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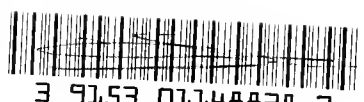
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*The
Connecticut
Agricultural
Experiment
Station,
New Haven*

Pumpkin
Trials 1994
and Three-year
Compendium

BY DAVID E. HILL

*Bulletin 929
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SUMMARY

In 1994, 13 cultivars of large to miniature pumpkins were grown at Windsor in a sandy terrace soil and at Mt. Carmel in a loamy upland soil. Average yield of eight cultivars of medium to large pumpkins, common to both sites, was 42 T/A at Windsor compared to 20 T/A at Mt. Carmel. Greater yield at Windsor was due to greater fruit set, greater average weight, and fewer pre-harvest losses. Diminished yield at Mt. Carmel was due to drought and high temperatures during early fruit set, and infection of powdery mildew in late summer that caused premature ripening of fruit. At Windsor, yield of Rocket exceeded 67 T/A, due largely to excellent fruit set. Yield of Pro Gold 500 and Pro Gold 510 was 50 T/A with over 45% of fruit exceeding 20 lb. At Mt. Carmel, yield of Rocket exceeded 37 T/A; Howden, Pro Gold 500, and Pro Gold 510 exceeded 22 T/A.

Average yield of four small and miniature cultivars was 9.3 T/A at Windsor compared to 6.4 T/A at Mt. Carmel for the same reasons outlined above. At both sites, yield of New England Pie exceeded 11 T/A by virtue of heavy fruit set. Among the miniature cultivars at both sites, Oz had the greatest yield (7.7-10.7 T/A) and Baby Bear at Windsor had the greatest number of fruit (7,955/A).

Post-harvest loss of unprotected fruit due to frost damage at both sites was less than 10% for Baby Bear, Howden, New England Pie, Oz, Rocket, and Tom Fox.

Among all cultivars, Baby Bear, Big Autumn, Howden, Oz, Rocket, Pro Gold 500, and Pro Gold 510 provided excellent yield and quality. High yield and quality were dependent upon weather and adequate control of *Phytophthora*, black rot, powdery mildew, cucumber beetles, and vine borers.

Management strategies and a 3-year compendium of 1992-1994 trials are presented.

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Pumpkin Trials 1994 and Three-year Compendium

BY DAVID E. HILL

Pumpkins, members of the genus *Cucurbita*, have been traced back to early civilizations in North America by archeologists who found preserved fragments of rind and seeds in the ruins of the Cliff Dwellers (Erwin 1930). He presents good evidence that pumpkins are of American origin. It was reported that native Americans originally grew pumpkins for their edible seed (Splittstoesser 1979). The native Americans who met the Pilgrims in 1620 also grew pumpkins and squash for their edible rind. In colonial days, pumpkins were grown as a companion crop with corn (Thompson 1931). Today, great quantities are grown for Halloween decorations and for consumption in pies and breads.

Present outlook

The marketing of pumpkins for decoration and pie filling has increased substantially in the last decade. Many growers of fruit and vegetables, who tailor their production for pick-your-own clientele, now include a pumpkin patch in their plans. In 1989, the Connecticut Agricultural Marketing Directory listed 61 growers who grew pick-your-own pumpkins or listed them as a major item in their fall sales. Several other growers supply retail outlets. Although documentation of pumpkin production in the United States and Connecticut is lacking, the Connecticut Department of Agriculture estimated that 800-1000 acres of pumpkins were grown in Connecticut in 1994.

To maximize production of pumpkins and reduce the number of misshapen fruit, growers must choose cultivars that are uniform in color and shape. Because decorative pumpkins are mostly selected by eye appeal, a substantial number of substandard pumpkins are left in the field. Breeders have developed many new hybrid cultivars that are more uniform in shape and color and also resist mildew and rot. New breeding objectives are to develop cultivars with shorter vines (space savers), thicker rinds (more durable in transport and storage), thicker stems (better handling), smaller or larger fruit (display appeal), and hullless seeds (edible quality).

In this bulletin, I shall report yield and quality of 13 cultivars, ranging in size from large to miniature. I shall also report on post-harvest losses during unprotected storage and

strategies to maximize yield. Finally, I will present a 3-year compendium of yield and durability of pumpkins grown at two sites and list cultivars and their characteristics that captured my attention during the trials.

METHODS AND MATERIALS

Soils

Pumpkin trials were conducted at the Valley Laboratory, Windsor, on Merrimac sandy loam, a well drained sandy terrace soil with somewhat limited moisture holding capacity and at Lockwood Farm, Mt. Carmel, on Cheshire fine sandy loam with moderate moisture holding capacity.

Cultivars

Seeds were obtained from several domestic suppliers. Among the 13 cultivars tested in 1994, five were tested for the first time, seven for the second time, and one for the third time. Special characteristics of the cultivars are listed in Table 1. Semi-bush (SB) cultivars have short vines and require less planting space. Cultivars with precocious yellow genes (PYG) are yellow to orange throughout their growth instead of green changing to yellow or orange as they mature. Cultivars with hullless (H) or semi-hullless (SH) seeds can be readily used for toasted snacks. Cultivars designated thick stemmed (TS) have very thick stems, often referred to as handles, that remain durable after early frosts. Cultivars designated miniature (M) produce abundant fruit weighing 1-3 lb.

Culture

Seeds were sown June 7-8 in groups of six to seven seeds. The groups were spaced 5 feet apart within rows that were 8 feet apart (1090 planting groups/A). In the trials, there were 12 planting groups/row for each cultivar. After germination, the plants were thinned to four plants/group (4360 plants/A). The plants, after thinning, were at least 10 inches apart within each group. During July, the crop was irrigated once at Windsor and twice at Mt. Carmel.

Fertilization

Before planting, the soils at Windsor were fertilized with 1000 lb 10-10-10/A. Four weeks after planting, the rows

Table 1. Pumpkin cultivars grown at Windsor and Mt. Carmel in 1994.

Cultivar	Characteristics*	Years Tested
Baby Bear	M, SH	2
Baby Pam	M	1
Big Autumn	SB, PYG	2
Happy Jack		1
Howden		2
Oz	M, SB, PYG	3
New England Pie		2
Pro Gold 500		2
Pro Gold 510		1
Rocket (JSS 9032)		2
Spirit	SB	2
Tom Fox	TS	1
Trick or Treat	H	1

*M=Miniature; PYG=Precocious yellow gene; SB=Semi-bush; H=Hulless seed; SH=Semi-hulless seed; TS=Thick stem.

were sidedressed with 90 lb/A calcium nitrate for a total application of 130 lb N/A. At Mt. Carmel, 3-foot wide swaths of soil were fertilized at a rate of 900 lb/A 10-10-10. After 4 weeks, when the plants began to form vines, the unfertilized 5-foot swaths between the planted strips were fertilized at the rate of 500 lb/A 10-10-10 and rototilled into the soil. Soil pH was 6.5 at each site: lime was not added.

Disease control

A preplant application of Ridomil 2E (2 qt/A) was disked into the soil to a depth of 2 inches to control *Phytophthora* crown and fruit rot. Black rot and powdery mildew were controlled with alternate weekly applications of Bravo 500 (3 qt/A) and Ridomil-Bravo 81W (2 lb/A) from late-June to mid-August. Benlate 50DF (0.5 lb/A) and karathane (0.5 lb/A) were also applied alternately from late-June to mid-August to control powdery mildew.

Insect control

Asana XL (9.6 oz/A) was applied weekly from mid-June to mid-July to control vine borers and cucumber beetles.

Weed control

Weeds were controlled by cultivation. Weeds germinating in the 4-weeks following planting were rototilled as the late application of fertilizer was incorporated into the soil. Within 3 weeks, the vines completely covered the spaces between the rows and suppressed further weed growth.

Harvest

All pumpkins were harvested October 4-7 at both sites. The pumpkins were weighed individually and graded for

color, shape, thickness of stem, and the presence of surface blemishes. All pumpkins remained unprotected at the edge of the field and were regraded October 29-30 to determine post-harvest loss from rotting or frost damage.

Rainfall and temperature

Rainfall distribution throughout the pumpkin-growing season, June through October, is shown in Figure 1. Each bar represents the departure from mean monthly rainfall for Hartford and Mt. Carmel reported by the National Weather Service. In 1994, total rainfall from June through October was 24.6 inches at Windsor and 16.8 inches at Mt. Carmel compared to 30-year averages of 15.7 and 16.2 inches, respectively, at each site. The above-average rainfall at Windsor (+8.9 inches) was supplied by localized thunderstorms in June through August and provided ample water for the crop. At Mt. Carmel, total rainfall for the growing season was about normal (+0.6 inches), but moisture deficits occurred in June and July during the most active period of vine growth and reduced their vigor.

In October, the unprotected pumpkin fruit were exposed to light frosts (30-32F) on four nights at Windsor and three nights at Mt. Carmel.

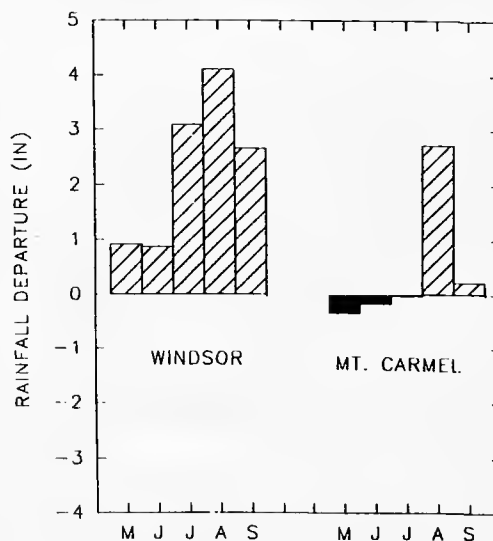


Figure 1. Departure from normal rainfall (0) during the 1994 growing season at Windsor and Mt. Carmel.

YIELD AND POST-HARVEST LOSS OF FRUIT

Yield

The average yield of eight cultivars of medium to large pumpkins, common to both sites, was 42.0 T/A at Windsor and 20.0 T/A at Mt. Carmel, a 110% difference (Table 2). The average yield of four cultivars of small to miniature pumpkins was 9.3 T/A at Windsor and 6.4 T/A at Mt. Carmel, a 45% difference. Greater yield of all pumpkin cultivars

Table 2. Yields of Pumpkins at Windsor and Mt. Carmel, 1994

Cultivar	WINDSOR					MT. CARMEL				
	Hvst. %	Avg. Wt. lb.	Total Yield T/A	Total Fruit No/A	Field Storage Losses %	Hvst. %	Avg. Wt. lb.	Total Yield T/A	Total Fruit No/A	Field Storage Losses %
Baby Bear	100	1.6	6.4	7955	1	96	1.4	3.3	4690*	9
Baby Pam	96	2.2	4.5	4105	35	100	2.0	3.8	3850	22
Big Autumn	100	14.7	42.5	5780	22	94	9.2	19.6	4270	27
Happy Jack	88	12.8	31.1	4860	19	88	13.6	12.5	1840*	9
Howden	-	-	-	-	-	86	18.7	25.0	2680	9
New England Pie	97	4.0	15.6	7790	10	99	3.6	11.0	6115	5
Oz	98	3.0	10.7	7120	4	94	2.7	7.7	5695	9
Pro Gold 500	94	20.6	50.0	4860	10	78	15.2	22.3	2930	26
Pro Gold 510	98	20.1	49.6	4940	7	81	14.4	23.5	3265	20
Rocket (JS-9032)	97	16.3	67.6	8290	12	96	11.5	37.1	6450	12
Spirit	85	10.2	24.8	4860	19	96	9.1	19.0	4190	16
Tom Fox	98	13.8	35.2	5110	3	88	9.4	14.2	3015	8
Trick or Treat	94	14.4	35.0	4860	2	97	10.0	11.7	2345*	32

*Germination less than 50%

at Windsor compared to Mt. Carmel was due to greater average number of fruit per acre (5875 vs. 4055), greater average weight of fruit (11.1 lb vs. 8.5 lb), and greater percent of fruit harvested (95.4 vs. 92.2). Lower numbers and smaller sizes of fruit at Mt. Carmel were due to high temperatures and moisture deficits in June that caused many flowers to abort during early fruit set. Similar low fruit yields were reported in many pumpkin fields throughout Connecticut in 1994. Fruit set was normal at Windsor because of localized thunderstorms, which not only supplied ample rain in June but also cooled air temperatures. Smaller fruit at Mt. Carmel was due to an infection of powdery mildew in late-August causing collapse of foliage and premature ripening of fruit despite efforts to control disease.

At Windsor, yield of Rocket was greatest among all cultivars (67.2 T/A) because their vines produced the greatest number of fruit. Yield of Big Autumn, Pro Gold 500, and Pro Gold 510 exceeded 40 T/A. Although the average weight of Big Autumn was about 6.0 lb less than the Pro Gold cultivars, high yields were attained by an 18% increase in the number of fruit. Among the medium sized pumpkins, yield of Happy Jack, Tom Fox, and Trick or Treat exceeded 30 T/A. Among the miniature pumpkins, Oz had the greatest yield and Baby Bear produced the greatest number of fruit.

At Mt. Carmel, yield of Rocket was greatest among all cultivars (37.1 T/A) because of a greater number of fruit. Yield of Howden, Pro Gold 500, and Pro Gold 510 exceeded 22.0 T/A. The high yield of Howden was attained by heavier fruit because the number of fruit/A was lowest among all cultivars (except those that germinated poorly) with 14% of fruit rotting in the field before harvest. Among the miniature cultivars, Oz had the greatest yield because of heavier weight and greatest fruit set.

Post-harvest loss of fruit

Although harvested pumpkins should be protected from rain and frost to reduce post-harvest loss, all fruit were unprotected during October to resemble conditions in pick-your-own operations. There were three to four light frosts (30-32F) at both sites. Frost damage appeared as water-soaked, discolored patches on the shoulders of the fruit. The weakened stems separated from the fruit when lifted.

At Windsor, the average post-harvest loss was 12% compared to 16.2% at Mt. Carmel (Table 2). Although there was one less frosty night at Mt. Carmel, additional losses were caused by crow damage. Holes pecked into the rind of some fruit served as focal points for infection by soft rot.

At Windsor, Baby Pam had the greatest post-harvest loss (35%) from frost damage followed by Big Autumn and Spirit (19-22%). The stems of these cultivars were of medium thickness. Cultivars with thicker stems generally had less than 10% loss.

At Mt. Carmel, post-harvest loss of Trick or Treat exceeded 30%. Many stems shriveled after powdery mildew infected the crop. Post-harvest losses in Baby Pam, Big Autumn, Pro Gold 500, and Pro Gold 510 exceeded 20%. Many of these losses may have been due to infection following crow damage. Cultivars that best withstood frost damage at both sites were Baby Bear, Oz, and Tom Fox. These cultivars had well-developed stems for their size.

WEIGHT DISTRIBUTION

Commercial seed catalogues generally rate pumpkin cultivars according to their weight class; i.e. 10-15 lb, 20-25 lb, etc. These ratings are very general and represent weights attained by pumpkins growing under favorable temperature, moisture, nutrient supply, and freedom from disease. In my

Table 3. Percent distribution among weight classes (lb) of pumpkin fruit grown at Windsor and Mt. Carmel in 1994. The underlined numbers represent the median weight class.

Cultivar	WINDSOR						MT. CARMEL					
	<5	5-10	10-15	15-20	20-25	>25	<5	5-10	10-15	15-20	20-25	>25
Baby Bear	<u>100</u>	-	-	-	-	-	-	<u>100</u>	-	-	-	-
Baby Pam	<u>100</u>	-	-	-	-	-	<u>100</u>	-	-	-	-	-
Big Autumn	3	16	<u>36</u>	28	16	1	2	45	<u>41</u>	12	-	-
Happy Jack	5	19	<u>45</u>	26	3	2	4	14	<u>50</u>	23	9	-
Howden	-	-	-	-	-	-	3	6	19	<u>32</u>	28	12
New England Pie	<u>84</u>	16	-	-	-	-	<u>100</u>	-	-	-	-	-
Oz	<u>98</u>	2	-	-	-	-	<u>100</u>	-	-	-	-	-
Pro Gold 500	-	10	17	<u>24</u>	26	23	-	17	<u>40</u>	23	9	11
Pro Gold 510	-	4	26	<u>29</u>	20	25	-	23	<u>31</u>	41	-	5
Rocket (JS 9032)	-	8	32	<u>40</u>	15	5	3	40	<u>42</u>	14	1	-
Spirit	-	<u>53</u>	40	7	-	-	6	<u>64</u>	30	-	-	-
Tom Fox	6	25	<u>33</u>	22	8	6	8	<u>47</u>	33	12	-	-
Trick or Treat	2	14	<u>34</u>	36	14	-	7	39	<u>47</u>	7	-	-

trials, each cultivar produced a population of fruit that encompassed several weight classes (Table 3). In 1994, the median weight classes of Pro Gold 500, Pro Gold 510, Rocket, and Tom Fox were one class greater at Windsor than at Mt. Carmel, the result of a more favorable moisture supply and absence of disease. At Windsor, Pro Gold 500, Pro Gold 510, and Rocket produced the heaviest fruit. Fully 46-48% of Pro Gold 500 and Pro Gold 510, exceeded 20 lb and 7-10% exceeded 30 lb.

At Mt. Carmel, Howden and Pro Gold 500 produced the heaviest fruit. Fully 40% of Howden and 20% of Pro Gold 500 exceeded 20 lb. Eleven percent of Pro Gold 500 exceeded 30 lb. As expected, virtually all fruit of Baby Bear, Baby Pam and New England Pie fell in the <5 lb class at both sites. At Mt. Carmel, the median class of Spirit and Tom Fox fell one weight class below those reported in commercial catalogues. These lower medians were undoubtedly due to unfavorable growing conditions at the site.

MANAGEMENT STRATEGIES

Site selection

Although the yield of pumpkins in 1994 was dependent upon weather and disease control, the loamy soil at Mt. Carmel had a greater moisture holding capacity than the sandy soil at Windsor. Sandy soils require more frequent light irrigations than loamy soils during droughty periods. Pumpkin fields where known infections of black rot have been observed within the last two years may still retain the potential for infection. Location of the field is an important consideration. Growing sites that present good air movement are less susceptible to disease than small fields surrounded by tall trees. Pumpkin fields at the base of narrow valleys are more susceptible to damage by early frosts than fields on upper slopes. Pick-your-own fields are at greater risk in low-lying areas where early frosts are known.

Selection of cultivars

The ideal cultivar produces a high yield of uniformly shaped fruit and withstands damage from frost and disease. Some growers report that their customers prefer a somewhat upright globed fruit that is deep orange in color. For pumpkins exceeding 20 lb, Howden, Pro Gold 500, and Pro Gold 510 had the greatest yield. In the 15-20-lb range, Rocket and Big Autumn had the greatest yield at both sites. The fruits of all of these cultivars were relatively uniform in shape and had thick stems. Big Autumn, with its precocious yellow gene, had yellow color at the base of the stem and post-harvest loss due to frost damage exceeded 20% at both sites. Frost protection of fruit from this uniformly shaped cultivar would minimize post-harvest loss.

For durability in pick-your-own operations, where unprotected fruit may be damaged by frost, Tom Fox shows promise. Although yield of this cultivar is modest and fruit size is variable, its very thick stem resists frost damage.

Among the miniature pumpkins, Oz had the greatest yield, uniformity of fruit, and durability. However, in 1992-1993 (Hill 1994) post-harvest loss exceeded 50% at both sites after fruit were subjected to temperatures as low as 26F. Baby Bear was a prolific producer of fruit at Windsor but poor germination at Mt. Carmel (<50%) halved yield and population.

Insect and disease control

Pumpkin fruit and vines are highly susceptible to disease and infestation by vine borers and cucumber beetles. For disease control, regular applications of fungicides, especially during periods of wet weather, were necessary to insure greater yield of fruit. In fields infected by black rot and *Phytophthora*, pre-plant incorporation of fungicide was necessary. Additional applications of fungicides every 7-10 days to developing vines and fruit in late-June through

August minimized infection. Cucumber beetles and vine borers, observed in late-June through mid-July, were controlled by weekly application of insecticides until they naturally declined.

Post-harvest storage

Pumpkins can be stored at 50-55F and 70-75% relative humidity for several months (Ashley 1992). For 3-4-week storage prior to Halloween, pumpkins can be placed in a dry area and covered with plastic sheets or tarpaulins to protect them when frost threatens. Fruit left in the field for pick-your-own clientele cannot be protected from frost. Selection of cultivars that are more resistant to frost damage is an alternative. Among the large and medium size pumpkins, Rocket and Tom Fox lost fewest fruit to frost damage. For miniature pumpkins, Baby Bear and Oz had the least post-harvest losses.

COMPENDIUM, 1992-1994

The pumpkin trials were established to identify cultivars that are best suited to Connecticut's soil and climate. Cultivars that yielded well and endured early frosts while unprotected the first year were repeated and new cultivars were added to the trials. Cultivars that yielded poorly or were heavily damaged by frost were dropped from the trials. During the trials, the cultivars were subjected to excessive rain (1992), drought (1993, 1994 especially at Mt. Carmel), above-normal temperatures in June and July (1994), below normal temperatures in October (1992, 1993), and disease infections (1992, 1994 at Mt. Carmel). These vagaries in weather and disease profoundly affected yield and durability of the crops. I have identified several cultivars that yielded well, provided salable fruit, and had minimal post-harvest loss. I have also identified other cultivars that produced quality fruit but must be protected from frost. It should be noted, however, that the cultivars identified in this compendium are reliable, but not infallible due to weather extremes. Cultivars dropped from testing because of poor yield, quality, or low durability may have been treated too harshly, but it was impractical to test all 19 cultivars each year to determine their true probability of success. Some new cultivars, tested late in the program, may have had insufficient time to test their performance under varying weather.

Table 4 lists all cultivars tested in 1992-1994. Additional details of their yield, quality, and durability may be found in this Bulletin and Bulletin 919 of this Station. The most reliable cultivars will now be described.

Large

1. Pro Gold 500 and Pro Gold 510 were tested for 2 years and 1 year, respectively. The deep orange fruit of these hybrid cultivars were uniformly shaped, upright globes. Ribbing was moderate to deep and stems were thick. The average weight of fruit exceeded 20 lb. About 10% of

fruit exceeded 30 lb. Under favorable conditions, yield reached 50 T/A. The fruit of Pro Gold 510 was more durable than Pro Gold 500 in unprotected storage.

2. Howden was tested for 2 years. The deep orange fruit of this cultivar, a natural selection by John Howden of Massachusetts, had shapes that ranged from upright globe to globe. Ribbing was deep and stems were thick. Although the average weight among sites ranged from 18-23 lb, greater than 40% of fruit exceeded 20 lb and 12% exceeded 25 lb. Yields of 35 T/A were common. Durability was greater than most cultivars tested.

3. Big Autumn was tested for 2 years. The orange fruit were somewhat variable in shape. Upright globes predominated with some globe-shaped fruit. A prominent feature of this hybrid cultivar is its precocious yellow gene that maintains its yellow to orange color throughout its growth. Its semi-bush vining characteristic permits planting at closer spacing. Ribbing was shallow and stems are of medium thickness. Under favorable conditions, the average weight exceeded 15 lb with the median range in the 15-20 weight class. Despite its semi-bush vining characteristic, fruit production under favorable conditions was prolific and produced yields of 40-58 T/A. Post-harvest losses in unprotected storage were 20-25% with light frost (30-32F) and 40-65% with heavy frost (26-29F). This cultivar offers greater potential when harvested fruit are protected.

Medium

1. Rocket (JSS 9032) was tested for 2 years. The deep orange fruit were somewhat variable in shape, predominantly upright globes with some globes. Ribbing was deep to moderately deep and stems were thick, providing a secure handle. Among all cultivars tested, Rocket had the thickest rind (<2.0 inches) and produced heavy fruit for their size. The average weight of fruit among sites and seasons was 12 lb. Under favorable conditions, 20% of fruit exceeded 20 lb and yield exceeded 65 T/A. In unprotected storage, durability was related to frost frequency and severity of temperature. Post-harvest losses were high when night temperatures were below 28F but low when temperatures did not fall below 30F.

2. Happy Jack was tested for 1 year. The deep orange fruit was somewhat variable in shape, predominantly upright globes with some globes. Ribbing was moderately deep and stems were thick. Average weight at both sites was 13 lb. Although the median weight class was 10-15 lb, 30% of fruit exceeded 15 lb; 5% exceeded 20 lb. Under favorable conditions, yield exceeded 30 T/A. In unprotected storage, post-harvest losses were low when temperatures did not fall below 30F.

3. Tom Fox was tested for 1 year. The deep orange fruit was variable in size and shape, ranging from upright globe to flattened globe. Ribbing was deep to moderately deep. The most notable feature of this cultivar was its very thick

Table 4. Three-year compendium of yields, dominant weight class, and unprotected durability rating for pumpkins grown at Windsor and Mt. Carmel, 1992-1994.

Cultivar	WINDSOR					MT. CARMEL				
	1992	1993	1994	Weight	Durability*	1992	1993	1994	Weight	Durability*
	T/A	T/A	T/A	Class-lb		T/A	T/A	T/A	Class-lb	
Autumn Gold	2.3	-	-	10-15	L	9.7	-	-	5-10	M
Aspen	-	24.2	-	10-15	L	-	27.0	-	10-15	L
Baby Bear	-	12.2	6.4	<5	M	-	4.6	3.3	<5	M
Baby Pam	-	-	4.5	<5	M	-	-	3.8	<5	M
Big Autumn	-	58.5	42.5	15-20	M	-	-18.9	19.6	10-15	M
Conn. Field	24.1	31.6	-	10-15	M	20.8	16.4	-	10-15	M
Ghost Rider	3.2	22.5	-	5-10	L	8.7	15.8	-	5-10	M
Happy Jack	-	-	31.1	10-15	H	-	-	12.5	10-15	H
Howden	9.5	-	-	>25	M	19.3	-	25.0	15-20	H
Lumina	-	16.7	-	10-15	M	-	6.9	-	5-10	M
New Eng. Pie	-	14.7	15.6	<5	M	-	8.8	11.0	<5	M
Oz	2.0	18.2	10.7	<5	H	7.0	8.0	7.7	<5	M
Pro Gold 500	-	35.6	50.0	15-20	M	-	18.0	22.3	10-15	M
Pro Gold 510	-	-	49.6	15-20	H	-	-	23.5	10-15	H
Rocket (JSS 9032)	-	28.3	67.6	10-15	M	-	18.7	37.1	10-15	M
Spirit	-	26.1	24.8	5-10	M	-	16.8	19.0	5-10	M
Tom Fox	-	-	35.2	10-15	H	-	-	14.2	5-10	H
Trick or Treat	-	-	35.0	10-15	H	-	-	11.7	10-15	M
Wizard	0.7	24.7	-	15-20	L	8.6	3.7	-	15-20	M

*Durability rating: High (H); Moderate (M); Low (L)

stem that provided a secure handle that did not separate following light frosts. The average weight ranged from 10-14 lb at both sites, with 35-45% of fruit exceeding 15 lb. Under favorable conditions, yield attained 35 T/A. This cultivar was the most durable among all large and medium sized pumpkins with less than 10% post-harvest losses in unprotected storage.

Small

1. Spirit was tested for 2 years. The light orange to orange fruit were uniformly shaped with upright globes predominating. Shallow ribbing created a smoother surface than most cultivars tested. Stems were moderately thick. The average weight of fruit was 9 lb. Under favorable conditions, yield attained 25 T/A. Its short vining habit allows a close planting space for optimum yield. Its durability was moderate in unprotected storage with post harvest losses ranging from 20-25%. Protection of harvested fruit would increase durability.

2. New England Pie was tested for 2 years. The deep orange fruit was uniform in shape with flattened globes predominating. Ribbing was deep and stems were moderately thick. The average weight was about 4 lb with 15-20% exceeding 5 lb. Yield at both sites ranged from 11-14 T/A. The

fruit was moderately durable in unprotected storage. Its flesh is stringless and highly prized for use in pie filling and breads.

Miniature

1. Baby Bear was tested for 2 years. The orange fruit was uniformly shaped with flattened globes predominating. Ribbing was deep and stems were long and moderately thick to thin. Average weight was 1.5 lb and yield of 12 T/A was attained under favorable conditions. More common yields were 5-6 T/A. Fruit production averaged three per vine, with total fruit exceeding 14,000 fruit/A under favorable conditions. At Mt. Carmel, germination of seed in the loamy soil was 33-46% in both years compared to 89-100% in the sandy soil at Windsor. It appears that the semi-hulless seed is more prone to rotting in heavier soil. Fungicidal protection of seed or a heavier seeding rate would increase stand density. The virtue of Baby Bear's semi-hulless seed, however, is its edible quality as a toasted snack.

2. Oz was tested for 3 years. The orange fruit of this hybrid cultivar was very uniform with an upright globe shape. The surface of the fruit was smooth and its stem was moderately thick, creating a sturdy handle. The compact fruit averaged 3 lb in weight and attained yield of 18 T/A under

favorable conditions. More common yields were 7-8 T/A. The durability of the fruit in unprotected storage was highly variable. Post harvest losses of 40-60% occurred when temperatures fell below 28F, but only 5-10% when subjected to light frosts (30-32F). The semi-bush vining characteristic of Oz permits denser planting and its precocious yellow gene eliminates the need to fully ripen before harvest.

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