

NEBRASKA POTATO EYES

Technical News Reports for the Nebraska Potato Industry

Vol. 3, Issue 3
Winter, 1991

Alexander D. Pavlista, Editor
Extension Potato Specialist

Editor's Note

It is with deep sadness that Bob O'Keefe and myself announce the death of Dr. Harvey O. Werner. Many considered Dr. Werner to be the "Father of the Nebraska Potato Industry". He died on October 7, only two weeks before his 98th birthday. (See Passages). We send Dr. Werner's wife, Elsie, their four children and the whole family our sincerest condolences.

The growing season is over and the spuds are in. This year was the "year of early blight"

(See SPUDDERS on Page 6). PVY in Norkotah was a major problem.

Now is also time to prepare for the next Nebraska Potato Focus. The topic will be "Potato Diseases". Remember, it will be on December 10 and 11. Notices and registration forms will be in the mail soon. A number of guest speakers will be coming including Doug Slothower of the National Potato Board and probably Ron Walker of the National Potato Council. Gary Leever will be giving a special presentation on what runs through his mind and eyes during field inspections. As last year, the holiday dinner will be at the Scotts Bluff Country Club and the plan is to make the meal center around a particular cuisine.

You and the other U.S. Potato producers confirmed in a referendum (8/19-9/6) amendments to the National Potato and Promotion Plan. Imported potatoes, potato products and seed potatoes will be assessed at rates levied on U.S. potatoes. Eighty one percent of the producers and importers who voted favored this provision. Other confirmed amendments include representation of importers, up to 5, on the National Potato Promotion Board and the elimination of the assessment refund.

The University of Idaho recently released a bulletin (#725, August 1991) entitled "Bruise-Free Potatoes". This bulletin was assembled by members of the National Potato Anti-Bruise Committee of the PAA. There are several copies at the Panhandle Research and

Extension Center, Scottsbluff. The Committee and the University of Idaho have also developed three videotapes - "The Harvester", "Harvester Chain Adjustment" and "Handling". To purchase these contact "Ag Communication Center, University of Idaho, Moscow, ID 83843"; the combined price is \$110. I have some fliers on these if anyone would like to learn more.

Looking forward to seeing all of you in December. I think NPF 91 will be the best yet.



In This Issue...

"Father of the Nebraska Potato Industry" Dies	2
PAA Meetings	2
SFA Potato Chip Variety Trials	3
Business in Japan	3
NPC Wary of Free Trade Agreement	4
EBDC/ETU Market Basket Survey	5
Life Without Agrichemicals	5
EBDC/ETU Market Basket Survey	5
Aldicarb Use on Seed Potatoes	5
Cultivars: LaBelle	6
Spudders	6
Recordkeeping of Restricted Use Pesticides	7
CAFME*—Who Keeps Good Records Anyway?	8

PASSAGES

"Father of the Nebraska Potato Industry" Dies

Robert O'Keefe and Alexander Pavlista
Extension Potato Specialists (retired and current)
University of Nebraska, Scottsbluff



Dr. Harvey O. Werner died at the age of 97 in Lincoln, Nebraska on October 7, 1991. Dr. Werner joined the staff of the University of Nebraska in 1918, became a Full Professor in 1926, received his Ph.D. in 1934, and retired on July 1, 1962.

Dr. Werner was a native of Wernersville, Pennsylvania. He was educated at Pennsylvania State University (B.S., 1913), University of Nebraska (M.S., 1923) and University of Chicago (Ph.D., 1934). At retirement, Dr. Werner had completed 44 years of service to the Nebraska potato industry.

Among his many accolades, Dr. Werner was President of the Potato Association of America in 1925, became an "Honorary Life Member" in the PAA in 1954, and a "Fellow" in the American Society of Horticultural Science in 1965.

Eleven potato cultivars have been released by Dr. Werner. These include 'Bounty', 'Haig' and 'Progress'. The Haig cultivar opened the processing potato market to Nebraska growers. Besides potatoes, two tomato cultivars Sioux and Red Cloud were released.

Dr. Werner developed a needed premium market for Nebraska potatoes by starting the certified seed potato program. He is credited with playing a major part in the continuance of the Nebraska potato industry.

PAA Meetings

Alexander D. Pavlista
Extension Potato Specialist
University of Nebraska, Scottsbluff, NE

The 75th Annual Meeting of the Potato Association of America (PAA) met in Spokane, Washington, August 11-15. The symposium of the meeting was titled "Maintaining Potato Productivity into the 21st Century". The presentations in the symposium will be published in an upcoming issue of the American Potato Journal. Some of the research highlights which are of interest to Nebraska growers follow:

Verticillium Wilt—

As phosphate levels increase in soils, there is a correlating decrease in the incidence of Verticillium Wilt.

Verticillium Wilt expression in Russet Burbank was least when rotated after corn or sudangrass. Dr. Jim Davis (University of Idaho) reported on the use of cover crops for the control of Verticillium and Rhizoctonia. Even 6 years of fallow did not reduce the populations of Verticillium dahliae in soil. Sudangrass as a cover crop was outstanding at reducing Verticillium Wilt; a 3-year continuous cropping of this cover crop was the only treatment to significantly reduce the population of this fungus. Other effects on the R. Burbank cropping year were increased N and P in soil, increased potato growth, and increased yields of US #1 tubers. Corn and three rapes tested also reduced Verticillium Wilt occurrence. Sudangrass had no effect on Rhizoctonia Wilt. Essex rape did reduce stem infection by Rhizoctonia.

Marigolds decreased root lesion nematode population and increased yields of potatoes planted the following year. However, the growth of crops especially beans planted right after marigolds are soil incorporated may be inhibited by a month.

PVY-N —

Dr. Robert Coffin reported that 460 acres in Prince Edward Island were found infected with PVY-N as of August; 4400 acres are out of certification. Most of the tubers were composted. All home garden potatoes were eliminated. The most infected cultivars were Atlantic, R. Norkotah, R. Burbank, and Shepody. Most "positives" were in Foundation Seed. Tobacco plants were placed in 20 fields some of which had PVY-N. No symptoms were detected on the tobacco.

Weed Control —

At 7 weeks after emergence, 85% of incident light is excluded by Superior's canopy and 99% by R. Burbank's. From 7 WAE, weed control is due to canopy excluding light from the soil and 95% exclusion is needed. Weed control is accomplished by herbicides up to 7 or 8 WAE. Sencor/Lexone dissipated from 1 to 0.2 ppm by 6 WAE and to 0 by 8 WAE.

Continued on Page 3

PAA Meetings From Page 2

Nutrition —

Phosphate uptake is higher in R. Burbank when phosphate fertilizer is disced into the soil and it is least when applied as a band.

When nitrogen is applied preplant, there is a 51% recovery of N in R. Burbank plants in September. But, if the N is applied during the season, the recovery, indicating uptake efficiency, is greater. On 6/12, it is 84%; on 8/2, it is 79% in plants.

Two quick field test for nitrate in leaves were compared with the traditional dried ground samples/electrode procedure. Good correlations were obtained in the 1989 and 1990 growing season in New York. These field tests, Merck strips and Hach kits, give readings on fresh plant sap within 10 minutes.

Miscellaneous—

Tuber formation stops at soil temperatures above 77° F and injury occurs at 85° F.

Certain volatile monoterpenes have been found to be highly effective potato sprout inhibitors, 100 times greater than CIPC. They also inhibit the growth of fungi on tuber surfaces. These oil constituents are commonly used in flavorings, perfumes and over-the-counter medications.

Microwaves were reported to break sprout dormancy of R. Burbank tubers. A 2-second exposure of 2.5 lb of single-drops was adequate to stimulate sprouting.

Business in Japan

Alexander D. Pavlista

Extension Potato Specialist

University of Nebraska, Scottsbluff, NE

The Pacific Rim is the most promising export market for U.S. potatoes. Since 1985 sales of potatoes in the Pacific Rim have risen by 161 percent. Japan has been a major market. In 1985 the U.S. exported 628 million cwts of potatoes and in 1990 the U.S. exported over 1 billion cwts of potatoes for an increase of 60 percent.

The Japanese culture is dramatically different from that of the USA. One example is Japanese business practices. Two points underlie all business conducted in Japan. 1. Business must make a long-term commitment to Japan. 2. All business is based on relationships.

People to people trust is a key factor in Japanese business relationships. Contracts are mere formalities and do not mean nearly as much as a person's word.

Once initiated, business ties last for years. It has taken years for The Board to carve itself a niche in the Japanese business world, but today, U.S. potato exports to Japan are at an all time high.

SFA Potato Chip Variety Trials

Alexander D. Pavlista

Extension Potato Specialist

University of Nebraska, Scottsbluff

The Snack Food Association (SFA) Potato Chip Variety Trials were conducted in 1990 for the fifth year. The trials were located at California, Florida, Maine, Pennsylvania, Michigan, Washington, and The Red River Valley. Norchip and Atlantic continue to be the most popular cultivars used for chipping. Atlantic produces a good chipping tuber with excellent specific gravity. The disorders of this cultivar that need improvement are hollow heart, heat necrosis, and storability. Three cultivars have performed very well and show promise for producing acceptable chip color after 45_ F storage; these are Snowden, Somerset, and AF875-16 (Mainchip). The latter, however, yielded below average.

Comparing 3-year averages of cultivars between 1986 and 1990, the highest yielders were Steuben, Gemchip, Allegany, Atlantic, Kanona, Spartan Pearl, and AC80545-1. By far the best specific gravity of 1.090 was obtained by Atlantic; next were Snowden (1.085), MS700-70, MS716-15, and Steuben (1.083); Norchip was 1.080. Note Mainchip was not included.

**Overall Averages of Cultivars in 1990 Trials
(7 locations)**

	Yield (cwt/A) US #1	Specific Gravity	Agtron Chip Color
Atlantic	325	1.091	58
Norchip	245	1.081	59
Coastal Chip	292	1.082	58
LaBelle	227	1.075	56
Saginaw bold	244	1.083	61
Snowden	247	1.088	60
Spartan Pearl	279	1.080	57
Mainchip	234	1.092	61
CS7232-4	199	1.076	58
ND2008-2	223	1.070	58
E55-35 (2 locales)	355	1.099	59
NY85 (5 locales)	193	1.087	62

NPC Wary of Free Trade Agreement

Ron Walker
Executive Director
National Potato Council, Englewood, Colorado

The United States potato industry relies on the U.S. domestic market for roughly 87 percent of its total fresh potato trade and 80 percent of its total processed potato sales. Would a proposed United States-Mexico free trade agreement put thousands of U.S. vegetable growers out of business? Or would it create opportunities to sell U.S. produce (potatoes) to Mexico? These are questions that are now being debated as the Bush Administration continues negotiations with the Mexican government over a proposed free trade agreement. For this reason, the National Potato Council (NPC) is extremely concerned with the potential for increased imports of Mexican fresh and processed potato items as a result of a free trade agreement between the two countries.

The Council is also concerned that a free trade agreement will entice major U.S. potato processors to move their operations to Mexico to take advantage of low labor and low overhead costs of production. In turn their plants would likely look to source their fresh supply from Mexican-produced potatoes. It is a fact that more and more U.S. vegetable growers will shift a portion of their production south of the border. Statistics also indicate a rapid rise in Mexican vegetable exports to the U.S. Recent figures from the U.S. Department of Commerce, Bureau of Census show that the value of fresh vegetables imported into the U.S. from Mexico increased from \$435 million in 1988 to \$586 million in 1989. This does not include melons or prepared vegetables.

Many are asking the question "Will all vegetable production shift to Mexico?" No. Growers who have farms in Mexico indicate the advantages are not always as great as they might seem. The trend currently favors more Mexican vegetables, and a free trade agreement would greatly boost this trend. While we recognize that such an agreement can be of great benefit to some sectors of our national economy, it is important that the negotiators not forget the impact such an agreement will have on specific industries such as potatoes. To date statistics reveal nearly 90 percent of Mexican fresh fruits and vegetables are exported and shipped to U.S. markets under current trade relations.

The negotiations between the U.S. and Mexico must have specific goals. The U.S. should conclude all efforts in the Uruguay Round before formal negotiations begin on any free trade agreement. All tariff and non-tariff barriers must be addressed in the free trade negotiations. Mexico's restrictive licensing practices must be eliminated. Tariff eliminations should occur over the longest possible time frame for sensitive items such as

potatoes. Free access on both sides of the border will mean increased U.S. imports of both fresh and processed potatoes from Mexico.

In 1990 approximately 85,000 hectares (215,000 acres) of potatoes were planted in Mexico. In addition, Mexico produced some 200,000 tones of seed potatoes. Today the Mexican growers have purchased seed potatoes from both the U.S. and Canada to not only improve but expand their production. Industry sources estimate that Mexico has the potential to plant an additional 400,000 acres of fruits and vegetables in the Matzulan areas. We view the idea of a free trade agreement between the U.S. and Mexico with grave concern for the simple reason that every study that has been done on the subject has found that the U.S. fresh fruit and vegetable industry will be the loser in the end.

One other issue that has not been discussed is that of agricultural chemicals. The registration process and maximum residue levels between the U.S. and Mexico must be harmonized with adequate safeguards to insure compliance. Today there is a vast difference between what is being used in Mexico versus what is being used in the U.S. with regard to agricultural chemicals.

In conclusion the Council strongly believes that, as stated before, the U.S. must conclude all efforts in the Uruguay Round of multilateral trade negotiations before pursuing a free trade agreement with Mexico. If the Uruguay Round negotiations fail, then all areas of access concern—tariffs, import licenses, effective phytosanitary enforcement based upon sound scientific standards, subsidies and certification, and inspection requirements—should be addressed in the negotiations.

Any U.S. and Mexico free trade agreement will be a double-edged sword. Potato growers in this nation have cause to be alarmed and concerned about possible implications. They, in the end, could feel the sharp edge.

(Editor's note: Vegetables with pesticide residue above tolerance (violations) were mostly found in imported samples and not U.S. samples; refer to table.)

Vegetables: 1989 Surveillance

	No Residue	Less than Tolerance	Violations
	Percent of Samples		
Imported	68.1	27.4	4.5
U.S.	67.6	30.9	1.5

Life Without Agrichemicals

Larry D. Schulze
Extension Pesticide Coordinator
University of Nebraska, Lincoln

According to a study by the Washington consulting group GRC Economics, the elimination of agricultural chemicals would turn the good life quickly into bad. GRC Economics predicted that overall consumer food prices would jump 45% with fruits and vegetables up 50%. The supply of fruits and vegetables would be cut by 50%. The lowering of consumption levels of fruits, vegetables, and high-fiber grains would make it im-

possible to reduce the risk of heart disease and cancer. Natural toxins in food would increase with serious adverse health implications. The poor would get poorer with a larger percent of income going to food purchasing. Crop yields would decrease requiring 10.3 million acres more per year. World hunger would worsen. American agricultural exports would significantly decline.

In fiscal year 1991, EPA has registered only three new pesticides. In fiscal years 1988, 1989 and 1990, 13, 15, and 6 were registered, respectively.

EBDC/ETU Market Basket Survey

Alexander D. Paulista
Extension Potato Specialist
University of Nebraska, Scottsbluff

The EBDC/ETU Task Force submitted a report to the EPA confirming that consumer exposure to the fungicide and this metabolite is very low. The year long Market Basket Survey showed that residue found in foods purchased at grocery stores were one-hundredth to one-tenth as much as earlier field trial data used to establish tolerance. This was the largest survey of its kind ever conducted with a total cost of about \$10 million born by the registrants. EBDC registration on potatoes is strongly supported by Atochem NA Inc., Rohm and Haas Co., BASF Corp., and E. I. duPont and Co.

Residue in Potatoes Bought at Grocery Stores

	% Tubers, Residue, Undetectable		Mean Detected in Tubers with Residue	
	EBDC	ETU	EBDC	ETU
Raw	98	67	0.0020 ppm	0.0021 ppm
Frozen	98	40	0.0013 ppm	0.0044 ppm

ppm-parts per million and 0.001 ppm = 1 part per billion

(Editor's note: One part per billion is like 1 inch in 10 trips from Chicago to San Francisco.)

Aldicarb Use on Seed Potatoes

Alexander D. Paulista
Extension Potato Specialist
University of Nebraska, Scottsbluff

Continued use of aldicarb on seed potatoes and in instances where there are no alternatives or resistance has developed was urged by the National Potato Council (NPC). The NPC noted adverse effects of not using aldicarb. 1. The quality of certain processed potatoes has deteriorated. 2. Potato growers are being forced to use large amounts and numerous kinds of alternative insecticides to replace aldicarb. 3. The quantity and quality of fresh potatoes, particularly in the Pacific Northwest, has deteriorated.

Colorado potato beetles have been observed in the Pacific Northwest for the first time since application of aldicarb began. In other areas, Colorado potato beetles have developed resistance to almost all the available insecticides. The NPC asserted that without aldicarb it may be impossible to produce virus-free potato seed. Costs of the seed will also increase.

A specific plan was introduced by the NPC for returning aldicarb to use on potatoes: 1) develop a specialized stewardship program for critical uses; 2) develop an education program for distributors and users for critical use areas; 3) develop a certification and monitoring program for product use in critical areas; 4) develop a colored granular product for geographical and market tracking; 5) develop a system to assure only limited applications are being made; 6) develop a system to assure that waste disposal is minimized, and 7) develop a packaging system to aid in product tracking.

The NPC urged the EPA not to completely eliminate aldicarb but to regulate its use on a critical need basis.

Cultivars: LaBelle

James F. Fontenot

Professor of Horticulture

Louisiana State University, Baton Rouge, Louisiana

Dr. Fontenot and his colleagues at LSU and Gene Shaver of Shaver Seed Farms, Scottsbluff, Nebraska recently announced the release of **LABELLE** potato cultivar. LaBelle (La 01-38) is a round, smooth, white potato cultivar suitable for chipping and for tablestock.

LaBelle was selected in 1980 from clones remaining after Campbell Soup Co. terminated its breeding program. This cultivar has a medium-late maturity and a vigorously growing vine in Louisiana. It is widely adaptable, high yielding, and stress tolerant (drought and hail); however it is susceptible to scab. LaBelle has been tested in the North Central Regional Trials in 1983, 1984, and 1985. In the latter two years, it was rated first in overall merit.

Summary of Properties:

Purpose - chipping and tablestock

Maturity - medium-late (medium-early in Nebraska)

Vine - Medium-large

Leaves - Open-type, dark green

Tubers - Blocky to round, white skin and flesh

Set - Above average

Eyes - numerous, shallow and evenly distributed

Chip color - equal or better than Norchip, similar to Atlantic

Internal defects - hollow heart is rare, no internal necrosis

External defects - rare

Other - Susceptible to scab, tolerant to drought and hail, total glycoalkaloids in tubers are very low

Louisiana Trials

	Yield US#1 (cwt/a)		Specific Gravity	
	1984	1985	1984	1985
LaBelle	148	134	1.060	1.057
Norchip	136	54	1.061	1.057

Seed Source Comparisons in Louisiana, 1989.

	Seed Source	Total Yield cwt/a	Yield US #1 cwt/a	Specific Gravity
Kennebec	ND	190	100	1.062
LaBelle	NE*	230	140	1.064
LaBelle	ME	210	120	1.064
LA 12-59	NE*	250	150	1.064
LA 12-59	ME	120	60	1.064

*Shaver Seed Farms, Scottsbluff, NE.

Nebraska Trials (4 trials, 1989-1990)

	US #1 cwt/a	Specific Gravity	Chip Color*
LaBelle	405	1.081	56
Atlantic	436	1.093	56
Norchip	349	1.082	60

*Agron (1990 trials)

Spudders

Gary Leever

Secretary-Manager

Potato Certification Association of Nebraska, Alliance, Nebraska

Which way did the summer go? I think that I missed it somewhere. It is the last week of August and field inspections are drawing to a close. Second inspections are completed and in most of the early planting we have completed final inspections. Acres entered for 1991 were 8,052 the most entered in Nebraska since 1947. However, by third inspections that number has been reduced by 854 acres. Of the 854 acres rejected 712 or 84% was due to Mosaic in the variety Russet Norkotah.



Of acres entered of that variety, 60% have been rejected for either visible Mosaic or latent Mosaic detected by Elisa in our Certification Laboratory. That figure is about normal for Norkotah with rejection in most states running between 70 and 80%.

The remaining acres that did not pass are primarily due also to Mosaic in the varieties Shepody and Gemchip. To date no rejections have resulted from bacterial disease. Last year I called it the year of the Beetle so I guess this year must go down as the year Norkotah did not fly because of PVY.

Recordkeeping of Restricted Use Pesticides

Larry Schulze
Extension Pesticide Coordinator
University of Nebraska, Lincoln

The 1990 Farm Bill requires certified private pesticide applicators to maintain records of the use of restricted use pesticides. Prior to the passage of this bill, only certified commercial pesticide applicators had this recordkeeping requirement.

It is estimated that the earliest that private applicators could be expected to start keeping records will be January, 1992. The following are provisions for recordkeeping requirements approved under the 1990 Farm Bill:

1. Records of the application of restricted use pesticides must be maintained for two years.
2. All certified applicators shall keep such records.
3. Commercial applicators shall be required to provide application records to the person for whom an application was provided.

4. Records by private certified applicators shall contain information comparable to that maintained by commercial applicators in the state of residence.

5. Records must be made available to any federal or state agency that deals with pesticide use.

6. In no case may a government agency release data, including the location from which the data was derived, that could directly or indirectly reveal the identity of individual producers.

7. Persons who fail to comply shall be subject to a fine in an amount up to \$500 for the first offense.

8. The bill directs the U.S. Secretary of Agriculture and the Administrator of EPA to survey records. The following form is a suggested guide. No specific format has yet been established.

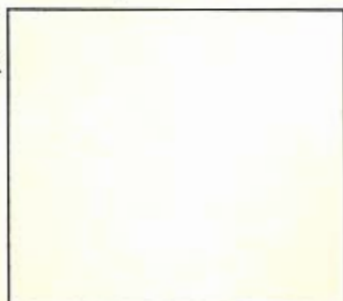
Private Applicator Record of Restricted Use Pesticides

Farm name _____

Application Date _____ Starting time of application _____

Field ID or name _____ Acres treated _____

Field map and information:



Soil condition (wet, dry, cloddy) _____

Temperature _____ Relative humidity (low, med, high) _____

Wind direction & speed _____

Other _____

Crop, commodity or site protected _____

Crop stage of growth _____

Target pest(s) _____

Pest stage of growth _____

Pesticide information:

Pesticide trade name _____

Pesticide EPA registration number _____

Percent active ingredient _____ or lbs a.i. per gallon _____

Rate of application _____

Total amount applied to area treated _____

Disposal of pesticide:

Disposal amount _____

Method _____

Location of disposal _____

Date of disposal _____

Name of applicator _____ Certification number _____

(This form is a guide. No specific format for these items has been established.)

Who Keeps Good Records Anyway?

Raymond E. Massey
Extension Economist, Farm Management
University of Nebraska, Lincoln, NE

Research performed in Ohio looking at the use of farm accounting systems of agricultural producers yielded some interesting results. They surveyed over 900 producers asking what kind of accounting system they used and for what they used the information.

Almost two-thirds used the old shoe box or farm record book method. One-third used more complete accounting systems, either on paper or by computer or mail-in service (e.g. The Nebraska Farm Business Association). These records were used most frequently for preparing income statements for income tax reporting or credit acquisition.

What determined the type of system used by different producers? Producers choose the more

complete accounting systems if they wanted to use the records for making management decisions. They were producers who saw the need to get a better handle on their operation than what was provided by reports

required by the government for taxes or lenders for money.

The study showed that younger producers, more educated producers and larger producers tended to keep more complete accounting records. It was not determined whether or not complete records aided producers in becoming larger or was something producers began doing after they became larger. What do you think?

Source: Schnitkey, Gary D., Marvin T. Batte, and Eugene Jones. "Farm Accounting Systems and Information Usage." *Review of Agricultural Economics*. 13(1991):109-117.



C A F M E
*Coalition for Agricultural Financial
Management Education, UNL

Our Thanks to:



LOCKWOOD



FMC



1992 Sponsors