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Management of Mangu mite in sweet orange (*Citrus sinensis*) in Nalgonda District, Telangana, India

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Abstract

The present investigation was conducted in order to manage the mangu mite in Sweet Orange in Nalgonda district of Telangana. In India, Telangana is one of the major sweet orange producing states. Sweet Orange is major important horticulture crop which was having high source of vitamin C. Farmers are getting lower yields due to non adoption of proper management practices for mangu mite hence decrease in the quality of fruit so that farmers getting less price to their produce. In order to reduce mangu mite infestation and improve yield and quality of fruit, OFT was conducted in farmers' field in two years with three locations in each year. Proper management practices for control of mangu mite in Sweet Orange improve the yields and B:C ratio in OFT, when compared to farmer practice. The average yield and B:C ratio of three farmers in 2016-17 was 7300 kg/ac and 1.7:1 in farmer practice, where as in OFT average yield and B:C ratio was improved to 8900 kg/ac and 2.3:1 respectively. In 2017-18 average yield and B:C ratio was 9120 kg/ac and 5.4:1 in OFT compared to farmer practice was 7840 kg/ac and 4.08:1 yield and B:C ratio respectively. Proper management practices with application of insecticide to mangu mite reduces the losses and increase the yield and quality of fruit.

Keywords: Sweet orange, yield, mangu mite, management, nalgonda, Telangana, India

Introduction

Sweet orange is one of the most important fruit crop of Nalgonda. It plays an important role in providing energy, food and certain vitamins. Besides, it is a good source of income for the growers. Off-course several devastating diseases such as gummosis, powdery mildew, canker disease, citrus tristeza, citrus greening etc. and many insects pests attack on the citrus crops but timely use of management tools for their effective management in these area can really help to uplift the farmers' economic condition to a greatest extent.

Sweet Orange (*Citrus sinensis*) belonging to the family Rutaceae Deep well drained loamy soils are the best for the cultivation of Citrus. pH of soil should be 6.5 to 7.5. Nalgonda soils are suitable for cultivation of Sweet Orange. In India, Telangana state was in fourth position in productivity 14.89 MT/ha during 2017-18 after Andhra Pradesh, Madhya Pradesh and Karnataka. The major Sweet orange (*Citrus sinensis*) growing states in India are Telangana, Andhra Pradesh, Maharashtra, Madhya Pradesh, Karnataka, Punjab, Bihar, Assam, Mizoram and Jammu & Kashmir.

Fruit crop play an important role in the life of farmers of Nalgonda district of Telangana. In India, every year a huge loss to citrus production occurs due to damage caused by insect pests, diseases and off course physiological disorders. All these factors together cause a great damage to citrus crops; and growers as well as consumers are disadvantaged with it. For management of mangu mite problem the present OFT was carried out in farmers field.

Ravindra Kumar *et al.*, (2015) ^[3] observed that The diseases of mandarin orange in Darjeeling and Sikkim hills regions are gummosis, powdery mildew, citrus canker, citrus tristeza, citrus greening, citrus scab and anthracnose and insects pest problems are citrus leaf miner, citrus psylla, citrus fruit flies, lemon butterfly, fruit sucking moths, aphids, shoot borer/trunk borer, citrus decline complex, etc. briefs about effective management practices of mandarin orange in NEH regions to help farmers' improve their livelihood through better horticultural production.

E. Etebu1 and A. B. Nwauzoma (2014) ^[1] reported that diseases can be controlled in sweet orange through chemical treatment of fruits, use of biological control agents, proper packaging and storage facilities and other disease management practices to reduce post harvest damages.

Y. Yang *et al.*, (1995) ^[4] suggested that A mathematical model was developed to describe the relationship between cumulative damage and cumulative mite-days. The model could be used to predict fruit surface damage based on mite population data.

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Nalgonda has the major growing area of sweet orange in Telangana state. Mangu mite is common insect pest for most of the sweet orange orchard farmers in Nalgonda. Due to infestation of mangu mite, lesser price for produce by reduction in yield and quality of fruit. Therefore, effective management practice is necessary to control of mangu mite and to produce high yield with quality citrus fruits. So the present investigation was carried out on Management of Mangu Mite in Sweet Orange (*Citrus sinensis*) in farmers' field of Nalgonda district during 2017-18 and 2018-19.

Materials and Methods

Farmers are incurring high yield losses due to mangu mite. Reduce the damage caused by mangu mite recommended proper management practices by DAATT Centre, Nalgonda district in Telangana conducted the OFT (On Farm Trial) in farmers field for two years, in each year with three locations and different mandals. In each location of the farmers field recorded the yields by DAATTC, PJTSAU. The OFT conducted in 2016-17 at three locations was Pagidimarri Village of Kanagal Mandal, Argalabavi Village of Nalgonda Mandal and Koppolu Village of Gurrampodu Mandal. During 2017-18 OFT conducted at Chityala Village of Nalgonda Mandal, Parada Village of Kattangur Mandal and Annareddygudem Village of Nalgonda Mandal. In each

location in OFT, recommended to farmers for spraying of Difenthiuran 1 gr/lit. followed by Fenazaquin 1ml/lit. Spraying two times with 15 days interval for three months improves the yield of Sweet Orange.

Results and Discussion

Farmers are getting yields of 7300 kg/ac, Where as 8900 kg/ac in OFT. Benefit Cost ratio (B:C ratio) in farmer practice was 1.7:1 where as in case of OFT was 2.3:1 during 2016-17 year. In second year, i.e. in 2017-18 the yields of the farmer practice were 7840 kg/ac where as in OFT the yields were 9120 kg/ac. The B:C ratio 4.08:1 and 5.40:1 in farmers practice and OFT respectively. In OFT due to spraying of Difenthiuran 1 gr/lit. followed by Fenazaquin 1ml/lit. Spraying two times with 15 days interval for 3 months improves the yield of Sweet Orange.

Even though the cost of cultivation was same in two years and yields are also in similar trend but the B:C ratio was variable in two years. This is because of high market price in second year i.e. 2017-18. The market price based on demand & Supply. The market price of Sweet Orange during 2016-17 was Rs.13000/MT. Where as in 2017-18 the market price of Sweet Orange was Rs.30,000/MT. The variability of B:C ratio was high between two years due to fluctuation in the market price.

Table 1: Management of Mangu Mite on Yield and B:C ratio of Sweet Orange in Farmers practice and OFT during 2016-17

S. No	Name of the farmer	Village and mandal	Farmer Practice	OFT Trial
1.	N. Shekar Reddy	Pagidimarri, Kanagal	6760	9120
2.	A. Biksham Reddy	Argalabavi, Nalgonda	7680	9040
3.	R. Narsimha	Koppolu, Gurrampodu	7460	8540
	Avg. Yield (kg/ac)		7300	8900
	Price @ (Rs./MT)		13,000	13,000
	Gross income (Rs.)		94,900	1,15,700
	COC (Rs.)		55,860	51,200
	Net income (Rs.)		39,040	64,500
	B:C ratio		1.7:1	2.3:1

Table 2: Management of Mangu Mite on Yield and B:C ratio of Sweet Orange in Farmers practice and OFT during 2017-18

S. No	Name of the farmer	Village and mandal	Farmer Practice	OFT Trial
1.	S. Sathi reddy	Chityala, Nalgonda	6970	8795
2.	N.Lingaiah	Parada, Kattangur	8430	9490
3.	Yogendar Reddy	Annareddygudem, Nalgonda	7040	9075
	Avg. Yield (kg/ac)		7840	9120
	Price @ (Rs./MT)		30,000	30,000
	Gross income (Rs.)		2,24,400	2,73,600
	COC (Rs.)		54980	50,600
	Net income (Rs.)		1,69,420	2,23,000
	B:C ratio		4.08:1	5.40:1



Fig 1: OFT on Management of Mangu Mite on Yield and B:C ratio of Sweet Orange conducted in field of Sri N. Shekar Reddy at Pagidimarri Village of Kanagal Mandal.

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