

## TEXAS RUSSET NORKOTAH STRAIN SELECTIONS 112, 123, 278, 296



Russet Norkotah 112

Russet Norkotah 223



Russet Norkotah 278

Russet Norkotah 296

Standard Russet Norkotah

**Origin.** Russet Norkotah is an early-maturing variety released in 1987 by North Dakota State University (Russet Norkotah: A new russet-skinned potato cultivars with wide adaptation. Amer. Potato J. 65:597-604, 1988). It is primarily a fresh market potato with good boiling and baking qualities. It is widely adapted to the western U.S. Strain selections were made by Texas A&M University in 1989 (Selection evaluation, and identification of improved Russet Norkotah strains. Amer. J. Potato Res. 76:161-167, 1999). Four strains survived extensive grower trials. These strains were selected in Texas fields with heavy *Verticillium* and early dying pressure.

**Plant Variety Protection.** Plant variety protection has been granted for TXNS112 (PVP No. 9900141), TXNS223 (PVP No. 9900140), TXNS278 (PVP No. 9900139) and TXNS 296 (PVP No. 200300288). The Texas strains are available only from selected seed growers licensed by Texas A&M University. (See Current Licensees, this website)

**Advantages over Standard Russet Norkotah.** Higher yields, early dying resistance, bigger/stronger vines, lower fertilizer needs, better weed competition, better hail and heat stress resistance, higher percentage of large tubers.

<b><i>Distinguishing Characteristics/Advantages of Texas Russet Norkotah Selections*</i></b>					
<b>Selection</b>	<b>Standard</b>	<b>TX 112</b>	<b>TX 223</b>	<b>TX278</b>	<b>TX 296</b>
Source	North Dakota	Texas A&M	Texas A&M	Texas A&M	Texas A&M
Vine Vigor	low	moderate	moderate	high	moderate
Tolerance to heat and Verticillium / early die	susceptible to early die	higher tolerance to early die	higher tolerance to early die	Tolerance to Vert. & heat	higher tolerance to early die
Recovery from frost or hail	low	moderate	moderate	moderate/high	moderate
Tubers per Plant	high	moderately lower some years	moderately lower some years	moderately lower some years	moderately lower some years
Adapted Soils (Best in)	sandy loam low salts	loamy sands sandy loams low salts	medium soils moderate salt	tough soils loam salt tolerant	medium soils moderate salt
<b>Nitrogen goals (lbs.) for 450 cwt. Yield goal in Colorado's San Luis Valley**</b>					
Nitrogen	high	medium	medium	medium	low
Need total	220 to 240	210 to 230	180 to 200	200 to 220	180 to 220
Planter N	70 to 100	70 to 100	70 to 100	70 to 100	90 to 100
Side dress N	40 to 50	40 to 50	40 to 50	40 to 50	zero
Nitrogate N	up to 90	up to 90	up to 50	up to 70	up to 120
Spacing (in)	11-12	11-12	11-12	10.5-11.5	11-12
Roots-primary	small	medium	medium	medium	larger
Root mass(in.)	12	14	16	16	16
Average Maturity (days)	105	110	113	113	113
Average Yield (cwt.)	400	430	440	440	440
<i>*Data provided by LeRoy Salazar, Agro Engineering, Inc., Alamosa, CO.</i>					
<i>**Excessive N can result in rough tubers.</i>					

**Plant/roots.** The Texas strain selections are fast emerging with moderately upright vines and white flowers. They have a determinate growth habit and are slightly later in maturity than the standard Russet Norkotah. All the Texas strains have a somewhat bigger vine than the standard Russet Norkotah, with strain selections 278 and 296 usually the largest. The root systems are generally more developed and extensive than standard Russet Norkotah. While susceptible to hail damage, they are more resistant than the standard.

**Tubers.** Tubers have white flesh and are long to slightly oblong with medium to heavy russeted skin. Eyes are shallow, numerous, and well distributed; medium specific gravity (1.085). Although not considered suitable for processing, they will fry directly from the field.

**Yield Potential.** Yields are generally in the 450 to 500 cwt. range with a high percentage of No. 1's. Most years growers can expect 30+ cwt. yield advantage over the standard.

## **GROWING SEASON MANAGEMENT**

Management strategies for the strain selections are generally the same as for standard Russet Norkotah, with the notable exception of reduced nitrogen requirements.

**Pre-planting considerations.** Tubers have a medium dormancy. Whole or cut seed is acceptable. However, cut seed is often preferred to eliminate apical dominance resulting in increased stem number, which can prevent over sizing of tubers late in the season. Closer seed spacing will also help control tuber size. Prolonged warming should be avoided (usually no more than 60°F for two weeks) to minimize excessive sprouting and physiological aging. Pre-cutting seed a month or more before planting can also increase physiological aging. Planting seed in cool soils can delay emergence, aggravate rhizoctonia stem cankering, and result in poor fertilizer uptake. These strain selections should be planted 4 to 6 inches deep in a broad, well-shaped hill to control late season greening.

**Fertility** (soil test basis; lbs/acre) Proper nitrogen management is essential to minimize production costs while maximizing yields. Significant savings in production costs can be realized with the strain selections. The Texas Norkotah strain selections require significantly less fertilizer nitrogen than the standard Russet Norkotah or Russet Burbank.

**Irrigation.** Irrigation interval at maximum ET is 2.5 days. Drought tolerance is poor to moderate; significant yield reduction occurs if plants are moisture stressed. Irrigation applied at short intervals, coupled with adequate early season fertility, will help develop necessary vine growth prior to tuberization. After tuberization, vine growth often slows. Subsequent rapid tuber bulking and moderately early vine senescence results in reduced late-season water requirements. Growers should strive to avoid late-season over watering since it creates ideal conditions for expression of many diseases such as black leg or leak.

## **Pest control**

**Weeds.** All strains compete fairly well against weeds, especially compared to standard Russet Norkotah. They are not sensitive to any major herbicides.

**Insects.** Standard insect control measures are generally effective, but proper time and rotation of insecticide applications helps to avoid aphid build-up and virus spread.

**Fungicides.** Three to five fungicide applications may be necessary to control foliar early and late blight.

**Tuberization/Bulking.** Tuber set is light to medium and high in the hill. Greening may be a problem without good hill management. Tuber bulking occurs in a short interval during early to mid-season at a rapid rate. The Texas Russet Norkotah strains are moderately resistant to blackspot and resistant to growth cracks, second growth and hollow heart.

**Vine Kill.** Average days from planting to vine kill range from 105 to 115, depending on both the strain selection grown and the nitrogen program employed. While vines are more difficult to kill than those of standard Russet Norkotah because of their larger size and vigor, vine kill is easily accomplished. Vine killing may not be required in Northern areas which experience early fall frosts; however, if senescence is not complete, vines are easily killed. Adequate skin set occurs in 12 to 21 days. Tubers can become large late in the season, so close monitoring is necessary near season's end.

## **STORAGE MANAGEMENT**

The Texas Russet Norkotah strain selections generally have few storage problems, but leak, blackleg and silver scurf can become serious. They are not considered long-term storage potatoes. If stored, they probably should be marketed by mid-March because tuber dehydration can result in pressure bruises and blackspot development.

## **DISEASE REACTION**

The Texas Russet Norkotah strain selections have some of the same disease reactions as standard Russet Norkotah, but they appear to have better *Verticillium* and early dying resistance. All strains are susceptible to PVY and PLRV and, while susceptible, are slightly resistant to early and late blight.

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Note: This information should be used only as a guide. Adjustments for local conditions must always be made.

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