Pumpkin Cultivar Evaluation, Northern Indiana, 2006

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Pumpkins grown for Halloween and other decorative purposes continue to be an important crop for many Midwestern vegetable farmers. Breeders are developing new varieties with improved appearance and disease resistance. A trial was conducted to evaluate varieties.

Materials and Methods. The trial was established on a Tracy Sandy Loam soil at the Pinney-Purdue Agricultural Center in Wanatah, Indiana. Eighteen jack-o-lantern varieties and three pie-sized varieties were grown in a randomized complete block design with 2 replications. Each plot consisted of two 40-ft. rows on raised beds centered 7.5 ft. apart. Fertilization took into account nutrients previously applied: 24 lb./A N, 96 lb./A P2O5, and 47 lb./A K2O applied prior to seeding wheat in Fall 2005, and 97 lb. N/A applied to the wheat in Spring 2006. The wheat was killed with glyphosate in mid-April and incorporated. Prior to planting pumpkins, 20 lb./A N from urea was applied and incorporated. An additional 25 lb. N/A from UAN was sidedressed in late June. Weeds were controlled with a pre-emergence application of Strategy®, followed during the season by a row-middle application of Curbit®, three cultivations, and handweeding. On 30 May seeds were planted 2 ft. apart. On 19 June plants were thinned to 20 per plot for jack-o-lantern types and 40 per plot for pie-types. Overhead irrigation was applied shortly after seeding to incorporate herbicide and provide moisture for emergence. Seed of the cultivar '18 Karat Gold' was not available at planting time and so 2-week-old seedlings were transplanted on 27 June. Arctic® (permethrin) was applied 21 July, 4 and 26 Aug. to control squash bugs. Quadris®, Acrobat®, Bayleton®, and Topsin® were applied in rotation in combination with Bravo® to control powdery and downy mildew. Vine vigor was rated on 26 July (data not shown) and again at harvest. Powdery mildew on upper and lower leaf surfaces was also rated at harvest. On 5 Sept. pumpkins more than one-half orange were harvested from the first replication only. On 18 Sept. all pumpkins of mature size were harvested from all plots. Weight and number of marketable orange pumpkins (those with at least one-half of rind surface orange in color), marketable turning pumpkins (less than one-half of rind orange) and cull pumpkins were recorded. Harvested fruit were evaluated for color, suture depth, shape, peduncle length, diameter and health, uniformity of fruit size and shape, and overall fruit quality. The average weight per orange pumpkin was calculated. Pounds and number of fruit per plot were converted to tons and number per acre based on a plot area of 900 sq. ft. For the first replication only, the percent of orange pumpkins harvested on 5 Sept. was calculated. The number of cull pumpkins was converted to a percent of the total number of orange, turning and cull pumpkins harvested. Analyses of variance were conducted for responses which met AOV assumptions, with mean separation using Fisher's protected LSD at the 5% level.

Results and Discussion. Wet weather in August and September promoted phytophthora fruit rot. The disease occurred unevenly in the field and for some varieties caused greater numbers of cull fruit than typically observed at this location.

Results are presented in Table 1. Yields reported in this table are based on a plant population of 968 plants per acre for jack-o-lantern types and 1936 plants per acre for pie types. Optimal plant population varies with vine growth habit and average fruit size. Varieties with restricted vines and small or medium-sized pumpkins would very likely produce higher yields at higher populations.

Phat Jack was the only variety with an average pumpkin weight over 40 lbs. The yield of 9.8 tons per acre was lower than any other jack-o-lantern type, and only 25% of the harvested pumpkins were half orange by 5 Sept. Phat Jack had extremely vigorous vines, deep sutures and a long, thick peduncle.

Five varieties produced fruit averaging between 26 and 29 lbs.: Dependable, Harvest Time, Super Herc, SSX 5019, and Gold Medallion. Harvest Time produced the highest yield and fruit number, but did not differ significantly from Dependable and Gold Medallion. SSX 5019 had the highest percentage of cull fruit in the trial (23%), probably due to heavy infection by phytophthora fruit rot in

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one replication of that variety. Harvest Time, a tall bright orange pumpkin, received the highest rating for overall appearance in this group, and Super Herc received the highest rating for fruit uniformity.

Six varieties produced fruit averaging between 19 and 24 lbs.: Gold Medal, SSX 5030, Expert, Spartan, HMX 6685, and Gladiator. Yields for these varieties were similar, between 17 and 19 tons per acre. Gladiator was one of the latest varieties in the trial, with only 52% of the pumpkins half orange by 5 Sept. Expert received the highest rating for overall fruit quality in this group. HMX 6685 and Gladiator had low powdery mildew at harvest. Expert had high levels of powdery mildew at harvest. Both Expert and HMX 6685 had very vigorous vines.

Five varieties produced fruit averaging between 14 and 18 lbs.: 20 Karat Gold, Gold Challenger, Magic Lantern, Magician, and Charisma. 18 Karat Gold also fell into this range, averaging 17.8 lb., but is not included in Table 1 because it was planted late. These varieties produced similar yields and fruit numbers. The fruit number per acre was generally higher than for the larger-fruited varieties. 20 Karat Gold, Magic Lantern and Charisma received the highest overall fruit quality ratings in this group. Charisma, Gold Challenger and Magician received the highest ratings for uniformity of size and shape. Magician had low powdery mildew and most vigorous vines at harvest.

The three pie type pumpkins did not differ in yield or fruit number. Cannonball produced the largest pumpkins, averaging 4.2 lbs., and Prankster the smallest, averaging 3.2 lbs. The relatively large percentage of culls for Prankster was due to phytophthora fruit rot in one replication. Cannonball and Iron Man both had very vigorous vines at harvest. Cannonball received the highest ratings for uniformity and overall appearance.

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Table 1. Yield and number of orange pumpkins, average pumpkin weight, percent culls, percent orange by Sept. 5, and plant and fruit characteristics for 17 jack-o-lantern and 3 pie-type pumpkin cultivars, Wanatah, Indiana, 2006[z].

Cultivar	Seed Source[y]	Yield	Number	Ave. Pumpkin Wt.	Culls	Orange on 9/5[x]	Powdery Mildew[w]		Vine Vigor[v]	Peduncle[v]			Fruit Uniformity[v]	Overall Fruit Quality[v]	Color[u]	Sutures[u]	Shape[u]
							Upper	Lower		Length	Diameter	Health					
Jack-o-Lantern Types		*tons/acre*	*1000s/acre*	*lb.*	*% by no.*	*% by no.*	*%*			*1 to 9*							
Phat Jack	SI	9.8	0.48	40.4	0	25	41	82	9.0	7.5	7.5	6.0	3.0	5.0	M-D	D	S-T
Dependable	AC	22.2	1.57	28.3	13	87	36	77	7.5	4.0	6.5	7.0	4.0	6.0	L	S	T
Harvest Time	AC	25.5	1.82	27.9	10	97	23	64	7.5	4.0	6.0	6.5	5.5	7.0	L-M	S	T
Super Herc	ST/HM	14.1	1.04	27.3	11	87	19	77	7.0	5.0	6.5	7.0	7.0	5.0	D	D	O
SSX 5019	SK	14.5	1.09	26.4	23	88	23	86	6.5	4.5	4.5	6.0	6.0	6.0	M-D	D	O
Gold Medallion	RU	19.6	1.48	26.3	8	68	41	86	6.5	5.0	7.5	7.0	5.5	5.5	M	M	O
Gold Medal	RU	17.5	1.50	23.4	7	71	41	86	8.0	5.5	6.5	6.5	4.0	5.5	M-L	M	O
SSX 5030	SK	17.2	1.52	22.6	14	93	36	77	6.0	6.0	4.5	5.0	5.5	4.5	M-L	M	S-R-O
Expert	JS	17.9	1.67	21.4	7	63	60	97	9.0	5.0	5.0	7.5	7.5	8.0	M-D	D	O
Spartan	SW	18.4	1.74	21.1	14	91	42	77	5.5	4.0	4.5	4.5	6.0	6.0	M	D	O
HMX 6685	HM	18.6	1.82	20.5	11	74	14	38	8.5	4.0	6.0	5.5	5.0	3.5	D	M	O
Gladiator	ST/HM	17.5	1.86	19.0	4	52	19	50	7.5	5.0	5.5	7.5	7.0	6.0	D	M-D	R-O
20 Karat Gold	RU	21.0	2.35	17.9	7	88	28	86	5.5	6.0	5.0	7.0	6.5	7.5	M	M	R-O
Gold Challenger	RU	18.8	2.13	17.8	6	60	38	81	7.0	6.0	5.5	7.0	7.0	6.5	M	M	O
Magic Lantern	ST/HM	22.0	2.59	17.0	5	62	28	82	6.5	5.0	4.0	7.0	6.5	7.5	D	M-D	R-O
Magician	ST/HM	18.8	2.59	14.5	12	70	10	32	8.0	5.0	5.0	6.0	7.0	6.5	M	M-D	R-O
Charisma PMR	JS	16.3	2.27	14.3	12	89	19	60	6.5	5.5	4.0	6.0	7.5	7.5	D	D	R
LSD .05[t]		6.0	0.49	3.1	–	–	–	–	–	–	–	–	–	–	–	–	–
Pie Types																	
Cannonball	ST/HM	12.5	5.9	4.2	1	30	28	86	9.0	6.5	7.0	6.5	8.0	8.0	M-D	S-M	R-O
Iron Man	ST/HM	12.8	7.0	3.6	2	43	28	63	8.0	6.0	6.0	5.0	7.0	6.0	M	S	R
Prankster	RU	9.7	6.0	3.2	16	85	5	86	4.0	6.0	6.0	5.5	6.0	5.0	M-L	M	S
LSD .05[t]		ns	ns	0.6	–	–	–	–	–	–	–	–	–	–	–	–	

[z]Seeded 5/30 and harvested 9/5 (1 rep only) and 9/18 (both reps). 968 plants per acre for jack-o-lantern and 1936 plants per acre for pie types.

[y]AC=Abbott&Cobb, HM=Harris Moran, JS=Johnny's Selected Seeds, RU=Rupp Seeds, SI=Siegers Seeds, SK=Sakata, ST=Stokes Seeds, SW=Seedway.

[x]Percent of all orange fruit that were harvested on 9/5; one replication only.

[w]Average of ratings recorded on 9/5 for rep 1 and 9/20 for rep 2 for upper and lower leaves; converted to percent leaf area affected.

[v]Vine vigor at harvest and fruit quality after harvest rated on a 1 to 9 scale: 2=low vigor, short/thin peduncle, non-uniform, poor quality; 5=average, 8=good vigor, extra long/thick peduncle, very uniform, high quality.

[u]Color: Light, Medium or Dark orange; Sutures: Shallow, Medium, or Deep; Shape: Squat, Round, Oblong or Tall.

[t]Fisher's protected least significant difference.