

## **Performance of Pumpkin Cultivars, Plateau Experiment Station, 2002**

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### **Interpretative Summary**

The pumpkin cultivars were highly productive, but fruit size was less than anticipated for most of the large fruited cultivars. 'Pik-a-Pie' produced the highest tonnage of pumpkins for the small fruited varieties. The remaining small fruited cultivars performed well, although size and appearance varied with cultivar.

### **Introduction**

Pumpkins are grown in large commercial acreage for the Halloween market in Tennessee. An estimated 3500 acres of pumpkins are produced in Tennessee, with over half being produced on the Cumberland Plateau. Pumpkins have been a profitable crop in recent years, and acreage production seems to increase each year. Several tobacco and row crop producers have considered or actually produced pumpkins as an alternative crop. Pumpkin production has many problems that need to be addressed for successful production of pumpkins. Weed control can be a problem in pumpkins as labeled herbicides fail to control all species of weeds adequately. Insecticides and fungicides need to be applied on a 7 to 10 day frequency. Bees are needed for pollination. Pumpkins require a fairly high degree of management for successful results. An experiment was conducted at the Plateau Experiment Station at Crossville, TN in 2002 to evaluate performance of 23 pumpkin cultivars.

### **Materials and Methods**

The site was prepared for planting by conventional tillage methods. Fertilizer was broadcast at 400 lb/A of 15-15-15 and incorporated with a disk on May 22. Plots were direct seeded with the selected cultivars on June 4. Plot size was one row, with a spacing of 12 by 20 ft. Each row contained 5 hills with 3 seeds/hill. A pre-emergence application of clomazone (Command) at 0.375 lb ai/A and ethalfluralin (Curbit) at 1.5 lb ai/A was made on June 5. After germination, hills were thinned to 2 plants/hill. Experimental plot design was a randomized complete block with four replications.

Insect control was by esfenvalerate (Asana) at 0.05 lb ai/A alternated with carbaryl (Sevin) at 1.0 lb ai/A on a 7 to 10 day frequency. Fungicides were azoxystrobin (Quadris) at 0.25 lb ai/A alternated with a combination of chlorothalonil (Bravo) at 2.0 lb ai/A and myclobutanil (Nova) at 0.125 lb ai/A applied with each insecticide treatment. Pumpkins were harvested on Sept 23 and 24. Harvested pumpkins were sorted according to sizes of over 20 lb, 15 to 20 lb, 10 to 15 lb, and less than 10 lb. Number and weight of pumpkins in each weight range were recorded. Quality ratings were made at harvest. All ratings were on a 1 to 10 scale with 10 the most desirable. All data were analyzed by

analysis of variance methods, and means were separated by Duncan’s multiple range tests at the 0.05 level.

### Results and Discussion

Most of the large and medium sized varieties tested produced similar total tonnage of pumpkins, with the exceptions being ‘Howden’ and ‘Merlin’ (Table 1). The six small fruited cultivars did not produce any pumpkins that weighed over 10 lb. ‘Lil. Ironsides’ and ‘Pik-a-Pie’ produced a higher tonnage in the less than 10 lb class than any other cultivar except ‘Mystic Plus’, ‘Touch of Autumn’, and ‘Trickster’. ‘Hybrid 500’ produced a larger tonnage that weighed over 20 lb per pumpkin than all cultivars except ‘Appalachian’, ‘Hybrid 510’, and ‘Gold Strike’. ‘Appalachian’ produced a higher tonnage that weighed between 15 and 20 lb per pumpkin than all cultivars except ‘Gold Gem’ and ‘Hybrid 500’, ‘Mother Lode’ and ‘Magic Lantern’. Fruit of most of the cultivars weighed less than expected. This was probably due to the extremely dry conditions that occurred.

‘Little October’ produced more pumpkins per acre and more pumpkins that weighed less than 10 lb per pumpkin than any other cultivar (Table 2). Yields in number of fruit per acre generally were quite high and ‘Howden’, the check cultivar, produced 1814 pumpkins per acre. This is a high yield since the row spacing was 12 ft in order to help separate the cultivars at harvest. ‘Hybrid 510’ produced more fruit that weighed over 20 lb per pumpkin than all cultivars except ‘Appalachian’, ‘Gold Gem’, and ‘Hybrid 500’. ‘Appalachian’ and ‘Magic Lantern’ produced more pumpkins per acre in the 15 to 20 lb class than all cultivars except ‘Gold Gem’, ‘Howden’, ‘Hybrid 510’, ‘Sorcerer’ and ‘Trojan’.

Most cultivars were rated high for quality characteristics (Table 3). ‘Aspen’, ‘Gold Bullion’, ‘Gold Gem’ and ‘Merlin’ were among cultivars rated high for fruit color. ‘Appalachian’, ‘Aspen’ and ‘Mother Lode’ were among cultivars rated high for appearance. Fruit of ‘Gold Bullion’ and ‘Gold Standard’ were among several varieties that had very large and nice stems. Fruit of ‘Gold Gem’ and ‘Ol’ Zebs’ were the largest in diameter, and fruit of ‘Little October’ had the smallest diameter. ‘Gold Strike’ was the cultivars with the most length, while ‘Little October’ were the cultivars with the least fruit length.

Table 1. Yield in tons per acre of different size classes of pumpkin cultivars at The University of Tennessee Plateau Experiment Station at Crossville, 2002.

Cultivar	total yield -	Pumpkins< 10 lb tons/A	Pumpkins 10-15 lb	Pumpkins 15-20 lb	Pumpkins>20 lb tons/A	Pun ave

	tons/A		tons/A	tons/A		wt - lb
Appalachian	17.99 ab <sup>z</sup>	1.06 i	3.91 de	9.04 a	3.97 abc	13.60 a
Aspen	15.44 abc	2.06 ghi	6.37 abcde	4.13 bcde	2.88 bcd	12.29 bcd
Gold Bullion	14.99 abc	3.70 efghi	6.28 abcde	3.67 bcde	1.34 bcd	12.29 bcd
Gold Gem	14.5 abcd	1.79 hi	3.73 ef	5.64 abcd	3.37 bcd	12.34 bcd
Gold Fever	17.1 abc	6.19 bcde	7.74 abcd	2.52 cde	0.64 cd	11.73 cde
Gold Strike	16.2 abc	3.67 efghi	4.94 bcde	3.58 bcde	4.03 abc	11.79 bcde
Gold Standard	16.9 abc	5.28 cdef	10.10 a	1.49 de	0.00 d	11.88 bcde
Howden	12.6 bcde	0.73 i	5.22 bcde	4.64 bcd	2.03 bcd	12.02 bcd
Hybrid 500	19.4 a	2.55 fghi	6.61 abcde	6.10 abc	4.19 ab	12.41 bcd
Hybrid 510	16.7 abc	2.37 fghi	4.98 bcde	2.52 cde	6.83 a	11.90 bcde
Mother Lode	16.4 abc	3.28 efghi	6.58 abcde	5.22 abcd	1.37 bcd	12.57 bc
Merlin	11.2 cde	1.97 hi	6.64 abcde	1.91 cde	0.64 cd	12.03 bcd
Magic Lantern	18.5 ab	3.22 efghi	6.10 bcde	1.89 ab	1.34 bcd	12.49 bc
Ol' Zebs	14.5 abcd	4.22 defgh	4.03 cde	4.25 bce	2.00 bcd	12.61 bc
Phantom	15.8 abc	4.55 defgh	8.07 ab	3.22 cde	0.00 d	12.65 b

Sorcerer	15.3 abc	5.07 defg	5.76 bcde	4.46 bcde	0.00 d	11.03 e
Trojan	17.6 ab	5.25 cdef	8.01 ab	4.34 bcde	0.00 d	11.50 de
<b>Small fruited</b>						
Lil. Ironsides	8.3 ef	8.34 ab	0.00 f	0.00 e	0.00 d	1.77 g
Little October	4.8 f	4.76 defgh	0.00 f	0.00 e	0.00 d	0.68 g
Mystic Plus	7.0 ef	7.01 abcd	0.00 f	0.00 e	0.00 d	4.15 f
Pik-a-Pie	9.2 def	9.19 a	0.00 f	0.00 e	0.00 d	4.44 f
Touch of Autumn	7.1 ef	7.10 abcd	0.00 f	0.00 e	0.00 d	2.12 fg
Trickster	8.0 ef	8.04 abc	0.00 f	0.00 e	0.00 d	2.29 fg

<sup>2</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability, Duncan's multiple range tests.

Table 2. Yield in number per acre of different size classes of pumpkin cultivars at The University of Tennessee Plateau Experiment Station at Crossville, 2002.

<b>Cultivar</b>	total yield - no.	Pumpkins< 10 lb no./A	Pumpkins 10-15 lb no./A	Pumpkins 15-20 lb no./A	Pumpkins>20 lb no./A	Seed :
Appalachian	2237 ef <sup>z</sup>	302 fg	544 de	1028 a	363 ab	Semir
Aspen	2359 ef	605 fg	1028 bcd	484 bcde	242 bc	Seedv
Gold Bullion	2600 def	1028 fg	1028 bcd	423 bcde	121 bc	Rupp
Gold Gem	2117 ef	484 fg	605 cd	665 abcd	363 ab	Rupp

Gold Fever	3568 de	1996 ef	1210 abc	302 cde	60 c	Rupp
Gold Strike	2600 def	1028 fg	847 cd	423 bcde	302 bc	Rupp
Gold Standard	3387 def	1512 fg	1694 a	181 de	00 c	Rupp
Howden	1814 f	242 g	847 bcd	544 abcd	181 bc	Harris Moran
Hybrid 500	2782 def	665 fg	1028 bcd	726 abc	363 ab	Rupp
Hybrid 510	2419 ef	665 fg	847 bcd	302 cde	605 a	Rupp
Mother Lode	2601 def	847 fg	1028 bcd	605 abcd	121 bc	Rupp
Merlin	1935 ef	544 fg	1089 bcd	242 cde	60 c	Harris Moran
Magic Lantern	2843 def	847 fg	968 bcd	907 ab	121 bc	Harris Moran
Ol' Zebs	2358 ef	1028 fg	665 bcd	484 bcde	181 bc	Rupp
Phantom	2964 def	1331 fg	1270 ab	363 cde	00 c	Seminis
Sorcerer	3448 def	1936 efg	968 bcd	544 abcd	00 c	Harris Moran
Trojan	3508 de	1694 fg	1270 ab	544 abcd	00 c	Seedway
<b>Small fruited</b>						
Lil. Ironsides	9377 b	9377 b	00 e	00 e	00 c	Harris Moran
Little October	13854 a	13854 a	00 e	00 e	00 c	Seedway

Mystic Plus	3388 def	3388 de	00 e	00 e	00 c	Harris Moran
Pik-a-Pie	4114 d	4114 d	00 e	00 e	00 c	Rupp
Touch of Autumn	6655 c	6655 c	00 e	00 e	00 c	Rupp
Trickster	7018 c	7018 c	00 e	00 e	00 c	Seedway

<sup>z</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability, Duncan's multiple range tests.

Table 3. Quality ratings of pumpkin cultivars at The University of Tennessee Plateau Experiment Station at Crossville, 2002.

Cultivar	Fruit color <sup>x</sup>	Fruit appearance <sup>x</sup>	Stem quality <sup>x</sup>	Fruit length	Fruit diameter
Appalachian	8.00 b <sup>z</sup>	9.00a	6.00 d	16.00 b	12.25 e
Aspen	9.00 a	9.25 a	9.25 a	12.25 e	14.16 c
Gold Bullion	9.00 a	9.00 a	9.00 a	14.00 c	11.00 f
Gold Gem	9.25 a	9.50 a	9.00 a	14.05 c	16.00 a
Gold Fever	9.00 a	9.00 a	7.00 c	12.25 e	12.00 e
Gold Strike	9.25 a	9.00 a	8.25 b	17.16 a	10.80 f
Gold Standard	8.00 b	8.00 b	9.25 a	9.00 g	14.00 c
Howden	9.00 a	9.25 a	6.00 d	14.00 c	12.00 e
Hybrid 500	8.00 b	7.00 c	3.00 e	10.00 f	12.16 e
Hybrid 510	9.25 a	9.00 a	9.00 a	14.25 c	11.00 f

Mother Lode	8.00 b	9.25 a	9.25 a	13.00 d	11.00 f
Merlin	9.25 a	9.25 a	9.00 a	12.16 e	13.00 d
Magic Lantern	9.00 a	9.00 a	8.25 b	14.00 c	15.00 b
Ol' Zebs	9.50 a	9.25 a	7.00 c	12.00 e	16.25 a
Phantom	8.25 b	8.25 b	8.00 b	14.25 c	12.00 e
Sorcerer	9.00 a	8.00 b	8.00 b	14.00 c	12.16 e
Trojan	8.00 b	8.00 b	3.50 e	10.00 f	11.00 f
<b>Small fruited</b>					
Lil. Ironsides	8.25 b	9.25 a	9.50 a	4.00 k	6.00 h
Little October	8.00 b	9.00 a	9.25 a	2.95 l	3.75 j
Mystic Plus	9.25 a	9.25 a	9.25 a	7.00 h	6.75 g
Pik-a-Pie	9.00 a	9.00 a	9.00 a	6.25 i	6.00 h
Touch of Autumn	9.00 a	9.00 a	9.50 a	5.00 j	5.00 i
Trickster	9.00 a	7.75 b	3.50 e	7.16 h	7.00 g

<sup>z</sup> Means within a column followed by the same letter are not significantly different at the 0.05 level of probability, Duncan's multiple range tests.

<sup>x</sup> Graded on a scale of 1-10, with 10 being dark orange color, good appearance, and good stem.

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This research represents one season's data and does not constitute recommendations. After sufficient data is collected over the appropriate number of seasons, final recommendations will be made through research and extension publications.