

SUPPRESSION OF LITTLE LEAF DISEASE OF CAPE-GOOSEBERRY BY TETRACYCLINE TREATMENT

BY

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By four sprays with tetracycline (60 ppm in water) a marked suppression of the symptoms of little leaf disease of capegooseberry (*Physalis peruviana*) was observed. Not only new leaves developed and leaves became larger in size, number of fruits per plant and their size also increased appreciably. Improvement in fruit quality was demonstrated by marked increase in the total sugar, vitamin C and pectin content of the fruits of the tetracycline treated plants.

INTRODUCTION

Capegooseberry (*Physalis peruviana* L., Fam. Solanaceae) is grown for its delicious fruits. Ripe fruits are consumed fresh or may be used in preparation of jams and jellies. For the past two years capegooseberry plants in some experimental plots at the University Farm at Kalyani were consistently found to be affected with a little leaf disease which has not been reported earlier. Suppression of little leaf and other diseases of mycoplasma origin of different crops by antibiotic treatments has been reported by some workers (Sinha and Peterson, 1972; Igwegbe and Calavan, 1973; Nyland and Moller, 1972). The present paper gives an account of the symptoms of little leaf of a capegooseberry and the effect of spraying the affected plants with tetracycline on the suppression of the symptoms and yield and quality of the fruits.

MATERIALS AND METHODS

Symptoms of the disease was studied by visual observations. For spraying of the plants, 5 plants showing initial symptoms of the disease were randomly selected and tag marked. Same number of plants showing more or less same degree of disease severity were also randomly marked to be kept as untreated control. The plants were sprayed at the run off point by tetracycline at 60 ppm concentration in water. The first spray was given when the plants were 92 days old after transplanting and three more sprays were given at 15 days intervals.

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Plant ripened and fully ripe fruits were harvested separately from the healthy, untreated diseased and antibiotic treated plants during the month of February and made into representative samples for assay. The test fruits after harvest were straightway weighed. Total sugar, acidity and the vitamin C contents of the fresh fruits were determined by volumetric analysis (Anon., 1970). The total soluble solids (T.S.S.) of fruit juices were determined by hand refractometer.

For estimation of pectin the method described by Mazumdar and Basu (1979) was used. 250 ml of fruit samples were pulped and boiled with 500 ml distilled water for 3 h. The slurry was cooled, strained and volume of the extract made upto 1 litre, with distilled water. 100 ml of the extract was taken and to it 100 ml of 95% ethanol was added with continuous stirring. The solution was allowed to stand, filtered and the precipitate on the filter paper was washed with 100 ml warm distilled water. It was cooled and to this 100 ml of 95% ethanol was added again. The solution was stirred and allowed to stand for precipitation. The precipitate was filtered in previously weighed filter paper. The filter paper containing the precipitate was dried in a hot air oven at 65°C ($\pm 2^\circ\text{C}$) and the final weight was taken and expressed as the amount of pectin in respect of percentage of whole fruit sample.

Table 1. *Effect of tetracycline spray on the yield and quality of fruits of little leaf infected capegooseberry*

Treatments	Average number of fruits per plant	Average weight Fruit (g)	Total soluble solid ($^\circ\text{Brix}$)	Total sugar (%)	Acidity (%)	Vitamin-C (mg/100g)	Pectin (%)
Diseased non-treated plants	21.66	2.13	10.4	5.714	1.728	61.0	0.39
Diseased Tetracycline treated plants	79.66	2.59	13.8	9.09	1.536	83.25	0.99
Normal healthy plants	226.66	3.1	14.0	9.523	1.984	90.75	1.04

RESULTS AND DISCUSSION

The characteristic symptom of the disease was the smallness of the leaves. The petioles were so short that the leaves appeared to be sticking to the stem. Such leaves were narrow, soft, smooth and yellowish in colour. Newly formed leaves were much more smaller. The internodes of the stems were very much shortened. Axillary buds got enlarged but their leaves and petioled remained

shortened. This gave the plant a bushy appearance. Mostly there were no fruiting or very poor fruiting. Fruits, if formed at all, were much smaller in size than the healthy fruits, deformed in shape and wrinkled. Calyx cover remained tightly attached to the fruits.

By spraying the affected plants with tetracycline a marked suppression of the disease symptoms was observed. Not only new leaves developed, the leaf size increased ; fruit number and size also increased appreciably.

Although lower than that in healthy plant, the average number of fruits per plant, as well as average weight of fruits were markedly higher in tetracycline treated plants as compared to those in non-treated diseased plants (Table 1). Improvement in fruit quality was demonstrated by appreciable increase in the total sugar, vitamin C and pectin content in the fruits of tetracycline treated plants as compared to those in the non-treated plants. Acidity of the fruits was lower in the antibiotic treated plants than both the healthy and non-treated diseased plants.

Tetracycline treatment of little leaf infested capegooseberry plants in the initial stage of infection, thus, not only suppressed severity of symptoms and resulted in an increased yield, but also markedly improved the fruit quality.

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