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EFFECT OF PRE-HARVEST FOLIAR SPRAY OF MALEIC HYDRAZIDE ON STORAGE BEHAVIOUR OF POTATO STORED AT ROOM TEMPERATURE*

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The effect of pre-harvest single foliar application of maleic hydrazide (MH) at four concentrations viz., 0, 0.2, 0.3 and 0.4 per cent at 2, 4 and 6 weeks before harvest on the storage behaviour of potato cv. Kufri Jyoti was studied upto 150th day of harvest. It was observed that sprouting, sprouted eyes per tube, sprout length, sprouts weight, cumulative PLW and rottage of tubers were low throughout the storage, its effect being pronounced with increase in concentration and early application prior to harvest. It lowered the dry matter of tubers, but increased the starch content and had no significant effect on sugars at 150th day of harvest.

Storage of potato is essential in order to regulate the supply and to preserve the seed tubers. During storage potatoes are subjected to various losses due to respiration, evaporation of water from tubers and rottage due to various storage pests and diseases (Rastovski, 1981). Sprouting of potatoes leads to both quantitative and qualitative loss of tuber due to higher water loss, softening and sweetening of tubers. One of the simple and easier methods for the control of sprouting in potatoes stored at room temperature is use of chemical agents. Hence, investigations were carried out to study the pre-harvest foliar spray of maleic hydrazide on storage behaviour of potatoes stored at room temperature.

MATERIALS AND METHODS

A trial involving pre-harvest foliar spray of maleic hydrazide (MH) on the potato crop was carried out during Rabi season of 1981-82 at the University of Agricultural Sciences, Gandhi Krishi Vignana Kendra Campus, Bangalore. A split-plot design with 3 times of spray viz., 6(T_1), 4(T_2) and 2 weeks (T_3) before harvest to the main plots and 4 concentrations of MH viz., control (C_0), 0.2 (C_1), (0.3 C_2) and 0.4 per cent (C_3) to the sub plots and were replicated 4 times. The crop was planted during the third week of December 1981 and crop was raised by following recommended package of practices. Spraying was done till all the foliage of the plant got wetted uniformly. At spraying screens were provided on all sides of the plot to arrest spray drift. The crop was harvested at full maturity and the tubers were cured for 2 weeks. Five kg of cured tubers were randomly selected from each treatment and replication. They were stored in hessian bags upto 150th day of harvest (April to August, 1982) at the field laboratory of Horticutural Research station. B.H C. (50%) was dusted

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on the bags to control tuber moth. During storage data were recorded on five randomly selected tubers at fortnightly intervals.

RESULTS AND DISCUSSION

Sprout initiation: Significant differences were observed among the treatments due to different time of spray and concentrations of MH (Table 1a). Spray of MH at 6 weeks before harvest significantly delayed the initiation of sprouting at different concentrations and maximum delay was at 0.4% (T_1 C_3) closely followed by 0 3 per cent which were at par. Even at 0.2 per cent it was significantly superior to control. Same trend was observed for varying concentrations of MH sprayed at 4 weeks before harvest. Spray of MH at 2 weeks before harvest at varying concentrations delayed the sprout initiation considerably compared to control However, differences amongst concentrations were less marked. The prolonged dormancy of inhibited sprouting for a longer period after harvest by MH is brought about by way of reduced cell division as evident from reduced mitotic activity. These results are in agreement with the findings of Sukumaran *et al.* (1979) and Kaul *et al.* (1980).

Number of eyes sprouted per tuber: Pre-harvest spray of MH markedly influenced the number of eyes sprouted per tuber. From 75 to 150th day of harvest amongst different time of spray lowest number was in the spray given 6 weeks before harvest (T_1), while highest was in the spray given 2 weeks before harvest (T_3). Increase in concentration of MH resulted in the lower number of sprouted eyes per tuber (Table 2a). At 150th day after harvest the lowest number (3.31) was at 0.4% sprayed at 6 weeks before harvest (T_1C_3) while control (T_1C_0) had highest (5.75). MH sprayed at 6 weeks before harvest might have resulted in efficient translocation of MH to tubers resulting in the higher residues in the tubers which inhibited sprouting of eyes by reduced mitotic activity. Similar results of less number of eyes sprouted at the end of storage period is reported by Bishop and Schewers (1961)

Sprout length: MH application significantly reduced the sprout growth. MH sprayed at 6 weeks (T_1) was superior to 4 and 2 weeks (T_2 and T_3) in inhibiting the sprout growth throughout the storage period(Table3a). The sprout growth inhibition by MH sprayed at early stages prior to crop harvest is due to maximum translocation of MH to the tubers. Among different concentrations MH at 0.4% (C_3) and 0.3% (C_2) were at par and were more effective than 0.2% (C_1). MH at 0.4% sprayed 6 weeks (T_1C_3) was more effective compared to other combinations throughout the storage period and 150th day of harvest it had lowest sprout growth (1.59 mm), where as control (T_1C_0) had highest (26.6mm). The slow growth of sprout was due to residues of MH in the tubers which reduced the mitotic activity in the cells and ultimately the cell division. The trend of results was in confirmation with the findings of earlier workers (Choudhuri, 1967).

Weight of sprouts per tuber: At 150 th day after harvest lowest sprout weight (24.7 g/kg) was in the spray given at 6 weeks before harvest (T_1).

Table 1a : Effect of pre-harvest foliar spray of different times and concentrations of MH on initiation of sprouting and sprout weight of potato tubers stored at room temperature

Treatments	Initiation of sprouting (days)	Sprout at 150th day after harvest	
		Weight (g/kg of tuber)	%
	Time of spray		
T_1	50.62	24.70	2.47
T_2	44.69	47.90	4.79
T_3	39.69	65.90	6.59
C.D. ($P=0.05$)	2.67	11.34	0.95
C.V. (%)	6.86	28.83	23.90
	Concentrations		
C_0	32.67	82.50	8.25
C_1	47.17	43.80	4.38
C_2	48.33	27.20	2.72
C_3	51.83	31.10	3.11
C.D. ($P=0.05$)	1.88	11.01	1.06
C.V. (%)	4.98	27.46	27.46

Table 1b : Effect of pre-harvest foliar spray of different time and concentrations of MH on initiation of sprouting and sprout weight of potato tubers stored at room temperature

Treatments	Initiation of sprouting (days)	Sprout weight at 150th day after harvest	
		Weight (g/kg of tubers)	(%)
	Time of spray X concentrations		
T_1C_0	33.50	70.80	7.08
T_1C_1	53.75	20.70	2.07
T_1C_2	57.25	5.40	0.54
T_1C_3	58.00	2.00	0.20
T_2C_0	32.25	78.10	7.81
T_2C_1	47.25	59.20	5.92
T_2C_2	45.50	27.90	2.79
T_2C_3	53.75	26.40	2.64
T_3C_0	32.25	98.60	9.86
T_3C_1	40.50	51.70	5.17
T_3C_2	42.25	48.40	4.84
T_3C_3	43.75	64.20	6.42
C.D.[1] ($P=0.05$)	3.25	19.07	1.84
C.D.[2] ($P=0.05$)	3.85	19.78	1.86

C.D.[1] — For comparing two MH concentrations at a fixed level of time of spray

C.D.[2] — For comparing two time of spray means for a fixed or at different levels of MH concentration.

Table 2a : Effect of pre-harvest foliar spray of different time and concentrations of MH on number of eyes sprouted per tuber potato stored at room temperature

Treatments	Number of eyes sprouted/tuber						
	Days after harvest						
	60	75	90	105	120	135	150
	Time of spray						
T_1	2.94	3.48	3.75	4.03	4.33	4.50	4 55
T_2	3.56	4.05	4.50	4 64	4 81	5 09	5.16
T_3	3.47	4.34	4.66	4.80	4.97	5.16	5.28
C.D. ($P = 0.05$)	N.S.	0 56	0.60	0 55	0.38	0.29	0.17
C.V. (%)	18.29	18 40	16 09	14.05	9.43	6 84	8.54
	Concentrations						
C_0	5.25	5.44	5.63	5.62	5.69	5 73	5 73
C_1	3.17	3.15	4.42	4.62	4 81	5.19	5.19
C_2	2.60	3.25	3.56	3.85	4.21	4 44	4.63
C_3	2.58	3.96	3.60	3 81	4.10	4.37	4.44
C.D. ($P = 0.05$)	0 55	0.49	0.40	0.35	0.34	0.27	0.23
C.V. (%)	19 60	14.79	11.17	9.30	8.67	6.57	5.45

N. S. — Non-significant

Table 2b : Effect of pre-harvest foliar spray of different time and concentrations of MH on number of eyes sprouted per tuber potato stored at room temperature

Treatments	Number of eyes sprouted per tuber						
	Days after harvest						
	60	75	90	105	120	135	150
	Time of spray X Conc. of MH						
T_1C_0	5.44	5.56	5.56	5.69	5.75	5.75	5 75
T_1C_1	3.44	4.13	4.31	4.69	4.75	5.06	5.06
T_1C_2	1.51	2.44	2.87	3.19	3.63	3.94	4.06
T_1C_3	1.38	1.81	2.25	2.56	3.19	3.25	3.31
T_2C_0	5.25	5.44	5 69	5.69	5.75	5.75	5.75
T_2C_1	2.88	3.44	4.25	4 31	4 62	5.06	5.13
T_2C_2	2.81	3.62	4.12	4.37	4.56	4 63	4.88
T_2C_3	3.31	3.69	3.94	4.19	4.31	4.88	4.88
T_3C_0	5.06	5.31	5.63	5.62	5.56	5.69	5.69
T_3C_1	3.19	4.44	4.42	4.87	5 06	5.25	5.38
T_3C_2	2.56	3.38	3.56	4.00	4.44	4.69	4.94
T_3C_3	3.06	4.25	3.60	4.69	4.81	5.00	5.13
C.D.[1] ($P = 0.05$)	0.45	0.85	0.70	0.61	0.59	0.47	0.39
C.D.[2] ($P = 0.05$)	1.00	0.92	0.83	0.75	0.64	0.48	0.51

C.D.[1] — For comparing two MH concentrations at a fixed level of time of spray

C.D.[2] — For comparing the time of spray means for a fixed or at different levels of MH concentration

Spray at 4 weeks (T_2) was not as effective as spray given at 6 weeks but superior to 2 weeks (T_3). Amongst different concentrations, lowest sprout weight (27.2 g/kg) was in 0.3% (C_1), while highest (32.5 g/kg) was in control (C_3). Regarding interaction effect lowest (2.0 g/kg) was in 0.4% (T_1C_2) followed by 0.3% (5.4 g/kg) and 0.2% (20.7 g/kg) sprayed at 6 weeks which were at par. Spray of 0.4 and 0.3% at 4 weeks (T_2C_2 and T_2C_1) were at par but superior to 0.2% (T_2C_1). The lower sprout weight in MH sprayed treatments is attributd to reduced sprout length and less number of eyes sprouted per tuber. This is in line with the observations of Rao and Withver (1955).

Cumulative physiological loss in weight (PLW) : MH spray given at different times significantly influenced the cumulative physiological loss in weight of tubers during the storage. At 150th day after harvest lowest PLW of tubers (3.38%) was observed due to spray of MH at 6 weeks (T_1), Spray done at 4 and 2 weeks (T_2 and T_3) were less effective. Lower cumulative PLW was observed at varying concentrations (Table 4a) and lowest was in 0.3% (9.58%) closely followed by 0.4% (9.88%) which at par and were significantly superior to 0.2% (10.67%). Amongst the interaction effect lowest cumulative PLW was in the spray 0.4 (5.32%) and 0.3% (5.13%) at 6 weeks before harvest (T_1 C_2 and T_1 C_1 respectively) Whereas the sprays given at 4 and 2 weeks at varying concentrations were not so effective as spray given at 6 weeks. The low cumulative physiological loss in weight of tubers could be attributed to less number of sprouts per tuber, less length and weight of sprouts. Potato sprouts are nearly 100 times more permeable to water than potato skin (Sparenberg, 1979).

Rottage of tubers (%) : Lower cumulative rottage of tubers were observed due to MH spray throughout the storage period. At 150th day of harvest lowest (17.52%) was in the spray at 4 weeks (T_2) followed by 6 weeks (18.39). Varying concentrations of MH significantly influenced the cumulative rottage of tubers except at 30th day of harvest. At 150th day of harvest highest rottage was in control (C_3) while it was lowest in 0.2% (C_1) followed by 0.3% MH (C_2) which were at par. Amongst interaction effect it was in the spray of 0.3% MH (16.05%) at 4 weeks (T_2C_2). Lower rottage due to MH spray could be attributed to less sprouts, sprout length weight and cumulative PLW.

Dry matter of tubers . Application of MH 6 weeks before harvest (T_1) resulted in significantly lower dry matter content at 150 th day of harvest, whereas MH sprayed at 2 and 4 weeks (T_2 and T_3) were at par. Tubers from control (C_3) had significantly higher dry matter content of tubers (25.69%). MH at 0.3 and 0.4 %(C_2 and C_3) had significantly lower dry matter content than 0.2% MH (C_1). Amongst interactions spray given 6 weeks at 0.3 and 0.4% MH (T_1C_2 and T_1 T_2) had lowest dry matter of 19.0 and 19.39% respectivnly. Lower dry matter in the tubers is due to less loss of water from tubers and less number of sprouts/ tuber. Similarly increased dry matter content of tubers from untreated plots

Table 3a : Effect of pre-harvest foliar spray of different time and concentrations of MH on the sprout growth of potato stored at room temperature

Treatments	sprout length (mm)						
	Days after harvest						
	60	75	90	105	120	135	150
	Time of spray						
T_1	2.56	4.70	6.06	7.70	9.20	9.08	11.75
T_2	3.41	6.90	7.91	9.45	12.54	15.16	16.57
T_3	3.94	8.47	9.37	11.69	13.77	17.03	18.38
C.D. ($P = 0.05$)	N.S.	1.66	1.09	1.85	1.59	2.28	1.21
C.V. (%)	43.89	28.65	16.18	22.21	15.48	19.18	9.05
	Concentrations of MH						
C_0	5.71	9.55	12.22	15.58	20.21	24.45	26.10
C_1	3.71	6.82	7.56	9.13	11.47	12.00	14.36
C_2	2.27	5.45	5.90	6.97	8.14	9.83	10.44
C_3	1.49	4.96	5.44	6.78	7.64	8.68	9.82
S.E.	0.42	0.63	0.63	0.74	0.45	0.93	0.60
C.D. ($P = 0.05$)	0.42	1.30	1.30	1.52	0.92	1.87	1.23
C.V. (%)	30.75	23.19	19.89	18.92	9.28	16.39	9.49

N. S. — Non-significant

Table 3b : Effect of pre-harvest foliar spray of different time and concentrations of MH on sprout growth of potato stored at room temperature

Treatments	sprout length (mm)						
	Days after harvest						
	60	75	90	105	120	135	150
	Time of spray X Conc. of MH						
T_1C_0	5.01	8.79	12.67	15.95	20.87	24.44	26.67
T_1C_1	3.53	6.05	6.56	9.11	10.79	6.12	13.17
T_1C_2	0.87	2.75	3.52	4.23	4.13	4.27	4.37
T_1C_3	0.83	1.23	1.48	1.52	1.38	1.48	1.59
T_2C_0	5.47	9.15	11.45	15.56	20.80	24.59	25.84
T_2C_1	4.62	7.96	8.73	7.19	10.97	13.47	14.53
T_2C_2	2.06	4.90	5.35	6.91	8.89	11.53	13.53
T_2C_3	1.47	5.61	6.10	8.15	9.48	10.55	12.42
T_3C_0	6.64	10.70	12.53	15.23	18.95	24.31	25.80
T_3C_1	2.47	6.45	7.40	11.08	12.66	15.92	17.16
T_3C_2	4.17	8.69	8.83	9.76	11.41	13.86	15.13
T_3C_3	2.18	8.06	8.74	10.68	12.05	14.03	15.44
C.D.[1] ($P = 0.05$)	1.48	2.25	2.25	2.64	1.60	2.27	2.13
C.D.[2] ($P = 0.05$)	1.76	2.52	2.22	2.90	2.07	3.62	2.02

C.D.[1] — For comparing two MH concentrations at a fixed level of time of spray

C.D.[2] — For comparing the time of spray means for a fixed or at different levels of MH concentration

Table 4a : Effect of pre-harvest foliar spray of different time and concentrations of MH on cumulative physiological loss in weight of potato tubers stored at room temperature.

Treatments	Cumulative physiological loss in weight (%)								
	Days after harvest								
	30	45	60	75	90	105	120	135	150
					Time of spray				
T_1	2.11	2.58	3.21	3.65	4.14	4 78	5.76	6.95	8.38
T_2	2.23	2.64	3.48	3.98	4.33	5 05	5 87	8.17	11.34
T_3	2 56	3.03	3.76	4.32	4.82	5.46	6 64	9.99	12 98
C.D. (P = 0.05)	N S.	0.40	0.26	0.30	0.45	N.S.	N.S.	1.30	0.55
C. V.(%)	23.30	12.70	6.40	8 59	11.70	22 90	24 14	17 95	5.78
					Concentrations				
C_0	2 56	3.02	3.81	4 47	5.03	6 25	7.59	10.11	13.56
C_1	2.28	2.68	3 59	4.05	4.58	5.18	6.01	8 25	10.67
C_2	2.23	2.76	3.56	3.83	4.22	4.53	5.52	7.59	9 58
C_3	2.12	2.48	2.94	3.56	3 88	4.42	5.26	7.54	9.88
C.D. (P = 0.05)	0.22	0.32	0.25	0 28	0.40	0.80	0.69	0.89	0.69
C.V. (%)	11.36	10.57	6.36	8.50	10 86	18.74	13.60	12.62	7.62

N. S. — Non-significant

Table 4b : Effect of pre-harvest foliar spray of different time and concentrations of MH on cumulative physiological loss in weight of potato tubers stored at room temperature

Treatments	Cumulative physiological loss in weight (%)								
	Days after harvest								
	30	45	60	75	90	105	120	135	150
	Time of spray X Concentration								
T_1C_0	2.68	3.24	4.02	4.62	5.46	6.39	8.58	10.85	13.41
T_1C_1	2.08	2.50	3.37	3.84	4.10	4.98	5.86	7.20	8.64
T_1C_2	1.99	2.44	3.15	3.46	3.96	4.33	4.80	5.38	6.13
T_1C_3	1.70	1.94	2.30	2.66	3.02	3.40	3.86	4.36	5.32
T_2C_0	2.36	2.90	3.78	4.58	4.96	6.36	7.62	8.68	13.00
T_2C_1	2.20	2.53	3.54	4.06	4.64	4.92	5.36	7.91	10.88
T_2C_2	2.16	2.58	3.45	3.74	3.98	4.46	5.26	7.40	9.98
T_2C_3	2.18	2.55	3.07	3.53	3.76	4.46	5.24	8.70	11.50
T_3C_0	2.64	2.92	3.62	4.21	4.66	6.00	6.56	10.80	13.66
T_3C_1	2.56	3.00	3.86	4.26	4.99	5.64	6.82	9.65	12.50
T_3C_2	2.54	3.26	4.08	4.30	4.74	4.79	6.50	9.98	12.94
T_3C_3	2.49	2.94	3.46	4.50	4.87	5.40	6.68	9.53	12.82
C.D.[1] ($P = 0.05$)	0.38	0.66	0.43	0.49	0.40	N.S.	1.20	1.53	1.20
C.D.[2] ($P = 0.05$)	0.54	0.60	0.57	0.50	0.75	N.S.	1.62	1.83	1.16

C.D.[1] — For comparing two MH concentration means at a fixed level of time of spray

C.D.[2] — For comparing two time of spray means for fixed or at different levels of MH concentration

N.S. — Non-significant

Table 5a : Effect of pre-harvest foliar spray of different time and concentrations of MH on cumulative rottage of potato tubers stored at room temperature.

Treatments	Cumulative rottage of tubers (%)								
	Days after harvest								
	30	45	60	75	90	105	120	135	150
					Time of spray				
T_1	5.65	6.66	8 03	9.07	10.69	12 41	14.08	15.94	18.39
T_2	4.96	5.83	6 46	7.29	9.02	10.79	12.17	14.71	17.52
T_3	5.06	7.09	9 89	9.89	11.40	13.58	16 25	18.54	19 59
C.D. ($P = 0.05$)	N.S.	N.S.	N.S.	N.S.	N.S.	2.08	2.81	2.81	1.58
C. V.(%)	27.42	31.38	32.58	34 42	27.36	23 45	22 91	19 83	9.85
					Concentrations of MH				
C_0	5.59	7.78	9.44	10 55	12.93	15 06	16.09	17.90	20.41
C_1	4.83	5.57	6.49	7.53	9.09	10.65	12.78	14.32	17.21
C_2	5.32	6.65	7.09	8.07	8.77	10 70	13.71	16.23	77.58
C_3	5.15	6.13	7.68	8.78	10 69	12.64	14.07	17.13	18.82
C.D. ($P = 0.05$)	N.S.	1.25	1.49	1.67	1.56	1.49	1.71	1.77	1.79
C.V. (%)	26.34	22.90	22.14	22.85	18.01	14.49	14.50	12.91	11.58

N. S. — Non-significant

Table 5b : Effect of pre-harvest spray of different time and concentration of MH on cumulative rottage of potato tubers stored at room temperature

Treatments	Cumulative rottage of tubers (%)								
	Days after harvest								
	30	45	60	75	90	105	120	135	150
	Time of spray X Concentration								
T_1C_0	5.88	8.55	11.26	12.49	14.84	16.57	18.37	20.55	23.53
T_1C_1	4.19	5.39	6.06	6 69	7.48	9 53	12.44	13.78	16.54
T_1C_2	6.16	6.26	6.60	7.52	8.69	10 56	12.21	14.21	16.37
T_1C_3	6 38	6.44	8.22	9.57	11.73	12.98	13.29	15.21	17.14
T_2C_0	6.99	7.85	8 24	9.01	11.73	13.91	14.53	16.85	19.62
T_2C_1	3.46	4.40	4.82	5 83	8.15	9 01	10.63	12 22	16.90
T_2C_2	4.46	5.39	5.83	7.15	7 27	8.86	11.10	13.79	16 05
T_2C_3	4 92	5 95	6.96	6 97	8 93	11 40	12 42	15 93	17.57
T_3C_0	3.90	6.95	8 82	10.12	12.22	14.70	15 37	16.32	18.08
T_3C_1	6.85	7.17	8.60	10 05	11.65	13 41	15.28	16.97	18.20
T_3C_2	5.35	8.27	8.85	9 54	10 35	12 68	17 82	20 68	20 35
T_3C_3	4.16	5.99	7.87	9.81	11 41	13 53	16.52	20 20	21.75
C.D.[1] ($P = 0.05$)	2.00	N.S.	N.S.	N.S.	2.71	N.S.	2 97	3.07	3.11
C.D.[2] ($P = 0.05$)	0.54	0.60	0.57	0.50	0.75	N.S.	1.62	1.83	1.16

C.D.[1] — For comparing two concentration means at a fixed level of time of spray

C.D.[2] — For comparing two time of spray means for fixed or at different levels of MH concentration

N.S. — Non-significant

Table 6a : Effect of pre-harvest foliar spray of different time of spray and concentration of MH on quality of potato tubers at 150th day after harvest

Treatments	Dry matter* (%)	Starch* (%)	Reducing sugar* (%)	Sucrose* (%)	Total sugar* (%)
		Time of spray			
T_1	21.92	73.94	1.21	1.03	2.24
T_2	23.67	70.31	1.23	1.01	2.24
T_3	23.82	71.38	1.21	1.06	2.27
C.D. ($P = 0.05$)	0.72	1.84	N.S.	N.S.	N.S.
C.V. (%)	3.58	2.96	5.00	12.06	5.96
		Concentrations of MH			
C_0	25.69	70.83	1.21	0.99	2.20
C_1	23.68	70.42	1.22	1.01	2.23
C_2	21.53	72.33	1.23	1.07	2.30
C_3	21.64	73.92	1.21	1.06	2.27
C.D ($P = 0.05$)	1.32	1.62	N.S.	N.S.	0.15
C.V. (%)	5.10	2.69	2.95	11.74	7.75

*—Estimated on dry weight basis ; N. S.—Nonsignificant

Table 6b : Effect of pre-harvest foliar spray of different time and concentrations of MH on quality of potato tubers at 150th day of harvest

Treatments	Dry matter* (%)	Starch* (%)	Reducing sugars* (%)	Sucrose* (%)	Total sugar* (%)
		Time of spray X concentrations			
T_1C_0	25.77	69.75	1.22	0.99	2.21
T_1C_1	23.52	71.00	1.19	0.96	2.15
T_1C_2	19.00	77.50	1.25	1.04	2.29
T_1C_3	19.39	77.50	1.19	1.10	2.29
T_2C_0	25.59	70.50	1.23	0.90	2.13
T_2C_1	24.31	70.25	1.24	1.05	2.29
T_2C_2	22.46	69.75	1.22	1.10	2.32
T_2C_3	22.33	70.75	1.23	0.98	2.21
T_3C_0	25.72	72.75	1.19	1.08	2.27
T_3C_1	23.21	70.00	1.22	1.00	2.22
T_3C_2	23.13	69.78	1.21	1.07	2.21
T_3C_3	23.21	73.50	1.22	1.11	2.33
C.D.[1] ($P = 0.05$)	2.30	2.80	N.S.	N.S.	N.S.
C.D.[2] ($P = 0.05$)	1.63	3.02	N.S.	N.S.	N.S.

*—Estimated on dry weight basis

C.D.[1] — For comparing two MH concentration means at a fixed level of time of spray

C.D.[2] — For comparing the two time of spray for a fixed or at different levels of MH concentrations

N. S. — Non-significant

have been reported by Grewal and Sukumaran (1980).

Starch content of tubers: At 150th day of harvest starch content of tubers (dry weight basis) varied significantly among the treatments due to different time of spray, varying concentrations and their interaction (Tables 6a and 6b). Highest strarch content was observed when MH was sprayed at 6 weeks before harvest (73.94%). Amongst different concentrations highest was in 0.4% (73.92.) followed by 0.3% (72.33%). Due to intearction effect it was in the spray of 0.4 and 0.3% MH at 6 weeks before harvest (T_1C_3 and T_1C_2). Lowest was in control (T_1C_0). Reduced sprout growth has resulted in the conservation of energy as a consequence of this utilization of sugars in the process of respiration and breakdown of starch into sugars is minimised, resulting in lesser loss of starch during storage. These results are in aggrement with the findings of Tamaki and Naka (1961).

Reducing, non-reducing and total sugars: At 150th day of harvest significant differences were not evident amongst the treatments either due to different time of spray of varying concentrations of MH or interaction of them (Tables 6a and 6b). The trend of results was in confirmation with the findings of Hanseen (1960).

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