

ONION STORAGE ROT CONTROL

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SUMMARY

Effective control of onion rots in storage followed the application of Dichloran dusts at harvest. Dichloran dips, on the other hand, tended to increase final breakdown.

I. INTRODUCTION

In southern Queensland onions are stored from the spring harvest for autumn planting. Such bulbs are used to produce both table and seed onions. A general problem of onion growers in this area is the breakdown of onions, particularly during the later stages of storage. High humidities associated with this breakdown in bagged onions may encourage rapid rotting of the whole consignment or may induce sprouting. The planting of onion bulbs showing breakdown frequently leads to collapse in the field of clusters developed from such sets.

Previous investigations of onion breakdown caused by *Sclerotium cepivorum* showed that dip treatment after harvest with the fungicide "Dichloran" gives good control (Hughes 1970). When evaluated against other fungal storage rots this chemical again gave promising results. The organisms associated with such rots include *Botrytis* sp., *Rhizopus* sp., *Fusarium* sp., *Penicillium* sp., *Rhizoctonia solani* and *Sclerotium rolfsii*.

Despite the control of these rots, severe breakdown from bacterial soft rots occasionally occurred following the dipping treatment. It appeared likely that contamination with these soft rot organisms was being transmitted in the dipping solutions. It was considered desirable therefore to investigate the possibility of control with Dichloran dusts.

II. MATERIALS AND METHODS

Trials were conducted during the 1966-67 season on four separate consignments of onions. The following treatments were compared, each applied immediately following harvest:

1. "Dichloran" 50% dip (2 lb/100 gal)
2. "Dichloran" 4% dust
3. "Dichloran" 8% dust
4. Untreated.

For each consignment five replicates of each treatment were used. Plot size was 100 bulbs. The number of healthy bulbs and the number of bulbs sprouted were determined after 4 months' storage.

III. RESULTS

Results appear in Tables 1 and 2.

TABLE 1
PERCENTAGE OF HEALTHY BULBS AFTER 4 MONTHS' STORAGE FOLLOWING TREATMENT WITH DICHLORAN

Treatment	Trial 1	Trial 2	Trial 3	Trial 4	
Dichloran 8%	84.40 a*	99.40 a	99.20 a	99.40 a	
Dichloran 4%	80.80 a	99.00 a	99.40 a	99.20 a	
Dichloran dip	62.80 b	87.60 a	92.60 b	90.20 b	
Untreated	58.40 b	96.20 a	93.80 b	96.40 a	
Necessary differences for significance	{ 5% 1%	11.05	13.36	2.78	3.10
		15.22	18.41	3.84	4.35

* Means followed by the same letter are not significantly different at .05 level.

TABLE 2
PERCENTAGE SPROUTING OF ONION BULBS AFTER 4 MONTHS' STORAGE AFTER TREATMENT WITH DICHLORAN

Treatment	Trial 1	Trial 2	Trial 3	Trial 4	
Dichloran 8%	19.23 a	4.63 a	1.41 a	2.01 ab	
Dichloran 4%	19.17 a	5.67 a	2.21 ab	0.41 a	
Dichloran dip	30.18 a	20.69 b	5.41 b	11.66 c	
Untreated	25.30 a	14.40 b	4.06 ab	6.69 bc	
Necessary differences for significance	{ 5% 1%	12.69	7.92	3.80	5.66
		17.48	10.91	5.23	7.94

In only one of the trials (trial 1) was there an appreciable incidence of storage rot in the untreated. In this case there was a very real decrease in incidence with Dichloran dusts at both 4% and 8%. The dip, on the other hand, gave no control. In trial 3 the incidence of storage rot was low but significant improvement was achieved with the dust treatments. Despite the low incidence in trials 2 and 4, the dip treatment increased the disorder. This increase was significant in trial 4.

Sprouting was reduced by Dichloran dust treatment as compared to the untreated in two of the trials. There was a tendency for the dip treatment to increase sprouting but this was not significant in any of the trials.

IV. DISCUSSION

The efficacy of Dichloran dust in controlling storage rots under farm storage conditions has been shown. Subsequent to conducting these trials the efficacy of Dichloran has been checked against untreated controls on 10 farms, using bag storage, and the control of storage rots has been excellent.

V. ACKNOWLEDGEMENT

Boots Pure Drug Co. (Australia) formulated the Dichloran dusts tested.

REFERENCE

HUGHES, I. K.—Control of white rot of onions in storage. *Qd J. agric. Anim. Sci.* 27:393.

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