further.

'Colombian' sweet lime, a rootstock commonly used in Israel (6), also performed very well in this experiment. It exhibited good keeping quality when used as a rootstock for grapefruit, but fruit quality of oranges, tangelos, and mandarins has been poor on this rootstock in Florida (4). Trees on 'Rough Lemon', the major rootstock in Florida (3), also produced fruit which showed little susceptibility to postharvest decay, 5.7%.

Fruit from trees on 'Swingle' citrumelo (C.P.B. 4475), which has been noted as one of the best rootstocks for yield in Texas (1, 5, 8), performed very well in this experiment. Postharvest decay was 8.6%, lower than for the majority of the rootstocks in this study. 'Swingle' citrumelo (C.P.B. 4475), therefore, appears to be one of the most desirable rootstocks for grapefruit in Texas because of high yields, good fruit quality, disease resistance and fruit which is resistant to postharvest decay.

'Texas' sour orange is the most commonly used rootstock in Texas (7); therefore samples were taken from two groups of trees on it. Decay of fruit from trees on this rootstock was relatively low, 15.6 and 10.5%, but differences between this fruit and those showing considerably higher rates of decay were not statistically significant Fruit from trees on trifoliate orange, which is used as a rootstock in many areas, had 11.6% postharvest decay, intermediate between the 2 samples from trees on 'Texas' sour orange.

The four mandarins in this study, 'Changsha', 'Cleopatra', 'Sun Chu Sha Kat' and 'Sunki', also had a high postharvest decay percentage. Decay ranged from a high of 25.3% for fruit from trees on 'Changsha' to 15.2% for those from trees on 'Sunki' but differences were not statistically significant.

Fruit from trees on 'Morton' citrange had over twice as much decay, 26.5%, as 'Carrizo' citrange, 11.0% although the difference was not statistically significant. 'Morton' has been reported to induce better fruit quality than 'Carrizo' (8).

Highest postharvest decay, 27.7%, of 'Redblush' grapefruit was from trees on the hybrid C61-253 ('Shekwasha' × 'Chinotto'). This hybrid, together with the hybrids C61-250 ('Shekwasha' × 'Koethen') and C61-241 ('Shekawasha' × Rough lemon), produced fruit which was very susceptible to postharvest decay as compared to other rootstocks in this study.

No correlation was found among rind thickness, fruit size, total soluble solids, total acids, and susceptibility to decay. All these fruit characteristics are influenced by rootstock, but rootstock effects on decay resistance apparently have other, as yet unknown, bases.

Spoilage of grapefruit in market channels is extensive because of postharvest decay. It was found that fruit from trees on different rootstocks exhibited varying amounts of postharvest decay. Choice of rootstock has typically been based mostly on yield, physical characteristics and chemical composition of fruit. It is clear from these data, however, that differences in susceptibility to decay should also be taken into account.

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Thiabendazole Reduces Chilling Injury (Pitting) of Cyprus-grown Grapefruit[1]

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Abstract. **Thiabendazole (TBZ) incorporated in the wax coating at 2000 ppm, considerably reduced chilling injury of Cyprus-grown grapefruit during storage for 102 days at 8°C plus 34 days at 7°C.**

Chilling injury (CI) is expressed as dark sunken surface lesions on the peel of grapefruit (pitting) stored at low temperatures for prolonged periods. CI has been associated with a breakdown of the ATP/ADP energy transfer system (4, 5) and reduced by high levels (10%) of CO_2 (4). It was prevented when grapefruit were covered with films of polyvinylchloride and cast vinyl for a month at 4.5°C (5). Shiffman-Nadel et al. (3) demonstrated that incorporation of TBZ in a wax coating significantly reduced the amount of low temperature pitting during prolonged storage at 8 and 12°. TBZ has also been found effective against postharvest citrus pathogens. (1, 2).

The purpose of this study was to determine the effect of TBZ on CI of grapefruit grown under Cyprus conditions.

'Marsh Seedless' grapefruit were harvested at the Morphou Experimental Station of the Agricultural Research Institute when the Brix value by refractometer was 11.3° and citric acid 2.3%. The day after harvest, 800 fruit were randomly sorted into 40 telescope cartons. Fruit in 20 cartons were coated with "Sivadar" wax using a hand mist sprayer; those in the remainder were coated with "Sivadar" wax mixed with 2000 ppm TBZ. Cartons were subsequently paired and placed randomly side by side in 4 stacks. Storage temp was 8°C for 102 days followed by 7° for 34 days. Relative humidity of the room was 80 to 85% but in the cartons it was higher. The top 4 pairs of cartons were visually examined once a month for CI. All grapefruit were examined at 116 days and 136 days, then after 3 and 7 days at 27° to 30°C. Fruit was considered

Table 1. Effect of TBZ on the percentage pitting and decay in 'Marsh Seedless' grapefruit.

	102 days at 8°C + 14 days at 7°		102 days at 8° + 34 days 7°		+ 3 days at 27-30°		+ 7 days at 27-30°	
Treatment	Pitting	Decay	Pitting	Decay	Pitting	Decay	Pitting	Decay
	%	%	%	%	%	%	%	%
Wax	7.75	4.25	29.00	7.5	38.75	14.25	43	27.75
TBZ in wax	0.50***	0.75	8.25***	0.75**	20.00***	2.00**	30*	2.75***

*, **, ***Significant at 5% (*); 1% (**); 0.1% (***).

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as chilling injured when one pit of 5 mm^2 or larger was observed on the surface. The paired "t" test was used to analyze the data (Table 1).

TBZ incorporated in wax at 2000 ppm reduced CI and decay during and after cold storage. CI was generally light, less than 5 pits per fruit, upon removal of fruit from cold storage. The Brix value was 11.5° and the citric acid 1.8%. The Brix/acid ratio was thus increased from 4.9 at harvest time to 6.4 after cold storage. Appearance of the fruit was very good after storage but the flavor was not as good, probably due to the loss of acidity. There was no difference in taste between TBZ-treated and wax-treated grapefruit.

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Terbacil and Fertility Effects on Yield of Lowbush Blueberry[1]

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Abstract. **Terbacil (3-tert-butyl-5-chloro-6-methyluracil) at either 2.24, 3.58 or 7.17 kg/ha applied under high fertility level (168 kg N/ha from 1-2-2 formulation) significantly increased yield of lowbush blueberries (*Vaccinium angustifolium* Ait. and *V. Myrtilloides* Willd.). No yield differences were observed among terbacil rates. Rate of fertilizer application affected berry yield.**

Blueberries are commercially harvested in Maine, the Maritime Provinces and the Province of Quebec from native lowbush blueberry stands. The presence of numerous native and introduced plant species, including grasses, sedges and herbaceous flowering weeds, constitutes a serious weed problem. To prevent excessive growth of weeds, growers have traditionally adopted low fertility management, thereby restricting yields of blueberry fruit (1, 3). The need for an herbicide that effectively controls grasses and sedges is a major concern of the lowbush blueberry industry.

In 1972 Trevett and Durgin (2) reported that, in native lowbush blueberry stands, terbacil controlled perennial grasses and sedges. In 1973, they reported that, for the year of application, terbacil gave control of the following flowering weeds in lowbush blueberry fields: yarrow (*Achillea millefolium* L.), hawkweed (*Hieracium pratense* Tausch.), rattle weed (*Rhinanthus crista-galli* L.), brown-eyed susan (*Rudbeckia hirta* L.), pinweed (*Lechea* spp.), cincquefoil (*Potentilla canadensis* L. and *P. tridentata* Ait.), blue-eyed grass (*Sisyrinchium* spp.), red clover (*Trifolium pratense* L.), sheep sorrel (*Rumex acetosella* L.) and firewood (*Epilobium angustifolium* L.) (3).

This experiment was conducted to determine the effects of terbacil and fertility management on the yield in native lowbush blueberry stands.

After the 1971 harvest, lowbush blueberry plants in a commercial field in eastern Maine were pruned with a rotary mower leaving a stubble of approx 7-10 cm. On May 5, 1972 terbacil was applied at 0, 2.24, 3.58 and 7.17 kg/ha, in combination with different levels of fertilizer (no fertilizer, 56 and 168 kg N/ha in a 1-2-2 ratio) applied on April 22. The treatments were replicated 5 times in a randomized complete block design with plots measuring 1.5 × 15.2 m each. During the commercial harvest period in late August, 1973, the plots were hand raked to determine berry yield. Bayes LSD analysis at a cost ratio of 100 (approx 5% level of probability) (4) was used to distinguish differences among treatment means.

Blueberry yields were increased significantly in all plots receiving terbacil treatment under the high fertility level (Table 1). Terbacil effectively controlled competing weeds resulting in higher blueberry yields. Differences observed among rates of terbacil application were not statistically significant.

Table 1. Effect of terbacil and fertility management on yield of lowbush blueberries.

Treatment (kg/ha)		Blueberry yield
Terbacil	Fertility	(kg/ha)
0	168 N(1-2-2)	2741 b[z]
2.24	168 N(1-2-2)	4692 a
3.58	168 N(1-2-2)	5648 a
7.17	168 N(1-2-2)	5475 a
2.24	Unfertilized	1346 c
3.58	56 N(1-2-2)	3351 b

[z]Mean separation by Bayes LSD, ratio 100 (approx 5% level).

Fifty-six kg N/ha from 1-2-2 fertilizer in combination with terbacil at 3.58 kg/ha increased blueberry yield when compared to non-fertilized stands receiving 2.24 kg/ha terbacil treatment. This yield, however, did not differ from that obtained from blueberry stands receiving 168 kg N/ha from 1-2-2 fertilizer without terbacil treatment. Plots receiving fertility treatments without terbacil had excessive weed growth and were difficult to rake.

In native lowbush blueberry stands in which herbaceous flowering weeds were not abundant and perennial grasses and sedges were the principle herbaceous weeds, terbacil in combination with high fertility management doubled yields.

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