

NEBRASKA POTATO EYES

Technical News Reports for the Nebraska Potato Industry

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The 1992 Chip Seminar was a great success. Growers and processors attended from AR, CA, CO, DE, FL, IA, ID, IL, MA, ME, MI, MN, MO, ND, NE, NY, OH, OR, PA, SD, TX, WA, WI, and WY, and from AB, NB, NS, ON, and QB in Canada, 277 in all. The proceedings are available from the National Potato Council in Englewood, CO. For some highlights on the presentation see Chip Seminar on page 3.

Lots of new information on diseases and disease management was available at the last Nebraska Potato Focus, December, 1991. In-depth presentations were given on early dying, early blight, seed decay, tuber storage, black dot, scab, and fumigation. Written reports on these are given in the proceedings which have been mailed to all who attended and are available through the University.

Nebraska Potato Focus, 1991 (Volume 3):

Disease Evaluation in Potato Fields — Gary Leever

Fungicide Review — Alex Pavlista et al.

Disease Management — Gary Franc

Early Dying — Eric Kerr

Early Dying Syndrome — Robert O'Keefe

Early Blight — Gary Franc

Potato Scab — Frank Manzer

Fusarium Dry Rot — Gary Secor

Soil Fumigation — Sheldon Ellis

Fungicide Research in Nebraska — Alex Pavlista

Ground Water Strategy — Jake Jacobson

National Potato Council — Ron Walker

National Potato Board — Doug Slothower

Cultivar Trials — Alex Pavlista et al.

A once in 10 years meeting on potato pest management was held this past fall in WY. See the highlights on diseases and insects given on page 2.

An Extension Circular (EC 92-1247-D) summarizing the potato variety trials in Nebraska over the past three years is available from the university and the county extension agents. The release of 'Red Cloud' red potato variety has been approved by UN-L. An announcement will be made in the American Potato Journal. A NebGuide (G92-1090) on black dot is being issued and will be available at county offices and the University.

The National Potato Board recently announced that Roger Knutzen of WA became this year's chairperson as of March.

Tissue culture explants of new experimental potato varieties are being sent to NE for increase, see Notice to Growers.

EBDC use on potatoes approved See Page 8

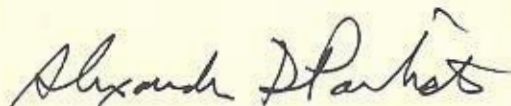
Notice to Growers

The Nebraska tissue culture bank has received or will soon receive several experimental cultivars from the USDA-ARS at Aberdeen, ID and the Oregon State University Foundation Seed Project. These will be available for increase in production, for further information call Kent Sather, Tissue Culture Coordinator at (308) 635-7002.

The cultivars are: A76147-2, A80559-2, A81473-2, A82611-7, CO83008-1, NDA2031-2 and NDO1496-1

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Potato Pest Management Conference

Alexander D. Pavlista

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The International Conference on Potato Pest Management was held on October 12 to 17, 1991 at Jackson Hole, WY. The last meeting of this sort was held 10 years earlier. Topics included in 1991 were insects, diseases, nematodes, and management practices. The following are some practical highlights useful to Nebraska, Wyoming, and northern Colorado.

Psyllid—

—Psyllids come from the U.S.-Mexico border and travel north to Colorado, Wyoming, Utah, and the Nebraska Panhandle. 'Psyllid Yellow' is caused by a toxin secreted in the saliva. Characteristics are decreased growth, erect foliage, leaf cupping, rosetting, leaf rolling, purpling or yellowing of young leaves, aerial tubers, and an increased susceptibility to early blight. Tubers are small and rough-skinned. They size poorly and tuber chains will develop. Premature sprouting toward the end of the season occurs. Confusion may occur since symptoms are similar to those resulting from mycoplasma and leaf roll virus infection.

There is no cultivar resistance and all solanaceous plants, e.g. tomato, pepper, nightshade, are hosts. Yield reduction in potatoes are often around 50%. Norgold Russet and Red Norland have shown the least yield losses, 20 to 30%.

—No correlations has been found between psyllid population size and economic or toxic effect with respect to years. The adult population is only loosely correlated with nymph populations due to migration. For example, an adult in Nebraska can go to Montana. Pepper is a good indicator plant to detect a growing nymph population and developing problem. The insect is attracted to yellow and neon colored traps; "suction traps" are not good.

—Soil-applied organophosphates give good control; soil-applied carbamates are erratic. Foliar application is tough because psyllids are on lower, shaded, leaves. Sulfur and sulfur-containing fungicides give good control; organophosphates and pyrethroids can also be used.

Leafhopper—

—Leafhoppers damage by direct feeding on the phloem 'sap' and there is no real evidence supporting leafhoppers as a disease vector. They migrate according to wind patterns coming north from the Gulf of Mexico and arrive from late April to mid-June. Leafhopper hosts include alfalfa, beans and deciduous trees. Their feeding can cause a 30% yield loss. There is a linear relation between leafhopper population and damage. Ten insects

per 100 leaves is considered the 'action' threshold for chemical application to prevent yield loss. The 'economic' threshold is 40 to 250 leafhoppers per 100 leaves. When controlling leafhoppers there can be a rise in early blight and early dying but yield is improved and damage is lowered. Late season attacks by leafhopper on physiologically older potato plants seem to have greater yield losses.

Early Dying—

—Caused by *Verticillium dahlia*, early dying shows initial unilateral wilting, 'flagging' which refers to a stem sticking out above the canopy and vascular discoloration. It occurs in conjunction with the lesion nematode *Pratylenchus penetrans* found in some areas in potatoes, alfalfa and wheat. The combination of this fungus and nematode can cause a major yield loss. Repeat cropping with potatoes increases the incidence of early dying.

Years cropped on potatoes	1	2	3	4 years
Percent early dying	10	40	70	80 % infected

—*V. dahlia* produces one generation per year. Its germination is stimulated by chemicals released by the potato or other host. At the end of the season, it goes into a dormant state for the following year.

—The fungus infects by entering through root tips and not through lesions made by the lesion nematode. Root wounding is not necessary. The mechanism for root infection is not yet known. Stress especially due to excess water plays a role. Early dying and yield loss were more severe in wet soils than moderately wet or dry soils in Oregon studies. Wet soils before tuberization favor infection and dry soils after tuberization favor expression of early dying. Wet soil after tuberization plays no role in early dying. Irrigation management before tuberization to avoid excessively wet soils is a good method to minimize infection.

—Soil fumigation with metam sodium reduces fungal population 85 to 90%. Limitation to this procedure are drift, groundwater contamination, destruction of beneficial microorganisms, and expense. Cover crops and vine removal are helpful. Fungal population are highest in wheat and alfalfa, therefore, these are not recommended crops to follow with potatoes in early dying infected areas.

—Cultivars which are resistant to early dying include Krantz and Frontier R.

—Sudangrass as a cover crop was best at decreasing the incidence and severity of early dying compared to fallow and several clovers. Yields were increased due to

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➔ **Potato Pest Management From Page 2**

leaf survival. Two or three years of cover crop growth before planting R. Burbank was needed for early drying reduction.

Scab—

—From recent research conducted at Cornell University, two phytotoxins have been isolated from *Streptomyces scabies*, the causal bacterium for common scab. These are called thaxtomin A and B. They produce skin necrosis similar to scab, are obtained only from pathogenic strains of the bacterium and are found only in scab-infected tubers. Scab-susceptible cultivars are sensitive to thaxtomin A and B causing necrosis while more resistant cultivars are less affected.

Silver Scurf—

—There is not good source of cultivar resistance to silver scurf. Seed is the primary source of inoculation. The best seed treatments according to North Dakota State University are TOPS, Mertect and Captan for tubers remaining after being infected at harvest but not lost during storage. There is no control in storage. Most isolates obtained in the U.S.A. and Canada were found to be tolerant of Mertect.

Bacterial Ring Rot—

—BRR can be carried along in sugarbeets. Colorado potato beetles and potato flea beetles can spread this disease. The recommendations from North Dakota State University is that, if a field has it, delay harvest and allow the tubers to breakdown in the field.

Wireworms—

—Wireworms like sorghum as a winter crop especially as an early cover crop. Early versus late cover crop relates well to economic losses due to wireworms.

—The movement of wireworms tends to be greater in sandy soils. In dry soil, they tend to move vertically toward the tuber zone. In wetter soil (40-50% moisture), there is a minimal amount of movement, and they tend to stay at the 12 inch depth.

1992 Chip Seminar

Alexander D. Pavlista

Extension Potato Specialist

University of Nebraska, Scottsbluff

The 1992 National Chip Seminar was held on March 5 to 7 at Denver, CO. It was hosted by the Rocky Mountain Regional Chip Seminar Committee which included several growers in Colorado, Nebraska, and Wyoming. It was well attended, 277 people, and the program was very well received. The following are brief summaries of a few of the presentations.

Steve Love of the University of Idaho outlined major considerations in developing a management strategy for a new variety. There are four major items.

First, one needs to determine the variety's suitability. This involves its adaptability to the geographical area; variety trials help here. Its marketability and the fit of the variety's characteristics to a market.

The second item is to collect information. This deals with yield, quality, varietal weaknesses, and comparison to standards. Information can be acquired through research reports and variety trials, releases, newsletters (such as the Nebraska Potato Eyes), and other growers. Some of the information to be learned deal with dormancy, eye distribution, tuber size and set, vine size, maturity, disease and bruise sensitivity, tuber quality, and yield.

Next, a management strategy needs to be customized for the new variety. The strategy needs to include seed management, fertilizer and irrigation management, pest control, vine desiccation, harvest, and storage management. Each component of the above practices needs to be analyzed individually.

Lastly, one needs to evaluate what was done and what were the results at the end. Then, revise the following year's management strategy based on this experience.

Components of a Management Strategy.

Practice	Component
Seed	number and distribution of eyes tuber set and size disease responses
Fertilizer	tuber set and size vine size maturity quality problems
Irrigation	vine size maturity stress responses
Weed Control	herbicide sensitivity vine size maturity
Disease control	disease responses bruising
Vine desiccation	maturity
Harvest	maturity disease and bruise responses
Storage	dormancy disease response tuber quality

Continued on Page 4

Comparison of Management Strategy for Three Chipping Varieties

Practice	Atlantic	Gemchip	Norchip
plant spacing	medium	close	medium
fertility	moderate N	low-mod N	moderate N
irrigation	moderate,late	high,whole	moderate,late
	season reduction	season	season reduction
herbicide	metribuzin -	metribuzin -	metribuzin -
	sensitive	moderately sensitive	moderately sensitive
	dinitroanilines-		
	slightly sensitive		
disease			
avoid-	scab,early dying	scab	early dying
control-	early blight,dry rot	early blight	dry rot
storage	not recommended	50°F,high RH	50°F,high RH
	due to rot	inhibit sprouting	inhibit sprouting
other	prevent	avoid	
	shatter bruise	handling damage	
	and oversizing		

Duane Preston of the University of Minnesota discussed pre-harvest analysis for chip quality. The only constituents of potato dry matter that is of practical importance to tuber maturity are the free sugars or simple carbohydrates, that is, sucrose, glucose and fructose. Joe Sowokinos and Duane developed a 'chemical maturity monitoring' (CMM) system. Refer to Minnesota Agricultural Experiment Station Bulletin #586-1988. To briefly summarize: CMM involves analysis of tuber sucrose and glucose using the Yellow Springs Instrument (YSI) model #27 and a standard chip test such as the chip color chart available from the Snack Foods Association.

Pre-harvest CMM samples should be collected and analyzed three to four weeks before harvest. All tubers from five to ten plants should be collected and placed in a mesh or

paper bag (30 tubers minimum).

The field, sampling site and date should be identified. Samples should be protected from direct sunlight, heat and cold. All samples should be stored in the dark, at room temperature and with good ventilation. If samples have an SR § 1.5 and % glc greater than 0.035 (glucose) §0.035 and chip color = 1 or 2, these potatoes are chemically mature and vine killing is not necessary to achieve chemical maturity. Vine killing may be necessary to curb physical growth or oversizing. Normal harvesting and application of Mertect may cause a slight rise in sugars. These sugars are rapidly removed during the wound healing, suberization period (2 weeks at 60° F). Chip color should remain acceptable throughout the early healing period, if chemically mature potatoes are placed into a stress-free storage.

Pre-harvest CMM may provide the grower with information such as:

- (1) the need for vine kill.
- (2) the harvest order of fields.
- (3) the need for a short-term "pre-conditioning period following suberization.
- (4) can indicate a field's short-term or long-term utilization potential.

Sprout inhibition and CIPC were discussed by two speakers, John Forsythe of Industrial Ventilation, Inc. and John Wise of Wise and Assoc., Ltd.

Main points of these include:

1. The timing of CIPC application was critical to successful sprout control. Application should be as soon after suberization (healing) as possible.

2. Movement of the air mass containing the aerosol particle suspension should be as gentle as possible. Slow the fan speed.

3. Task Force studies completed to date indicate no adverse toxicological effects of CIPC.

4. Most of the CIPC residue on tubers in storage are within the outer 2 to 4 mm of the tubers. Almost no residue was present in the pulp after peeling.

Robert Thornton of Washington State University discussed seed handling. Most of his discussion had earlier been presented at the Nebraska Potato Focus in 1990. Contact me for a copy of the reports if you don't already have one.

Gary Secor of North Dakota State University discussed potato diseases in storage. His discussion primarily dealt with dry rot and tolerance to Mertect, pink rot and leak. Most of the information was presented at the Nebraska Potato Focus in 1991. Copies are available through me.

Seed Seminar

Kent Sather

Seed Potato Inspector

Potato Certification Assoc. of Nebraska, Mitchell, NE

Once again potato growers from all over the United States and Canada braved the snow, ice and the airlines' luggage lottery to group together at the 10th Annual National Potato Council Seed Seminar. This was held December 5-7, 1991 in Portland, Maine. The theme was "Potato Improvement - Tools for Change". We strive for the better potato, better yields, better disease and insect resistance, better quality for processing, etc. The seminar discussed front-line technology to bring us closer to the perfect potato, that is genetic engineering. The classic form of potato breeding, growing true seed, has delivered varieties with only one or two exceptional characteristics and several poor characteristics. The genetic engineering research in industry is working to improve the poor characteristics established in those varieties. This will never totally replace the classical form of breeding. An example is plot work done with Russet Burbank engineered for Colorado potato beetle resistance. Almost complete defoliation of plots was evident, but one plot in the middle was full, green and growing. The beetles had avoided it because of the resistant gene transferred into the biological makeup of the plant.

Other related topics discussed were APHIS regulations, public and private research, patenting, and grower/breeder relationships; all were concerning experimental transgenic material. This genetic engineering tool is being utilized at present. It can serve to better our area's potato industry if we keep updated and informed.

Other meetings held in conjunction with the seminar were the PAA Certification Section and Pathology Section. These groups support the Seed Seminar and also ease their travel budgets by meeting at the same time.

The 11th Annual Seed Seminar is scheduled to be in Michigan next year - plan for it!

Spudders

Gary Leever

Secretary-Manager

Potato Certification Assoc. of Nebraska, Alliance, NE

Shipping seasons is over, and spring potato planting is fully underway. I would like to discuss the quality and quantity of Nebraska seed potatoes from the 1991 crop. Quality-wise last year's crop was excellent. By and large, few lots had



any serious dry rot problems, and the truly troubling scab lots were few and far between. The overall quality of the Nebraska seed crop was as high or higher than it has ever been. However, because of the declining seed market and the supply-demand situation for most varieties, customer complaints were up from the past couple of years. One receiver even refused shipment of a load of Nebraska seed, claiming that the tubers, showing swollen lenticles (water pimples), were contaminated with nematodes. It was that kind of a year.

It comes then as no great surprise that actual seed shipments were at least 50,000 cwt. less than last year. In fact, seed potato shipments were lower than they have been in the last three years. This is hard to reconcile with the fact that over 8,000 acres were entered, an all time high, and shipments should also have been at record levels. The lesson for all of us is that sometimes less means more and sometimes more means less.

Fumigation Safety Practices

Larry D. Schulze

Extension Pesticide Coordinator

University of Nebraska, Lincoln, NE

The following practices are required by law when fumigating a field.

They are critical to the safety of the applicators and others:

1. Do not fumigate alone
2. Use a self-contained breathing apparatus
3. Post signs or placards during fumigation
4. Test air before re-entry or removing signs
5. Notify police and fire stations about fumigation jobs to be done.

Herbicide Resistance - Managing The Problem

Drew J. Lyon

Extension Dryland Crop Specialist

University of Nebraska, Scottsbluff, NE

Through the repeated use of herbicides with similar modes of action, i.e., on the same site, selection for increased resistance within existing weed populations has been imposed. The result is the development of species or biotypes that can no longer be controlled with some selective herbicides. There has been a dramatic increase in the incidence of herbicide resistance over the last 10 years. There are currently over 100 weed species where herbicide resistant biotypes have been reported. More than half of these are resistant to the triazine herbicides.

There are two weed species in which herbicide resistance has been confirmed in Nebraska. Both kochia and pigweed populations have been identified that are resistant to the triazine herbicides. In 1979, triazine-resistant kochia was found along railroad right-of-ways from Nebraska to Washington. By 1981, commercial applicators and growers in Nebraska were reporting field infestations of kochia that were no longer effectively controlled by normal use rates of atrazine. A field survey of kochia conducted in 1986 found triazine resistant kochia throughout all of the southwest, south central, and parts of the Panhandle of Nebraska. The heaviest infestations were found in the southwest and south central counties. This no-till or reduced tillage system relies heavily on atrazine for chemical weed control. Many of the fields where triazine resistant kochia was found, were located along a road, railroad right-of-way or industrial site that had used a soil sterilant for many years. One county that developed a triazine resistant kochia problem had used little atrazine on crop fields, but had been spraying their roadsides with atrazine. Triazine resistant pigweed populations have recently been found in southwest Nebraska.

Recently, an increasing number of weed species have developed resistance to herbicides other than the triazines. In 1987, weed species in seven locations in Idaho, North Dakota, Kansas, and Colorado were found to be resistant to the sulfonylurea herbicide, Glean. Weeds showing resistance were prickly lettuce and kochia. By the end of 1989, resistance to the sulfonylurea herbicides had been documented at 111 locations, 89 of which were agricultural sites, spread over 10 U.S. states and two Canadian provinces. Like triazine-resistance biotypes, the resistant biotypes usually show varying degrees of cross resistance to other chemical in the same herbicide family. The recent discovery of multiple resistance to several different classes of herbicides has also become a major concern.

The sulfonylurea and imidazolinone herbicides have the same mode of action. They both inhibit the action of the acetolactase synthase (ALS) enzyme. This enzyme is needed for the production of essential amino acids required for cell development in plants. Many of the recently introduced herbicides belong to one of these two herbicide classes. The potential to develop weed resistance to these herbicides is high where an ALS-inhibiting herbicide is marketed in more than one crop in a 2 to 3 year crop rotation, e.g. corn-soybean rotations. The impending release of crops resistant to ALS-inhibiting herbicides, e.g. Pursuit resistant corn varieties, increases the likelihood of continuous use of herbicides with the same mode of action.

For genetic resistance to occur, one or more alleles (a form in which a gene may occur) for resistance must be present at some level in the field population of a weed. Typically, resistance due to a single dominant allele is found at frequencies of about 1 in a million plants before selection for resistance has occurred. If resistance is due to a single recessive allele, then a typical frequency for this allele is around 1 in 10 billion plants. Once the weed population is exposed to the herbicide to which some resistant types are present, the herbicide kills susceptible biotypes and favors resistant biotypes. With the triazine herbicides, resistance usually appeared after 7 or more years of repeated application. Recently, however, resistance to the sulfonylurea herbicides has appeared after only 3 to 5 years of use.

Resistance has not appeared to the phenoxy herbicides despite monoculture with continuous use of 2,4-D for more than 30 years. This rapidly degraded herbicide has a much lower effective kill (the ability to control a weed and prevent seed production over the growing season) than the triazines. The phenoxy herbicides also have a completely different and complex, probably multi-site, mechanism of action. 2,4-D is a synthetic analog of a material plant hormone.

The fundamental principal of any management strategy to deal with herbicide resistant weeds is to reduce the selection pressure for the evolution of resistance. Perhaps the easiest and best way of accomplishing this is through the normal use of crop and herbicide rotation. Herbicides used in rotation should differ in their mode of action. Simply changing the product used may not result in a change in mode of action. Other recommendations include the use of shorter-residual herbicides, e.g. Ally instead of Glean; tank mixes or sequential treatments of herbicides with different mode of action, e.g. tank mixing Banvel with Ally; greater integration of tillage with herbicides, and preventing weed escapes from going to seed.

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➔ Herbicide Resistance From Page 6

The following characteristics of herbicides and their use contribute to an increased probability for the evolution of herbicide resistance:

- 1) Single target site and specific mode of action.
- 2) Extremely effective killing of a wide range of weed species.
- 3) Long soil residual and season-long control of germinating weeds.
- 4) Applied frequently and over several growing seasons without rotating or combining with other types of herbicides.

If a herbicide-resistant weed population is identified and confirmed, it is important to determine the extent of its distribution within the immediate area. It may be possible to contain a small infestation of the species to one farm or one field. Quarantine methods are recommended in such cases whenever feasible. Other control measures include substituting herbicides in an existing cropping system, altering tillage operations, the use of herbicides applied at different times during the cropping season, and crop rotations.

Herbicides with a similar mode of action:

- 1) Imidazolinones and Sulfonylureas—Accent, Ally, Arsenal, Beacon, Classic, Glean, Oust, Pinnacle, Pursuit, and Scepter.
- 2) Triazine—AAtrex, Bladex, Evik, Igran, Lexone/Sencor, Milogard, Pramitol, Princep, Velpar.
- 3) Dinitroanilines—Balan, Prowl, Sonalan, Surflan, Treflan.
- 4) Amides—Dual, Lasso, Ramrod.
- 5) Carbamothioates—Avadex, Eptam/Genep, Eradicane, Far-Go, Ro-Neet, Sutan, Vernam.

Cultivars: Ranger Russet

Joe Pavek and Dennis Corsini

USDA Potato Breeder and Plant Pathologist

Univ of Idaho Aberdeen, ID

The release of RANGER Russet was announced in 1991 by the USDA-ARS and Agricultural Experiment Station of Colorado, Idaho, Oregon, and Washington. It is targeted for french fry processing, fresh market and dehydration products.

RANGER Russet (A7411-2) was selected in 1977. The authors selected and conducted the early testing of this cultivar. It has a medium-late maturation and is a medium-large plant. Frying quality of RANGER R. was the same as for R. Burbank at harvest and after 3-month storage. Taste panel trials indicated similar baking quality between these two cultivars. RANGER Russet has been tested in the Western Regional Potato Variety Trials, and in various state and industry trials.

Summary of Properties:

Purpose — fresh market and frying
 Maturity — mid late
 Vine — medium to large
 Leaves — large and broad, medium green color
 Flowers — abundant, red-purple
 Eyes — moderately shallow to deep, high number, well distributed
 Tubers — long, slightly flattened; medium russet skin
 Set — less in number than R. Burbank and slightly larger in size
 Specific Gravity — higher than most russets
 Sugar — lower than R. Burbank
 Stem End — moderately resistant
 Bruising — moderately susceptible to shatter and susceptible to blackspot
 External Defects — moderately resistant to tuber malformations
 Internal Defects — highly resistant to hollow heart
 Yields — higher than R. Burbank
 Diseases - susceptible to common scab
 Herbicide - resistant to metribuzin injury
 Other — develops solids more rapidly than R. Burbank, therefore ready for processing about two weeks earlier.

Tuber yields and specific gravity in western trials

	Total cwt/a	US1 cwt/a	Specific gravity
RANGER R.	512	413	1.089
R. BURBANK	499	328	1.082

Combined means of 12 trials - Colorado, Oregon, Washington — 1981-1989

Idaho, 32 trials, 1981 to 1989

	Total cwt/a	US1 cwt/a	Specific gravity
RANGER R.	439	338	1.092
R. BURBANK	404	255	1.082

Nebraska trials, (Pavilsta, 1990 to 1991)

	>1 7/8 in. cwt/a	Tubers % total	Specific gravity
RANGER R.	462	93	1.071
R. BURBANK	277	90	1.074
FRONTIER R.	339	91	1.080
NORGOLD R.	330	90	1.075

EPA-Pesticide Update

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The following announcements have been made by the EPA so far during 1992.

Aldicarb—

Following negotiations, Rhone-Poulenc will amend its registrations of the pesticide aldicarb with regard to its use on potatoes. Rhone-Poulenc has applied for a conditional registration for aldicarb use on potatoes and has requested that the following terms and conditions be incorporated as a condition of registration:

1. The conditional registration will automatically expire at midnight on January 20, 1994.
2. Rhone-Poulenc will develop and submit to EPA residue and processing data, and will not distribute or sell product under this registration during the two-year period ending January 30, 1994.
3. Rhone-Poulenc will not apply for a separate registration for uses of aldicarb on potatoes during the two-year period ending January 30, 1994.

If this conditional registration expires, Rhone-Poulenc agrees that it will not contest EPA's revocation of the aldicarb tolerance for potatoes.

EBDCs—

EPA concluded the Special Review with a decision to permit the continued use of the EBDCs mancozeb, maneb and metiram on potatoes. This decision was based on the fact that there is much less than a negligible dietary risk to consumers from consuming potatoes treated with EBDCs and because of the strong benefits of EBDCs to the potato industry. EBDCs are the most widely used fungicides on potatoes because they are the most cost effective control for early and late blight. There are no rotation crop restrictions for EBDCs.

The recent market-basket survey showed that there were no EBDC residues in 98% of either the raw or frozen potatoes. In raw potatoes 67% of the samples did not have measurable ETU residues and 40% of the frozen french fry samples did not have measurable ETU residues. The limit of measurement for ETU was 0.002 ppm, in comparison with 0.01 for most other fungicides. The ETU methodology is thus capable of seeing residues at lower levels than seen for other fungicides. The ETU residues found were at extremely low levels, and the average ETU residue in frozen potato fries was only 0.0044 parts per million. Based on the scientific data, the amount of ETU an infant consumes from eating over 12,000 pounds of frozen potato fries every day would not produce effects in the most sensitive animal species tested for ETU.

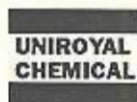
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