COLD STORAGE MOLD LOSSES AND LOSSES IN STRAWBERRY FIELDS IN NOVA SCOTIA – 1965

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Introduction

Commercial cold storage of strawberry plants for nursery stock is relatively new in Nova Scotia. The plants are dug in the fall, most of the leaves are removed, and the plants are tied in bundles of 25. From 20-40 bundles are stored in a polyethylene-lined crate with the liner folded over the plants to prevent desiccation. Ambient storage temperatures are maintained at or near 28° F which results in a plant temperature of about 30° F. Mold often develops on plants when storage temperatures rise above 30° F.

Growers have reported losses in new plantings which they attributed to poor plants from cold storage. In 1965 surveys were carried out in strawberry plant cold storages to follow ambient and plant temperatures and mold development. A field survey was also done to determine the causes of mortality in new plantings.

Losses in cold storage

In the four storages (A, B, C and D) surveyed, traces of mold were first observed on February 17, three months after the plants were in storage, on roots which had cortical root rot lesions. Where mold occurred plant temperatures were 30.5° F or higher. No mold was found on plants maintained at 30° F. Little change in mold development was observed until May when plants were being removed from storage. The highest losses were in storage C (Table 1) where a plant temperature of 33° F and an ambient temperature of 32° F were recordedon May 20. It is not known how long the plants were at these temperatures. On April 5 normal temperatures were recorded.

The average loss in Table 1 is similar to that reported in 1964 (1). Apart from the high losses in storage C, the losses would not be considered excessive. In storages A, B and D ambient temperatures were maintained at or near 28° F throughout the storage season.

The organisms usually associated with moldy plants and cortical root rots were Cylindrocarpon sp. Fusarium spp., Rhiaoctonia sp. and bacteria.

Causes and extent of mortality in new strawberry plantings in 1965

The field survey was made of 51 new plantings of fall or spring dug cold-stored plants as well as of plantings where plants were not from cold storage. The survey encompassed 72 acres or 358,000 plants. The results of this survey are shown in Table 2.

Table 1. Percent loss of cold-stored strawberry plants due to mold during 1964-65 storage season.

Storage	No. of plants	Varieties affected	% loss in storage
A	700,000	Redcoat, Cavalier Sparkle, Catskill	0.6
B	85,000	Redcoat arid Sparkle	0.1
C*	43,000	Sparkle and Surecrop	25.0
D	12,000	Several varieties	2.8
Total	840,000		1.8

* Wide temperature fluctuations were recorded in this storage.

The average loss in new plantings was 9.9% and 6.0% of this was attributed to poor planting practices such as planting too deep or too shallow or roots not spread out, misuse of herbicides, stem borer damage, high soluble salt content of the soil, and planting winter-killed plants. Poor planting was the most important factor in the survival of new strawberry plantings in Nova Scotia.

Losses sustained by growers receiving moldy storage plants were 9.4%. Of 51 growers surveyed only five were found to have received moldy plants which did not survive following planting. Green petal accounted for 0.6% loss but some of the dead or poor plants removed by growers prior to the survey may have been infected with green petal.

The mortality of some plants could not be explained. Such plants usually produced only a few leaves, eventually lost vigor, and died. These above-ground symptoms were associated with poor root development. This occurred on plants that were cold stored and on those that were freshly dug prior to planting. This is one of the more serious problems in new strawberry plantings and no explanation can be offered for its occurrence.

Literature cited

1. Lockhart, C. L. 1965. Losses of cold-stored strawberry plants due to mold, and factors affecting the survival of new plantings on the field - 1964. Can. Plant Dis. Surv. 45: 11-12.

[1] Plant Pathologists, Canada Agriculture Research Station and Nova Scotia Department of Agriculture and Marketing, Kentville, N. S.

Table 2. Percent losses in new strawberry plantings in 1965.

Variety	No. of plants	Acres	Percent loss	Percent of losses caused by							
				Green petal	Storage mold	Stem borer	Poor planting	Herbicides	Winter killing[1]	High salts	Others[2]
Redcoat	99,475	22.0	3.7	0.6	0.07	0.5	1.1	0.0	0.0	0.8	0.6
Sparkle	81,800	18.2	11.3	0.9	0.4	0.5	3.0	1.2	0.0	2.8	2.5
Cavalier	81,000	18.0	14.3	0.01	0.5	1.8	5.8	0.0	1.2	0.2	4.8
Surecrop	40,575	9.0	12.8	0.6	0.4	0.7	4.5	0.0	0.0	0.0	6.6
Catskill	27,800	6.2	7.5	1.3	1.0	0.1	0.0	5.0	0.0	0.0	0.1
Guardsman	10,150	2.2	23.1	0.0	1.4	0.5	0.0	21.2	0.0	0.0	0.0
Acadia	8,950	2.0	13.8	0.0	0.4	0.0	5.0	8.4	0.0	0.0	0.0
Grenadier	7,300	1.6	2.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Midway	1,000	0.25	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	358,050	72.0	9.9	0.6	0.5	0.8	2.9	1.5	0.3	0.5	2.9

1 Refers to injury confined to two fields.

2 Includes plants in which losses could not be accounted for