No. 9, August 1998 - By H. D. Coble et al.

### **SUMMARY:**

Chemical exposure has been a major concern of the general public for many years. This concern has resulted in regulation of food additives, drugs, cosmetics, and pesticides. In 1996, Congress enacted the Food Quality Protection Act (FQPA), which established a health-based standard for all pesticide residues in food and mandated that EPA determine that there is reasonable certainty of no harm from aggregate exposure to a pesticide from various sources, including the diet, drinking water, and residential use. Under the law, all existing pesticide tolerances will be reassessed in a process that is scheduled to be completed by August 2006.

The outcome of the process could result in the cancellation of some pesticide registrations important to production of several crops. The medical profession uses a model where relatively low-risk chemicals may be self prescribed, but high-risk chemicals are prescribed only by a trained and licensed professional. A similar model could be applied to pesticides where exposure control is an issue. Prescription use could be a mechanism by which certain valuable but high-risk pesticide uses could be maintained while addressing the public's concern for safe use of those products.

However, it should be understood that prescription pesticide use will require a new level of infrastructure in terms of personnel qualified to issue prescriptions. Such an infrastructure would take time to put in place and considerable resources to maintain. Careful analysis of the costs of prescription use should be made before such a step is taken.

[The complete copy of this 10-page paper may be purchased for \$ 3.00 from CAST, 4420 West Lincoln Way, Ames, IA 50014-3447]

# DRY BEAN MANAGEMENT CLINIC

## JANUARY 5-7, 1999

Presented by: **Colorado State University Cooperative Extension**

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The early registration fee of \$150 for this 3 day clinic includes tuition, speaker papers, major collection of dry bean management information, beverage breaks, campus parking permit, and two lunches. This early fee is honored for all registration forms postmarked and paid by December 1. After this date the fee is \$200. No single day registrations are available. Space is limited, so please register early to better assure your place in this program.

You can use the attached registration form to register now, or you can request a copy of the brochure with program details and a registration form be sent to you as soon as it is printed in September. To get a brochure sent directly to you, please send your name, address, and phone number to: Gordon Hazard, Office of Conference Services, Colorado State University, Fort Collins, CO 80523. He can also be reached by calling (970) 491-0466, Fax at (970) 491-3568 or e-mail at [ghazard@ocslan.sacc.colostate.edu](mailto:ghazard@ocslan.sacc.colostate.edu)

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