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NEBRASKA

POTATO EYES

Vol. 8, Issue 1, April 1996 • Alexander D. Pavlista, Editor

Editor's Note

The format, frequency and focus of the "Nebraska Potato Eyes" will undergo changes starting with this issue. These changes were suggested by growers in a questionnaire last fall.

Issues will be shorter, 3 to 4 pages, versus 8 to 10, and will come out bi-monthly instead of seasonally. Articles will aim at answering growers' questions and information requests.

Growers indicated a desire for simpler articles. After you read this issue, please contact me with any suggestions or comments. Let me know of any topic or item that you wish covered in future issues.

Alex Pavlista

In This Issue...

Fertilizer Placement: Broadcast or Band

Studies on cut Russet Burbank seedpieces in Idaho showed that ammonium sulfate (120-360 lb N/acre) banded six inches deep and six inches to the side resulted in more growth cracks and culls than when broadcasted and worked into the soil 6 to 8 inches. Harvested tubers from fields in which the starter fertilizer was broadcasted had a higher percentage of US#1, greater yield of US#1 and more larger US#1 tubers compared to banded application.

However, in California, another group reported no difference in yield between band or broadcast application of ammonium sulfate (60-240 lb N/ac).

In New York, researchers reported that seedpiece contact with urea (150-300 lb N/acre) may delay emergence and early growth. Urea was banded in the furrow. Ammonium nitrate did not have adverse effects when in contact with the seedpiece. The recommendation was to use an ammoniated fertilizer with mono ammonia phosphate (MAP). Placement is best 2 inches to the side and slightly below seedpiece. With this placement, urea also did not injure the seedpiece. This recommendation also comes from research in Maine where no difference between broadcast and band application was observed with superphosphate.

In work done in Ohio using ammonium sulfate and sodium nitrate, injury to cut seedpieces was observed when in contact with the fertilizer. Whole (single drop) seedpieces were not affected.

The effect of contact with nitrogen in the soil seems to be related to water movement from the seedpiece or sprout and not due to some toxicity. Injury is worst the more soluble the nitrogen or phosphorous form and the drier the soil.

Injury symptoms to watch out for:

1. retardation of sprout growth,
2. inhibition of soil moisture absorption by seedpiece (shriveling at cut surface),
3. sever injury and possible death of sprouts growing into a fertilizer band (especially under drought conditions),
4. prevention of wound healing of fresh cut surfaces by contact with fertilizer.

Injury symptoms after emergence due to contact:

1. delayed sprout emergence
2. weak, skinny plants
3. poor stand due to seed rot or sprout death

Conclusion:

There is no difference between broadcast and band application except in amount of fertilizer. Use an ammoniated fertilizer (ammonium sulfate/nitrate/phosphate) and avoid urea if banding. Place band to the side of the seedpiece (2 inches) and slightly below but never above. There is no need to apply more than 200 lb N/acre broadcast.

Late Blight Update:

Emergency Use Chemicals

The Section 18 (Emergency Use) request on Acrobat MZ, Curzate M-8 and Tattoo C for late blight control was sent to the EPA on April 11. It should be approved, if all goes well, in May and applications can begin. As soon as I learn of approval, I'll contact all growers.

In the request, we submitted to the EPA a 40% potato yield loss would result from a denial of the Section 18. Since the mean yield in 1995 was 320 cwt/acre, the yield estimate submitted was 192 cwt/acre to be sold at $6/cwt. These figures came to an estimated loss of $160/acre without approval of these fungicides versus a $695/acre profit with their approval.

Shepody: Field Management Profile

Several Nebraska growers are growing Shepody for the first time, primarily for French fry processing. Some have asked me about managing this variety. Shepody was selected in New Brunswick, Canada, and released in 1980 by Agriculture Canada.

Characteristics

Shepody is a determinate variety whose vine is medium-sized and spreading with large leaves. Flowers are numerous and large, and are colored light violet with white tips. Maturity is medium, a little earlier than Kennebec.

Tubers are oblong to long and slightly flattened with a smooth or very lightly netted skin. The skin is buff colored and the flesh is white. Eyes are shallow to medium deep. Tubers set late and size quickly; they can oversize. Dormancy is short. Specific gravity and yield are medium (Table 1).

Shepody is susceptible to common scab, early and late blight, early dying (Verticillium wilt), pink eye, and to PVX, PVY and leaf roll virus (PLRV). It is resistant to Fusarium wilt, stem canker (Rhizoctonia), and hollow heart, and tolerant to heat stress.

Table 1. Yield and specific gravity of Shepody in Nebraska as reported by growers.

Nebraska Region	Yield cwt/acre	Specific Gravity
North Central	375-500 (summer & fall crops)	1.075-80
Southwest	300-400 (summer & fall crops)	1.075-80
South & East	250-350 (summer crop)	1.075-80
Panhandle	300-400 (fall crop)	1.070-80

Seed

Because eyes are unevenly distributed and tend to be prevalent at the apical (bud) end, blind seedpieces can occur from the basal (stem) end of large tubers. Planting of "single drops" (whole 2-inch tubers) is preferred for better stands and heavier sets of moderately-sized tubers. If cut seed is used, it is suggested to precut 7-10 days for quicker and more even emergence and better stand.

Planting to Emergence

For French fry production, seedpieces should be spaced 8 to 11 inches within the row (34-36 inch row-spacing) depending on tuber set. Since Shepody oversizes easily and may green, pieces should be planted about 4 inches deep in a hill as large as possible. A wider hill is preferred over a taller one. Avoid scabby ground. Avoid using metribuzin (Lexone or Sencor); if used, apply pre-emergence safely before ground cracking. Other labelled herbicides may be used safely, i.e., EPTC (Eptam), metolachlor (Dual) and pendimethalin (Prowl).

Nitrogen Fertilization

Shepody needs about 80% of the nitrogen required for Russet Burbank. In Idaho and Maine, process quality was reduced even though yields were not. Do not exceed 200 lb N/acre. In alkaline soils, application of ammonium sulfate is recommended. Mild nitrogen deprivation before vine desiccation will allow an increase in tuber specific gravity (dry matter content) and make for easier vine desiccation.

Under sprinkler irrigation, supplemental nitrogen may be added until full bloom to maintain nitrate levels in petioles. Shepody has a narrow and high range for petiole nitrate content. In Idaho (Figures 1), the "sufficiency nutrient range" (SNR) for Shepody is from 20,000 to 24,000 ppm at 55 days after planting and drops to 8,000 to 11,000 ppm at tuber maturation. *[Note: SNR is the minimum to maximum nitrate concentration that should be*

present in petioles at different stages of the crop's growth. Petiole nitrate levels outside this range indicate a potential loss of tuber quality such as shape defects and sugar ends.]

Phosphorus at 50 to 75 lb/acre is added to prevent nitrogen-caused reduction in specific gravity. Potassium may reduce specific gravity.

Table 2. Key Management Points for Shepody.

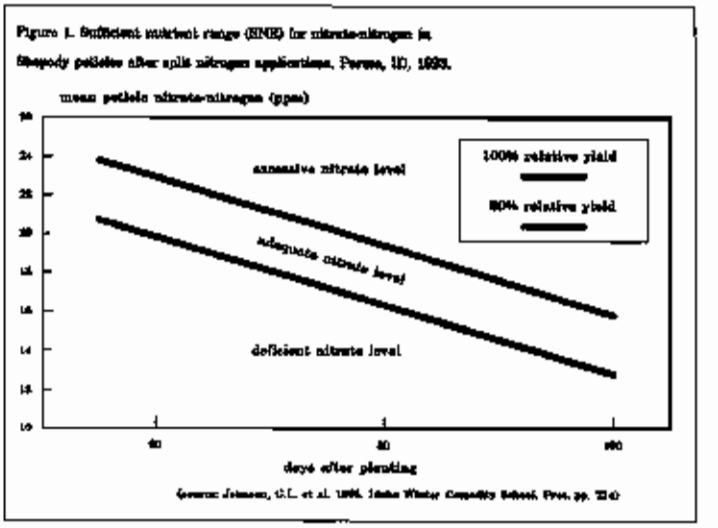
vine maturity	120 days after planting
disease susceptibility	early blight, late blight, viruses, Verticillium wilt
herbicide	sensitive to metribuzin
tubers	short dormancy, shallow set tend to oversize and green
seed	few eyes at stem end, precut
planting (processing)	8-11 inch spacing 4 inch deep
nitrogen	<200 lb/acre by full bloom
petiole nitrate	20-24,000 ppm, 55 days post-plant 8-11,000 ppm, tuber maturation
irrigation	>70% available soil moisture to flower drop
desiccation	difficult with green vines chemical method, slow but complete
storage	avoid – sugars buildup, sprouting

Irrigation Management

Up to flower drop, available soil moisture needs to be above 70%; afterwards, it can drop to 60%. Shepody requires less water applied more often than longer season varieties such as Russet Burbank. At the end of the growing season, irrigate less to avoid water rot, tuber oversizing and difficult vine desiccation.

Disease Note

Shepody is susceptible to early and late blight. Treatment should begin early depending on weather and may require 3 or more applications of a protectant, 7-14 days apart.



Tuber Quality Note

Because of tuber oversizing and shallow set, Shepody tubers are prone to greening. Shepody is more resistant to sugar ends than Russet Burbank but under very hot and dry conditions, especially if overfertilized, sugar ends can be a problem. With hot, dry surface soil, field sprouting can occur. These conditions may also result in a low specific gravity.

Vine Desiccation

Actively growing Shepody is hard to desiccate. Sample tubers to determine optimal size and specific gravity for vine desiccation. Due to Shepody's tendency to oversize, chemical desiccation is recommended. Sometimes a pre-desiccation, mild vine beating has been performed prior to chemical application. Sulfuric acid may be used if the tubers will not be stored else sugar ends may occur. Shepody should be ready to harvest 120 days after planting (95-100 days after emergence). In late blight areas, vines must be completely desiccated if tubers are to be stored. Rapid desiccation of green vines should be avoided if tubers will be harvested later and stored. Metalaxyl (Ridomil) applied mid-season is suggested for tubers going into storage to inhibit leak, pink rot and late blight development.

Storage

Shepody is not recommended for storage when tubers are to be processed. Tubers tend to accumulate sugars and reduce process quality. If stored, maintain temperature at 50-55 F and apply a sprout inhibitor (CIPC, Sprout Nip) after 2 months of storage.

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Shepody: Field Management Profile - Suggested Readings

Young, D.A., T.R. Tarn and H.T. Davies. 1983. Shepody: a long, smooth, white-skinned potato of medium maturity with excellent French fry quality. Am. Potato Jour. 60:109-113.

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