NEBRASKA POTATO EYES

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EDITOR'S NOTE

Late blight, late blight, has anyone seen some late blight in Nebraska this year. If not, count yourself as one of a few. Due to cold, wet weather, this disease has raised its sickly head worst since 1981. And next year, be prepared. Turn to page 6. Gary Leever will give you a reminder and an update. At the next Nebraska Potato Focus (NPF), Gary and Eric Kerr will be giving more information on late blight.

Talking about the next NPF, notices will be mailed out at the end of November. NPF will feature talks on herbicides. The planned speakers and topics are:

- *Larry Binning (Univ. of Wisconsin) — herbicide dissipation and canopy growth, p-days;*
- *Steve Love (Univ. of Idaho) — varietal sensitivity to herbicides;*
- *Phil Westra (Colorado St. Univ.) — tuber injury and herbicide / crop rotations.*
- *Drew Lyon (Univ. of Nebraska) — herbicide resistance in weeds.*
- *Larry Schulze (Univ. of Nebraska) — pesticide application regulations.*
- *Jake Jacobson (EPA — worker protection standards.*
- *Gary Leever (Certification Assoc. Nebraska) — late blight.*

There will also be workshops on potato injury and weed identification by Bob Wilson and Drew Lyon (Univ. of Nebraska).

As a reminder for those who didn't get the proceedings of the 1991 and 1992 NPF, a few copies (about 15 of the 140 printed are left). These NPF featured diseases (1991) and insects (1992); with the 1993 on weeds, these make an excellent information source on pests. The following are the contents:

1991: Diseases
Disease Evaluation / Gary Leever
Fungicide Review / Alex Pavlista et al
Disease Management / Gary Franc
Early Dying / Eric Kerr
Early Dying Syndrome / Bob O'Keefe
Early Blight / Gary Franc
Potato Scab / Frank Manzer
Dry Rot & Seed Decay / Gary Secor
Fumigation / Sheldon Ellis
Fungicide Research in Nebr. / Alex Pavlista
Pesticides & Ground Water/Jake Jacobson

1992: Insects
Insecticide Review/Alex Pavlista et al
Leafhoppers/Ted Radcliffe
Potato Psyllids/Whitney Cranshaw
Insecticide Resistance/Mark Whalon
Transgenic CPB Control/Jennifer Feldman
Wireworms & White Grubs/Bob Wright
Non-Chemical Control/Gary Hein
PVYn in Nebraska/Gary Leever
PVYn in Wyoming/Gary Franc
Rhizomania/Eric Kerr et al
Sulfur & Scab/Alex Pavlista
Workman Protection Standards/Jake Jacobson

Water, water everywhere. Have you heard? The Platte River after ice jams in early spring, 1993, became a tributary to the new, sixth Great Lake, Lake Iowa. Some potato acreage was lost in Eastern and Southcentral Nebraska due to flooding and July alone saw 20 inches of rain dumped along the Platte River. Harvest couldn't get started until August, behind normal scheduling.

Some of the highlights in this issue are a summary of the Potato Researcher Symposium sponsored by Zeneca (formerly ICI) in Arizona in April. Also, some of the practical information released in Idaho, Maine, Washington, and Wisconsin potato schools/conferences are outlined.

FONTENOT HAS BEEN RELEASED SEE PAGE 7.

Alexander D. Pavlista

In This Issue...

Potato Schools 1993

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The following are assorted highlights of the 1993 potato schools/state conferences held in Idaho, Maine, Washington, and Wisconsin.

IDAHO (20-22 January):

Nitrogen Fertilization — Of nutrients, nitrogen has the greatest impact on production and quality of potatoes. Nitrogen levels for newly released varieties are, therefore, of special interest. Short season varieties react differently than long season ones. The following, Table 1, shows marketable yields from 1992 trials on Shepody, R. Norkotah, Ranger R., Frontier R., and R. Burbank. In general, split N application of 80 lb/acre was better than 160 lb/acre applied preplant. However, the addition of 240 lb/acre or a triple split application of 80 lb/acre showed no consistent effects compared to the double split of 80 lb N/acre. (T. Tindall, M. Thornton and R. Brooks)

Table 1. Marketable yields of 5 varieties as influenced by nitrogen.

Variety	Nitrogen application, lb/acre (urea) 160*	80 + 80**	240*	80 + 80 + 80**
@ Parma, ID				
Shepody	348	410	411	477
R. Norkotah	391	451	426	432
Ranger R.	390	429	430	439
Frontier R.	392	407	447	392
R. Burbank	441	426	486	457
@Kimberly, ID				
Shepody	225	267	319	279
R. Norkotah	146	190	166	164
Ranger R.	258	303	316	305
Frontier R.	241	273	253	256
R. Burbank	266	309	336	303

*preplant incorporated
**split application — preplant and postemergence

Micronutrients — Intensive production systems require plant nutrients. Although the major elements receive the primary attention, the deficiencies of essential micronutrients can have an important impact on potato yield and quality. These micronutrients are boron (B), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), and zinc (Zn). These elements are key components of several enzymes and stimulate many biological reactions. For instance, Cu and Fe play a role in energy, Fe and chlorine (Cl) are in photosynthesis, Mo in nitrogen fixation, B in sugar movement and water retention, and Zn in growth regulator and tryptophan production. The deficiencies of these elements can't be easily identified by simple visual examination for classical symptoms (Table 2). Soil analyses can be useful but note several soil conditions can affect the availability of these micronutrients. Plant tissue analyses can warn of potential low nutrient levels. Nutrient concentrations suggested for petioles are given for R. Burbank in Table 3. Symptoms are generally seen when the readings are in the low range but not visible at the marginal level. Micronutrient application will be related to the length of the remaining growing season. Once a specific deficiency is determined, only that micronutrient should be applied. A 'shotgun' approach may not only be an unnecessary expense but could cause additional problems. (Larry Hiller)

Table 2. Deficiency symptoms commonly associated with the micronutrient elements as observed in potatoes.

Micronutrient	Deficiency symptom on potato foliage
Boron	Leaves thicken and roll upward; apical meristems die resulting in a bushing plant with shorter internodes; stems are more brittle.
Copper	Marked rolling of young leaves; wilting and death of leaf tip; leaves normally remain green and normal size.
Iron	Young leaves turn yellow to white without necrosis; leaf tips and edges remain green longest; often retain green veining.
Manganese	Younger leaves show interveinal chlorosis; gray to black flecks on underside of leaf and on stems, sometimes leading to small dead patches; younger leaves usually cup.
Molybdenum	Foliate yellow or greenish yellow.
Zinc	Young leaves chlorotic, narrow, cupped with tip burn, green veining; necrotic spotting gives a blotchy appearance; plant erect, often "fern-like" appearance.

Table 3. Suggested low, marginal, and adequate nutrient ranges for the fourth recently matured petiole for Russet Burbank potatoes.

Nutrient	Low (ppm)	Marginal (ppm)	Adequate (ppm)
Boron	< 10	10-20	> 20
Copper	< 2	2-4	> 4
Iron	< 20	20-50	> 50
Manganese	< 20	20-30	> 30
Molybdenum	??	??	??
Zinc	< 10	10-20	> 20

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Seed Quality and Storage—Information from yield studies (1991 and 1992) comparing seed removed from seed storage, grower storage and after seed cutting showed a significant loss of yield potential resulting from tubers passing through the seed cutter (Table 4). Russet Burbank seed tubers were removed from storage, hand cut and compared to normal planted seed pieces, after machine cut. Seven sample studies were analyzed together. There was a 3% yield loss between seed and grower storage, and a significant drop of 12% in the yield from growers storage to planting after machine cutting. Out of the seven data sets, six lots showed this loss of yield. Management and setting the cutter are among the biggest problems with handling seed lots. In evaluating seed lots, the recommended seed piece size is between 1.5 and 2.5 ounces. Seed lots of R. Burbank which were analyzed for size in 1990 showed that small pieces (< 1.5 oz) made up 5 to 40% of the planted lot. (Kleinkopf and others)

Table 4. Yield (cwt/acre) from R. Burbank seed removed after seed storage, grower storage and machine cutting in Idaho (mean of seven samplings).

after seed storage	after grower storage	after seed cutting
467a	451a	398b

Means followed by the same letter are not significantly different at the 95 or 90% level.

MAINE (6-8 January):

Potassium Fertilization—A three-year (1990-1992) field study was conducted on potassium (K) fertilization of Atlantic potatoes on the Aroostook Farm. Fields were categorized as low to medium K (< 200 lb/acre) and high K (> 200 lb/ac). Potassium was added as KCl (muriate of potash). On low K soils with no added K, plants were stunted and dark blue-green with bronzed leaf margins. With the addition of 140 lb/ac potash, there was a yield increase, but no further increase occurred with a second application of 140 lb/ac. On the high K soils, there also was a yield promotion, less than on low K soils. Specific gravity, on the other hand, showed a major decline with increasing potash levels. It was not strongly affected by soil K but it was reduced by 5 points per 140 lb potash/acre applied as KCl to soil. The trade-off is a gain in yield for a loss in dry matter content. Leaf analysis at flowering is a good indication of a K fertilization program. If leaf K level is below 3.5% at flowering, yields will be limited. If leaf K level is above 3.5 to 4%, specific gravity will be reduced with no corresponding increase in tuber yields.

Blackspot — In 1992, Maine growers experienced an increased amount of bruising especially blackspot. The major factors related to the increase are 1) cool, wet weather favoring high specific gravity and excess vine growth, 2) dry soils at harvest and 3) temperature changes during the season. Some varieties are highly susceptible to blackspot such as Ranger Russet and Lemhi Russet. R. Burbank is considered moderately susceptible. Turgid or firm tubers are more resistant to blackspot than flaccid or soft ones. Dehydration prior to harvest or storage increases blackspot. Tubers should be warm prior to handling in storage. Excessive nitrogen also increases susceptibility.

Hollow Heart — A combination of low soil temperature and too much soil moisture at tuber initiation in early July, 1992, appeared to increase the incidence of hollow heart in Maine in Atlantic and other varieties.

Powdery Scab — Due to low soil temperature, < 68 F, powdery scab was more common in Maine. This fungus is distributed in soil and on tubers. It likes poorly drained soil that is very wet early in the season and a pH between 4.7 and 7.6.

WASHINGTON (2-4 February):

Acreage and Varieties—Over the past 10 years, there has been considerable change in the percent acreage grown to different varieties (Table 5). Future impacts are likely from Shepody, R. Norkotah, Frontier R., Ranger R., and Goldrush as well as the new chipping varieties Chipeta and Snowden.

Table 5. Percent of Washington State potato acreage planted to the four predominant varieties during the last 10 years.

	Year			
Acreage Rank	1983 Variety	%	1986 Variety	%
1	R. Burbank	77	R. Burbank	72
2	Norgold R.	15	Norgold R.	15
3			Norchip	7
4			Kennebec	2
	Year			
Acreage Rank	1989 Variety	%	1992 Variety	%
1	R. Burbank	79	R. Burbank	69
2	R. Norkotah	6	Shepody	11
3	Norgold R.	3	R. Norkotah	8
4	Norchip	2	Norchip	3

Specialty Potatoes — Unusual potato varieties were prepared as chips or fries and evaluated for their taste quality. Of the 18 varieties plus Atlantic that were chipped Atlantic scored the highest in all categories. Bintje, a yellow variety, ranked a close second to Atlantic in color appeal. As french fries, seven specialty potatoes were compared to Russet Burbank. An experimental yellow variety, A082283-1, scored the best in taste, color and market appeal. R. Burbank was fourth in market appeal, second in taste and fourth in color.

Seed Pieces Handling — Dry rot (Fusarium) on seed decreased total and US #1 yields of R. Burbank by 5 and 12%, respectively. An even greater effect was observed on size distribution. The number of tubers > 10 oz was decreased 48% while that of undersized tubers increased 24%. Comparing dull versus sharp cutting knives, there was no

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effect on plant stand, number of missing plants. However, bruises on the seed pieces did affect stand and the number of weak plants (Table 6). Eighty five percent of the missing plants resulted from seed piece bruising. As for the development of weak plants, differences only occurred when more than four bruises were on a seed piece. (R. Thornton)

Table 6. Effect of bruising on the number of missing and weak plants (shark versus dull knives).

Bruise Level	% of missing plants	# of weak plants Shark	Dull
0	15	37	41
4	46	37	40
8	39	63	57

Colorado Potato Beetle — Colorado potato beetle (CPB) do not travel far during their lifetime. Half of the beetles stayed within 13 feet from the plant at which they were marked by researchers. Ninety percent were recaptured within 98 feet. Migration patterns of adult CPB show a preference toward Nooksack, Shepody and Russet Burbank over Norland, Norchip and Russet Norkotah. To illustrate a relationship between larval feeding and yield, the varieties Nooksack (attractive to adult CPB), R. Norkotah (not so attractive) and R. Burbank (an intermediate) were compared. On R. Burbank, CPB larval populations developed to high levels early in the trial. On Nooksack, they developed to high levels only late in the trial which on R. Norkotah, larval populations never reached high levels. The overall effect of feeding is seen comparing cumulative larval numbers and yield (Table 7). Norkotah R. produced the highest yield of the three varieties. (G. Long and G Ku)

Table 7. Larval feeding days and bulk yield of three varieties.

	Nooksack	R. Burbank	R. Norkotah
Larval Index	30	37	13
Yield Index	39	41	57
CPB Attraction	Yes	so-so	No

Black Scurf and Desiccation — *Rhizoctonia solani* anastomosis group, Ag-3, is the primary cause of black scurf on tubers which can result in plant damage (stem canker) and yield loss. A relationship between this disease and vine desiccation is unfolding. Plants desiccated the slowest by undercutting, chopping alone and nature/frost had more skinned tubers and the least black scurf. Quicker desiccation by cutting, burning, pulling and chemicals were associated with less skinning and more black scurf on tubers. The highest disease ratings were with burning and cutting; chopping and undercutting resulted in the least. The standard method used in Washington is chop followed by Diquat application. (D. Inglis)

Black Dot — There is widespread black dot infection in Washington. Although it occurs early in the season, symptoms usually become evident much later. In field trials on R. Burbank in 1991 and 1992, total yield was reduced 8 and 12%, respectively (Table 8). Yield of US #1 was reduced 12 and 18%. Specific gravity was not affected. Infection of potato foliage by black dot consistently decreased yields in Washington but infection of below-ground plant parts has not. Soil inoculation is important for disease spread but not on yield. (D. Johnson and E. Miliczky)

Table 8. Yields (cwt/acre) of R. Burbank in 1992.

Wounded	Inoculated	Total yield	US #1 Yield
-	-	519	414
-	soil	507	389
+	-	485	382
+	foliar	444*	328*

*significantly different from noninoculated controls.

Soil Fumigants — Three fumigants are commonly used: metam sodium (Vapam, Bursan etc.), 1,3 dichloropropene (Telone II) and a tank mix of 1,3 dichloropropene plus chloropicrin (Telon C-17). Research in Oregon recently showed significant reduction in Pythium, Fusarium and Verticillium population in treated soil at 12-in depth by metam sodium with or without 1,3 dichlorpropene. Plant vigor appeared best with metam sodium which also significantly increased yields (Table 9). (P. Hamm)

Table 9. Yield of US#1 (cwt/acre) after fumigation in Oregon.

Fumigant	Yield (cwt/acre)
none	190
Vapam @ 55 gpa	363 *
Vapam @ 75 gpa	349 *
Vapam @ 100 gpa	306 *
Telone II @ 20 gpa	247
Telone C-17 @ 27.5 gpa	316 *

* significantly different from none

WISCONSIN (16-23 February):

Goldrush Cultural Practices — No direct effect of optimum or excessive irrigation on total yield, tuber size or tubers solids for Goldrush was observed in Wisconsin. The optimum irrigation level provided adequate moisture and excessive irrigation only increased costs. Increasing plant spacing in rows increased percentage of tubers over 16 ounces. With Goldrush, an in-row spacing of 12 to 14 inches is likely optimum. The principle effect of supplemental nitrogen was on tuber solids. Increasing the rate of nitrogen tends to reduce them. With Goldrush, there was a significant increase in percentage of tubers over 16 ounces with 270 lbs N/acre. This rate also significantly reduced tuber solids and is not recommended. The optimum supplemental nitrogen rate is likely in the range of 125 of 150 lbs N/acre if harvested early (Table 10). There were no significant interacting effects between the irrigation level, in-row spacing and supplemental nitrogen rate. Each variable seemed to act independently of the others (D. Curwen)

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Table 10. Treatment effects on Goldrush total yield, tubers over 16 oz and tuber solids.

Treatment	Yield cwt/A	<16 oz % yield	Percent Solids
Irrigation — Optimum	392	5.3	17.7
— Excess	388	4.3	18.0
	ns	ns	ns
Spacing — 9 inch	396	2.4	17.7
— 12 inch	391	5.1	18.0
— 15 inch	394	7.1	18.0
	ns	*	ns
Nitrogen — 90 lb/A	385	3.5	18.8
— 180 lb/A	391	3.7	17.5
— 270 lb/A	394	7.2	17.1
	ns	*	*

ns = no significant, * = significant @ 5% probability

Atlantic/Tops — Atlantic potatoes were cut and treated with TOPS 2.5D at 1 lb/100 lb tubers at 12, 5 and 0 days before planting. There were no significant increase in yield of Atlantic at any application (Table 11). Note yield was significantly improved when cut tubers were allowed to suberize. (W. Stevenson)

Table 11. Yield of Atlantic potatoes cut and treated with TOPS 2.5D at different intervals before planting at Antigo in 1992.

Days before planting	Treatment	Total Yield cwt/acre	US#/A Yield cwt/acre
0	none	282	245
0	TOPS	292	257
5	none	329	291
5	TOPS	339	298
12	none	320	277
12	TOPS	337	294
LSD (0.05)[1]		35	36

[1]LSD (0.05) means the smallest difference needed for data to be different with a 95% confidence.

[Editor's note: Trials conducted in Western Nebraska since 1989 likewise have not shown a yield effect by TOPS on Atlantic although yield increases have been observed on Norgold Russet.]

Early Blight/Penncozeb and Bravo — Trials with Bravo and Penncozeb were conducted on Superior at Antigo and on Russet Burbank at Hancock, WI for the control of early blight. At Antigo, treatments were applied weekly from 20 Jul to 25 Aug and at Hancock from 1 Jul to 25 Aug. The data reported here are the percent of foliage infected on 8 Sept at Antigo (2 weeks after the last treatment and on 17 Aug at Hancock (Table 12). Superior treated with either Bravo or Penncozeb showed a significant reduction in early blight at Antigo. At Hancock, of the treatments reported here, Penncozeb and a higher rate of Bravo significantly reduced the disease on R. Burbank. (W. Stevenson)

Table 12. Early blight on Superior (Antigo) and Russet Burbank (Hancock) with Bravo and Penncozeb treatments.

	% foliage infected	
Treatment	8 Sept @ Antigo	17 Aug @ Hancock
none	75	77
Penncozeb 75D @ 2 lb	13	50
Bravo 720 @ 1 lb	4	69
Bravo 720 @ 1 1/2 lb	4	42
LSD (0.05)	6	27

Vine Desiccation — Russet Burbank potatoes were treated with varying desiccants at Hancock, WI. The initial application was on 17 Aug; a second application in one case (Diquat 4 + 4) was given eight days later. The desiccation reported here were taken 4, 8 and 14 days after the initial treatment (4, 8, 14 DAT). Some conclusion from the data (Table 13) are reported here. There was no significant reduction of yield taken at 22 DAT except for Diquat applied at 8 oz ai/acre on 17 Aug. Leaf and stem desiccation were not significantly different for the three Diquat and two Des-I-Cate treatments at 8 and 14 DAT. The two Flair treatments were not as effective as the Diquat and Des-I-Cate treatments. All chemical desiccants caused desiccation over the untreated check. (L. Binning)

[Editor's note: These data are similar to that obtained in Western Nebraska on Atlantic reported at the Nebraska Potato Focus and in the Nebraska Potato Eyes.]

Table 13. Leaf and stem desiccation (%), and yield (cwt/acre) of R. Burbank after application of Diquat, Des-I-Cate and Flair.

	8 DAT		14 DAT		22 DAT
Treatment (oz ai/acre)	% leaf	% stem	% leaf	% stem	Total yield
Check	5	5	33	20	552
Diquat (4)	85	78	97	93	489
Diquat (4 + 4)	87	77	100	95	521
Diquat (8)	93	82	97	97	451
Des-I-Cate (8)	85	77	93	90	550
Des-I-Cate (16)	90	80	97	93	518
Flair (8)	48	40	80	73	517
Flair (16)	60	63	83	80	524
LSD (0.05)	13	16	11	12	72

Weed control — Ten potato varieties were tested for yield sensitivity to various herbicides at Hancock. Highlights on total yields of Atlantic, Goldrush and Red Norland are given in Table 14. There was no significant effect on total yield of Castile, Snowden, Superior, FL1533, FL1625, Ranger Russet or Russet Burbank. Some interesting points to note in the affected varieties are: There is no total yield difference between handweeded plots and those where Sencor were applied at 8 oz/acre at hilling. Postemergence application tended to lower yield. (L. Binning)

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Table 14. Total yield (cwt/acre) of three varieties after four tested weed control methods.

Method[1]	Atlantic	Goldrush	Red Norland
Handweeded	419	428	464
Sencor, 8	433	391	426
Sencor, 6 + 6	419	338	399
Sencor, 8 + 8	367	357	370
LSD (0.05)	34	38	41

[1]Sencor 25DF: 6 and 8 = 6 and 8 oz ai/acre, respectively; + = split application: side dressed at hilling (21 days after planting -DAP) followed by postemergence (44 DAP), no + indicate single application at 21 DAP.

In another study at Spooner, mechanical cultivations were done at 42 and/or 63 DAP and compared to Turbo applied at 1.5 pt/acre at hilling (side-dressed). The best all around treatment with the least injury was Turbo (Table 15). (L. Binning)

Table 15. Effects on yields on R. Burbank and control of selected weeds at Spooner, WI, 1992.

Method	Total yield cwt/acre	A's yield cwt/acre quarters	Common[1] lambs-	Fall[1] Panicum	Redroot[1] pigweed
Weedy check	268	70	43	77	57
Handweeded	334	122	88	83	57
Cultivated (63DAT)	257	75	63	78	88
Cultivated (42 + 63DAT)	220	48	63	92	90
Turbo, 1.5 pt/ac	345	117	100	100	100
LSD 0.05)	90	75	14	5	17

[1]rating — the higher the rating: the better the control or the fewer weed plants in the plot.

Legumes to Potatoes/Nitrogen — Based on several site-years of calibration data, it appears that 50-100 lb of supplemental N is adequate for Russet Burbank following perennial alfalfa, and 75 to 125 lb N/acre may be needed following red clover. This compares with a normal recommendation of 200 lb N/acre for Russet Burbank. Somewhat less would be needed for Atlantic, especially on the heavier soils. (K. Kelling et al)

Pesticide Updates

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Admire — Miles Inc. has submitted an application for Admire to the EPA. This is a new insecticide targeting several pests. It is hoped that this new class of chemistry will be released in 1994. The active ingredient is commonly called 'imidaclopride.' As a liquid, it is applied at planting or can be used as a foliar spray. Matrix — DuPont has conducted trials on this new herbicide in the Pacific Northwest on potatoes. It is undergoing EPA registration and is reported to be especially for the control of nightshade.

SPUDDERS

Gary Leever
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LATE BLIGHT AND TUBERS

Phytophtora Infestans, late blight, was identified in many potato fields in late August in Western Nebraska and it seems to have been present in most Eastern Nebraska growing areas as well. So rather than bore you with an elaborate epidemiology of this disease I will give a brief rundown of practical information in preparation of a recurrence next year. Late blight is most active under cool, wet conditions. It prefers lush green foliage for most active infection. For all practical purposes, the freeze on September 13th took care of most potato foliage. In the field, tuber infection primarily occurs on tubers inadequately covered by soil. Tubers are infected by spores that wash from infected leaves. Tuber infection can also occur during wet harvest conditions when the fungi on vines come into contact with tubers. If cool, moist conditions exist, it can also occur from air-born fungal spores during harvest. Therefore, the normal recommendation is after vine kill allow at least two weeks for all drying of leaves and vines to occur. Then harvest under dry conditions. If you do not turn off the sprinkler or mother nature does not cooperate, the tuber phase will appear as small areas on the tuber. These areas have a purple or brownish cast. Under the tuber's skin, you will find a dry granular-type rot; the color of which is usually tan mahogany or brown. As in most tuber rots, cool storage conditions 33-39 F inhibit the growth of the organism; warm conditions such as those required for chip or french fry production (42+ F) favor the organism and rapid breakdown from secondary infections. Finally as the Irish found out so painfully in the 1850's, it's not so much the damage present this year, but it's whether or not it wipes you out next year. This means that tubers overwinter the late blight fungus, and the disease emerges in the spring with the sprouts to infect the subsequent crop. Which is exactly the Nebraska situation, we now have. Late blight is around but it will have very limited effect on this years crop. However, it is absolutely imperative that we control it next year. That means allowing no infected cull piles to exist. Field plantings will have to be sprayed with fungicides as soon as conditions warrant and on a regular schedule. What we need in 1994 is a good hot, dry, miserable Nebraska summer. It may be hard on horses and men but it's also hard on late blight.

CULTIVARS: FONTENOT

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[[In memory of Dr. James Fontenot, breeder of LA 12-59]]

The release of FONTENOT was announced in 1993 by Louisiana State University, Louisiana Cooperative Extension Service and Nationwide Seed Sales (Shaver Seed Farms, Scottsbluff, Nebraska).

FONTENOT (LA 12-59) was named after its breeder Dr. James Fontenot. It is a progeny of a self-cross of LA 42-38. It has been tested for three years in the North Central Potato Variety Trials where it ranked in the top five varieties every year, 1990, 1991 and 1992. It has demonstrated wide geographic and environmental adaptability. FONTENOT has also been tested extensively in Nebraska where it consistently performed as a top red-skinned potato. Seed is available from Nationwide Seed Sales in Scottsbluff, Nebraska.

The following is a summary of its properties and tables are included on its performance.

Summary of Properties:

Purpose — Fresh Market with potential for Processing
Maturity — medium-late, like Red LaSoda and Red Cloud, later than Red Norland, earlier than Red Pontiac
Emergence — slower than Red LaSoda, quicker than Red Cloud
Vine — large, vigorous and spreading, more so than Red LaSoda
Leaves — dark green, smooth, slightly cupped
Flowers — profuse and obvious; dark purple lightening toward tip; heavy seed set
Eyes — numerous; medium to shallow, more shallow than Red Pontiac; evenly distributed
Tubers — blocky to round; white flesh; deep red, thick, smooth skin; color is retained well in storage, like Red Cloud, better than Red LaSoda, Red Norland and Red Pontiac
Set — medium, greater than Red LaSoda
Dormancy — medium, like Red LaSoda, shorter than Red Cloud
Yields — high
Specific Gravity — high for red-skinned potato, higher than Red LaSoda, Dark Red Norland and Red Pontiac
Chip Color — 3 or 4 on SFA Color Chart (about 45 on Agtron)
Bruising — not easily
External Defects — low, little scab
Internal Defects — none
Diseases — tolerant to early blight; resistant to PVY
Herbicide Sensitivity — unknown
Eating Quality — excellent

Table 1. Performance of FONTENOT in the North Central Region Potato Variety Trials, 1990 to 1992, compared to red-skinned standards.

Variety	Total yield cwt/acre	US #1 yield cwt/acre	Specific Gravity
FONTENOT	381	342	1.079
Norland	312	274	1.066
Red Pontiac	446	392	1.066

Means of 3 years: 15 trials in 1990, 13 trials in 1991 and 12 trials in 1992, or a total of 40 trials.

Table 2. Comparison of Louisiana grown Fontenot and Red LaSoda in 1989.

Variety	Total yield cwt/acre	US #1 yield cwt/acre	Specific Gravity
FONTENOT	250	152	1.064
Red LaSoda	161	80	1.060

Table 3. Performance of FONTENOT in Nebraska between 1989 to 1993 in comparison to red-skinned standards. (mean of 9 trials)

Variety	Total yield cwt/acre	US #1 yield cwt/acre	Specific Gravity
FONTENOT	302 B[1]	301 B	1.080 A
Red La Soda	400 A	396 A	1.069 B
Dark Red Norland	283 B	272 B	1.068 B

[1]Numbers in columns followed by the same letter are not different at the 95% probability level.

Table 4. Performance of FONTENOT in Nebraska as part of the North Central Regional Potato Trials, 1990 to 1992.

Variety	Total yield cwt/acre	US #1 yield cwt/acre	Specific Gravity	Chip[1] color
FONTENOT	309 B[2]	287 A	1.079 A	54 A
Red Pontiac	414 A	372 A	1.066 B	31 C
Norland	304 B	287 A	1.067 B	42 B

[1]Chip color was measured with an Agtron E10; higher numbers indicate lighter potato chips; above 50 is often acceptable.

[2]Numbers in columns followed by the same letter are not different at the 95% probability level.

Table 5. Percent of tubers which showed overbrowning in 1989 and 1990 in Nebraska.

Variety	1989	1990
FONTENOT	36	16
Red LaSoda	0	0
Dark Red Norland	12	1
Sangre	4	0
Red Cloud	8	0
Red Viking	4	-

SEE PAGE 8 FOR ADDITIONAL COMMENTS ON FONTENOT

Editor's comment on FONTENOT: In general, Fontenot looks good in the Nebraska potato variety trials. In 1989 and 1990, there was a greater overbrowning than other red-skinned varieties in the trials (Table 5). These years were very hot (> 100 F in July) and dry. In 1992, some skinning was observed, and, in 1993 some knobbiness occurred. No unusual susceptibility or resistance was observed to common scab, black scurf, dry rot, vascular discoloration, hollow heart, or shape defects.

This is an excellent variety with good appeal for the fresh market and a possible niche in processing. It tastes good (personal experience), looks good and stores well. In comparison to Red Cloud, released by the Univ. of Nebraska in 1992, it yields the same, low to mid 300 cwt/acre; it has a higher specific gravity, 1.084 to 1.075; they both hold color in storage but may overbrown under certain conditions; they both process well for red-skinned potatoes. Fontenot has a shorter dormancy and faster emergence than Red Cloud.

UNIVERSITY OF NEBRASKA-LINCOLN, COOPERATING WITH THE COUNTIES AND THE U.S. DEPARTMENT OF AGRICULTURE