Table 3. Influence of TIBA and Gibberellin on yield of California Blackeye No. 5 peas.

Treatment	Row spacing (inches)					
	38	19	9½	38	19	9½
	Shelled peas lb/A					
	(1st harvest)			(2nd harvest)		
Check	1123	1327	775	536	776	810
20 g/A TIBA	1096	1865	863	302	579	607
50 ppm Gibberellin	1182	1579	707	483	828	823
20 g/A TIBA + 50 ppm Gibberellin	1161	1671	1017	272	572	587
LSD (0.05) for first harvest 212						

Table 4. Influence of TIBA and Gibberellin on per cent maturity at first harvest.

Treatment	Row spacing (inches)		
	38	19	9½
	% Picked at first harvest		
Check	67.7	63.1	48.9
20 g/A TIBA	78.4	76.3	58.7
50 ppm Gibberellin	71.0	65.6	46.2
20 g/A TIBA + 50 ppm Gibberellin	81.0	74.5	63.4
LSD (.05) 11.4			

significantly increased yield of peas on the 9½-inch rows. Peas planted in 19-inch rows and treated with 20 g/A of TIBA produced the highest yield (1865 lbs/A).

There was an increase in the per cent of peas picked at the first harvest at all row spacings with the TIBA-Gibberellin treatment (Table 4). The maximum percentage of peas picked at first harvest was 81% with the TIBA-Gibberellin treatment on 38-inch rows while the minimum percentage of peas picked was 46.2% on 9½-inch rows with the 50 ppm Gibberellin treatment. The influence of TIBA and TIBA-Gibberellin combinations on maturity rate has been previously reported (3). The per cent picked at first harvest was low on the 9½-inch rows regardless of the treatment that was applied.

These data indicate that yield and growth parameters of California Blackeye No. 5 peas were influenced by TIBA, Gibberellin and row spacing and that maximum yields were obtained on 19-inch rows when sprayed with 20 g/A of TIBA. In some cases the application of Gibberellin 5 days after TIBA applications were beneficial in promoting rapid maturity and increasing yield.

Literature Cited

1. Burton, Joe C., and Curley, R. C. 1966. Influence of triiodobenzoic acid on growth, nodulation and yields of inoculated soybeans. *Agron. J.* 58:406-408.
2. Greer, H. A. L., and J. C. Anderson. 1965. Response of soybeans to triiodobenzoic acid under field conditions. *Crop Science* 5:229-232.
3. Hipp, Billy W. and W. R. Cowley. 1969. Influence of 2,3,5-triiodobenzoic acid and gibberellin on growth, yield and nutrient content of southern peas. *J. Amer. Soc. Hort. Sci.* 94:269-271.
4. Prevatt, R. W. and H. W. Lundy. 1966. Progress report on the response of southern peas to triiodobenzoic acid under field conditions. *Fla. State Hort. Soc.* 79:191-193.
5. Wax, L. M. and J. W. Pendleton. 1968. Influence of 2,3,5-triiodobenzoic acid (TIBA) on soybeans planted in different cultural systems. *Agron. J.* 60:425-427.

Stem-cavity Browning of McIntosh Apples[1,2]

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A browning of the stem-cavity region is frequently the first externally visible storage disorder to appear in McIntosh apples. Stem-cavity browning is associated with core browning and is of commercial significance for it may develop after several days at 21°C during marketing (2). A somewhat similar disorder of Sturmer apples, stalk-end scald, was reported to preferentially affect terminal apples and to be controlled by scald inhibitors (3). Casual observation suggested that both size and position in the blossom cluster influenced development of stem-cavity browning of McIntosh apples.

Samples of 25 ± 1 terminal and lateral apples from each of 10 McIntosh trees were examined after a storage period of seven months at 0°C. Apples were sorted into the same five stem-cavity types as used by Webster and Crowe (4), individually weighed, and presence or absence of externally visible stem-cavity browning recorded. For contingency tests (1) frequency classes were pooled so that no expected frequencies were less than five.

Both size and position in the blossom cluster influenced development of stem-cavity browning (Table 1). Position had a predominant effect; even the smallest terminal apples had as much stem-cavity browning as the larger sizes of lateral apples (111-170 g).

(Continued on page 325)

[1]Contribution No. 1357.

[2]The technical assistance of I. W. Price is gratefully acknowledged.

Table 1. Stem-cavity browning of McIntosh apples as influenced by fruit size and position in the blossom cluster.

Position	Variate	Fruit weight (g) 51-70	71-90	91-110	111-130	131-150	151-170
Terminal[a]							
	No. of apples	10	75	91	50	20	4
	No. with stem-cavity browning	6	54	73	45	19	4
	% with stem-cavity browning	60	72	80	90	95	100
Lateral[a]							
	No. of apples	17	91	103	29	8	1
	No. with stem-cavity browning	0	26	38	17	2	1
	% with stem-cavity browning	0	29	37	59	25	100

[a]Effect of size significant at 1% in a 2 x 3 contingency test.

Table 2. Stem-cavity browning of McIntosh apples as influenced by shape of stem-cavity region.

Position	Variate	Stem-cavity shape: Raised	Flat to very shallow	Shallow and broad	Deep but broad	Deep and narrow
Terminal[a]						
	No. of apples	7	142	85	16	0
	No. with stem-cavity browning	7	119	64	11	0
	% with stem-cavity browning	100	84	75	69	0
Lateral[a]						
	No. of apples	0	0	0	55	194
	No. with stem-cavity browning	0	0	0	23	61
	% with stem-cavity browning	0	0	0	42	31

[a]Effect of stem-cavity shape not significant at 5% in a 2 x 2 contingency test corrected for continuity.

The shape of the stem-cavity region of McIntosh apples is also influenced by position in the blossom cluster (4). The trends shown in Table 2 suggest that position may influence development of stem-cavity browning because it influences stem-cavity shape. The association of stem-cavity shape and browning was highly significant when terminal and lateral apples were pooled in a 2 x 4 contingency test. This association was, however, not significant when terminal and lateral apples were tested separately (Table 2). In any event it would appear that McIntosh apples with shallow stem cavities, and thus of terminal origin, are more prone to stem-cavity browning than are apples with deep stem cavities.

Literature Cited

1. Bliss, C. I., and D. W. Calhoun. 1954. An outline of biometry. *Yale Co-operative Corp., New Haven, Conn.*
2. McColloch, L. P. 1966. Association of stem-cavity browning and brown core of stored McIntosh apples. *Plant Disease Reporter* 50: 178-181.
3. Padfield, C. S. 1966. Stalk-end scald of Sturmer apples. *Orchardist of New Zealand 39: 65-66.*
4. Webster, D. H., and A. D. Crowe, 1969. Effects of gibberellic acid, N-dimethylaminocuccinamic acid (Alar), ringing and thinning on McIntosh apple shape. *Jour. Amer. Soc. Hort. Sci.* 94: (2) 308-310.