quinalphos (1%) sprayed plots as against 16 per cent in untreated check. The efficacy of quinalphos in minimising PTM damage was earlier documented by Srivastava and Deole (1988). The efficacy of diflubenzuron against PTM was due to its oveicidal and larvicidal effects (Dalebout, 1985).

The yield per hectare ranged from 8.40 to 13.33 tonnes. Quinalphos treated plot registered higher yield (13.33 t/ha) followed by acephate (12.90 t/ha). Though diflubenzuron registered minimum PTM damage, corresponding yield increase was not recorded and it was lesser than control.

From this study, it could be summarised that PTM damaged was more at lower altitudes of Nilgiris district and the pest can be minimised by quinalphos 0.05% spary.

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EFFECT OF SKIN COATING, 2,4-D AND PREPACKING ON THE SHELF LIFE OF ACIDLIME FRUITS

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ABSTRACT

An experiment to extend the marketable shelf life of acidlime fruits with skin coating, 2,4-D and prepacking either alone or in combinations was conducted at the Horticultural Research Station, Tamil Nadu Agricultural University, Periyakulam. Frutox (Wax emulsion) recorded the lowest physiological loss of weight (6.0 - 6.2 per cent) as against 11.2 percent in the control. The different levels of Frutox (4,8 and 12 per cent) did not vary significantly for physiological loss of weight. Prepacking also recorded low physiological loss of weight (5.6 per cent). A combination of Frutox and prepacking significantly reduced the physioloical loss of weight to 0.8 to 1.0 per cent thus revealing cumulative effects. Dipping with 2,4-D 100 ppm did not influence the physiological loss of weight either when used alone or in combination with Frutox or with Frutox and prepacking. Frutox and 2,4-D individually had no effect on the intensity of storage rots as compared to control. Prepacking favoured the incidence of storage rots, while prepacking in combination with Frutox further enhanced the disease intensity. On the other hand, 2,4-D + Frutox + prepacking combination reduced the incidence of storage rot remarkably. Prepacking prolonged the marketable shelf life of acidlime to 17 days as against 5.7 days in the control. Further, extension of shelf life upto 25.3 days.

The rate of transpiration and respiration governing the loss of moisture and nutrients are of special concern in detached fruits since the losses are no longer replaced by the mother tree. The kind and extent of these physiological activities determine to a large extent the storage longevity of fruits and hence efforts to keep them at the minimum thershold level is of paramount importance. Acid lime is a commodity of considerable

* Horticultural Resea

trade significance in Tamil Nadu. The fruits remain marketable for periods ranging from three to six days depending upon the size. The post harvest degradation of acid lime is largely a function of loss of moisture often resulting in "toughening" and "browning" of fruit wall.

The physiological loss of weight is a function of both transpiration and respiration. Methods to sustain the physiological loss of weight are many and are employed with a fair degree of success. Skin coating has been extensively used in March Grape fruit (Davis and Harding, 1960). Kagzi lime (Garg and Ram, 1972), Sweet oranges (Sadasivan *et al*, 1972) and in Coorg Mandarin (Gobalakrishna Rao and Shantha Krishnamurthy, 1983). Prepacking in perforated polythene bags has been reported beneficial in Sweet oranges (Sadasivam, *et al*., 1972) and Coorg Mandarin (Gobalakrishna Rao and Shantha Krishnamurthy, 1983). 2,4-Dichlorophenoxy Acetic Acid (2,4-D) has been widely employed to preserve the green buttons of citrus fruits and thereby help to maintain host resistance over a longer period (Shiffman - Nabel *et al*., 1972; Gobalakrishna Rao and Shantha Krishnamurthy, 1983).

With this background in view, an experiment was carried out with a view to extend the shelf life of acidlime with skin coating, 2,4-D and prepacking and the results are discussed.

MATERIALS AND METHODS

The trial was conducted at the Horticultural Research Station, Tamil Nadu Agricultural University, Periyakulam (1985-86). The study envisaged fifteen treatments in Randomised Blocks Design with three replications, involving skin coating (Frutox was emulsion), 2,4-D and prepacking either alone or in combinations. Freshly picked acid lime fruits of uniform size and colour formed the experimental material and one kg of fruit was utilised per treatment.

Skin coating was given dy dipping the fruits for one minute in Frutox Wax Emulsion, a product of M/s. Indian Chemical Specialities, Nagpur. The 2,4-D 100 ppm treatment was also given similarly. The fruits were dried under fan immediately following the treatments. Prepacking was done in 200 gauge polythene bags of size 30 cm x 20 cm which are ventilated to approximately one percent of area. The bags were heat sealed soon after filling. The fruits received the treatments on the same day of harvest and were displayed in plastic trays under ambient conditions of temperature (23.5°C to 38.5°C) and humidity (37 to 89 per cent).

Data were collected on the physiological loss of weight after 3 days of storage (PLW percent), shelf life (days), and number of fruits spoiled due to storage decay (No.per kg) besides estimating the quality components viz., Peel content (Per cent by weight), Juice content (percent by weight), Total soluble solids (TSS °Brix), Acidity (percent citric acid), and ascorbic acid (mg. per 100 g of juice) at the expiry of their shelf life in the respective treatments.

RESULTS AND DISCUSSION

The data on physiological loss of weight, shelf life, storage decay, sell content, juice content, TSS, acidity and ascorbic acid in different treatments are furnished in Table 1.

Physiological loss of weight: The Physiological loss of weight ranged significantly from 0.8 to 11.4 per cent in different treatments. Frutox individually brought down the physiological loss of weight significantly to 6.0 - 6.2 per cent as against 11.2 per cent in control. The effect of prepacking on physiological loss of weight was similar to that of Frutox (5.6 per cent). The effect of combined treatment of Frutox and prepacking has lowered the physiological loss of weight magnificiently to an insignificant level of 0.8 to 1.0 per cent. Considering the different levels of Frutox

used (4,8 and 12 per cent), their effect did not vary significantly either when used alone or in conjunction with prepacking. The effect of 2,4-D on physiological loss of weight when used alone was neutral as it behaved statistically on par with control (11.4 per cent). A similar trend was noticed when it is used along with Frutox or with Frutox and Prepacking.

Marketable shelf life: The marketable shelf life of acid lime fruits varied significantly from 5.3 days (2,4-D 100 ppm) to 25.3 days (2,4-D 100 + Frutox 4 + prepacking). Prepacking individually enhanced the shelf life remarkably upto 17.0 days as against 5.7 days in control. Frutox when used alone confered marginal benefits with a shalf life of 7.7 days. A combined use of Frutox + Prepacking had further extended the longevity to 20.0 to 21.7 days which is significantly longer than either of their effects in isolation. The different levels of Frutox tried (4,8 and 12 per cent) did not differ in their affects on shelf life when used alone. However when used in combination with prepacking, Frutox 4 per cent was significantly superior to Frutox 8 and 12 cent. 2,4-D 100 ppm when used alone was found to be on par with control. But when combined with Frutox 4 and 8 per cent, it proved superior. When 2,4-D was used in combination with Frutox, the shelf life was extended upto 25.3 days. In such combination, the different levels of Frutox differed significantly as Frutox 4 and 8 per cent are on part but in turn superior to Frutox 12 per cent.

Storage decay: The number of fruits showing storage decay exhibited significant variations from among the treatments. The intensity of the disease was of higher order (18.3) in Frutox 4 per cent + Prepacking. The treatments Frutox 4 and 2,4-D 100 + Frutox 12 showed no incidence of rotting. Frutox exerted no influence on the intensity of storage rots (0.4 to 0.7) as compared to control (1.3). On the other hand prepacking significantly increased the incidence of rotting (6.3) while a combination of Frutox and Prepacking still further increased to 12.3 to 18.3. While the different levels of Frutox tried did not differe within themselves when used alone in respect of intensity of rotting, they differed significantly when coupled with prepacking, the higher concentration (12 percent) showing significantly low incidence of disease intensity (12.3) followed by 8 (13.7) and 4 (18.3). 2,4-D individually or in conjunction with Frutox had no influence on disease intensity. But in combination with both Frutox and prepacking, it remarkably reduced the disease incidence (6.0 to 10.0).

Fruit quality: The levels of ascorbic acid analysed in the fruits under different treatments showed considerable variations from 20.00 mg to 33.43 mg. There was a rapid fall in the level of Ascorbic Acid in control fruits which contained 24.26 mg within a short period of 5.7 days. A similar trend was noticed in 2,4-D 100 ppm also. The use of Frutox had marginal effects in slowing down the rate of loss of Ascorbic Acid, analysing 26.30 to 33.43 mg over a storage period of 6.7 t0 7.7 days. A significant improvement in the retention of Ascorbic Acid was observed with prepacking as the fruits analysed for 26.30 mg even after an unusually longer storage period of 17 days. With regard to different levels of Frutox tried, the data revealed that the rate of fall in ascorbic Acid increased with an increase in concentration the deleterious effect being more pronounced if the period of storage was more than 10 days. The total soluble solids and Acidity did not reveal significant deviations. A slight reduction in peel content was recorded in Frutox 4, Frutox 8, 2,4-D, 2,4-D + Frutox 4 and prepacking treatments. The juice content increased slightly in all the treatments involving 2,4-D either alone or in combination with Frutox.

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EFFECT OF DRIP IRRIGATION ON COTTON USING SODIC WATER IN SODIC SOIL.

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ABSTRACT

A study was conducted to find out the efficacy of drip irrigation, in combination with row spacing and plant spacing on the yield of MCU 7 summer cotton. Two levels of irrigation, three levels of row spacing and three levels of plant spacing were incorporated in the study. The water used for irrigation and the field soil type were sodic. The drip irrigated plots registered kapas yield of 730 kg/ac where as the furrow irrigated plots registered 666 kg/ac. The water utilised were 1:3 ratio in drip and furrow methods, though irrigation was non-significant.

In India major portion of the cultivated area is affected by sodicity and salinity. In many cases the well waters are of poor quality with toxic amounts of residual sodium carbonate (sodic water). Their use for irrigation though available in plenty, is restricted due to the fear of spoilage of cultivated land and poor crop yield. Abrol *et al.*, (1975) indicated that supply of water in root zone of the growing crops at appropriate time and in adquate quantities was needed for best results.

Sivanappan (1982) reported that in drip irrigation, 50-60% of water had been saved when compared to ordinary furrow irrigation in cotton and vegetable crops. Sivanappan (1980) has reported that by drip irrigation the cotton kapas yield was increased from 2000 to 3255 kg/ha.

MATERIALS AND METHODS

To test verify the effect of drip irrigation with sodic water for close spaced crops, a field study was conducted with the test crop of MCU 7 cotton in sodic soil at the Soil Salinity Research Centre, Tamil Nadu Agricultral University, Trichy during the summer season of 1987-88. The experiment was laid out in split plot design with two replications. The treatments consist of two types of irrigation, *viz.*, drip and furrow in main plots. The sub plot treatments were three types of row spacing i.e. 45 cm, 60 cm and 75 cm. The plant spacings of 20 cm, 30 cm and 40 cm were adopted in sub-sub plot treatments. The crop was raised by adopting all the recommended package of practices for irrigated cotton.

The drip system of irrigation was provided to one of the main plots with the water from an overhead tank of 15 M height. The drip system followed was of a low cost one. The water was carried by mans 2" dia black alkathene tube from the tank to the