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Ravi Venkanna Babu M

RA Horticulture, Krishi Vigyan
Kendra, Darsi, Prakasam,
Andhra Pradesh, India

Jahnavi M

SMS Crop Protection, Krishi
Vigyan Kendra, Darsi,
Prakasam, Andhra Pradesh,
India

Prasada Rao GMV

Programme Coordinator, Krishi
Vigyan Kendra, Darsi,
Prakasam, Andhra Pradesh,
India

Varapasada Rao CH

Senior Scientist, DAATTC,
Darsi, Prakasam, Andhra
Pradesh, India

Evaluation of flowering regulation in acid lime in Prakasam District of Andhra Pradesh

**Ravi Venkanna Babu M, Jahnavi M, Prasada Rao GMV and
Varapasada Rao CH**

Abstract

The study on evaluation of flowering regulation in acidlime of Prakasam District. Andhra Pradesh was carried out during 2017-18, 2018-19 and 2019-20 in acidlime farmers fields of Prakasam district. The experiment was carried out in 4.0 ha each with active participation of farmers with an objective to assess the flowering regulation in acidlime for enhancing the productivity and profitability. Mean yield of demonstration was 15.7t ha⁻¹ with net returns and C: B ratio of 138116.6 Rs ha⁻¹ and 1:3.67, respectively. Whereas, farmer practice recorded mean yield of 13.6 t ha⁻¹ with net returns and C: B ratio of 111016.6 Rs ha⁻¹ and 1:3.08, respectively.

Keywords: Acidlime, flowering regulation, GA3 50 ppm, Cycocel 1000 ppm, KNO₃ and yield

Introduction

Acid lime is the third important citrus fruit crops next to mandarins and sweet oranges. It is good source of vitamin C and good antioxidant properties. Citrus has no peculiar requirement of winter chilling but termination of growth during winter helps in flower bud induction resulting in spring flowering (Devi *et al.*, 2011) [2] Acidlime is one of the important horticulture crop in Prakasam Dt. Farmers are getting lower yields in summer crop due to lack of awareness on flowering regulation in acid lime and yield loss ranges from 15 to 20%. For combating this problem flower regulation in acid lime trial was disseminated the technology to farmers in Prakasam district. Adoption of flowering regulation practices enhances the productivity and profitability. Keeping the above problem in view the demonstration on flowering regulation in acid lime of Prakasam district was conducted during 2017-18, 2018-19 and 2019-20.

Materials and Method

Place of study: Kanigiri mandal during 2017-18.

1. Hanumanthupadu during 2018-19, Nagambotlapalem during 2019-20
2. Area- 4.0 ha each year
3. No. of farmers- 10 each year
4. Design front line demonstration in farmers' fields in 4 ha each year
5. Treatments:

T01-Farmers practice: Not following flowering regulation practices.

T02- GA3 50 ppm (50 mg/l) in June – July

Cycocel 1000 ppm (1 g/l) in September and

KNO₃ 10 g/l of water in October

Plot wise data was recorded in flowering regulation in acidlime and farmers practice plots. Information of yield and economic evaluation in terms of net profit earned and cost benefit ratio was recorded.

Results and Discussion

I.
II.

Corresponding Author:

Ravi Venkanna Babu M

RA Horticulture, Krishi Vigyan
Kendra, Darsi, Prakasam,
Andhra Pradesh, India

Table 1: Impact of demonstration on yield and economics of acid lime

Year	Yield (t ha-1)		Cost of cultivation (Rs ha-1)		Gross returns (Rs ha-1)		Net returns (Rs ha-1)		C: B ratio	
	Demonstration	Farmer practice	Demonstration	Farmer practice	Demonstration	Farmer practice	Demonstration	Farmer practice	Demonstration	Farmer practice
2017-18	15	13	50500	51700	180000	156000	129500	104300	1:3.5	1:3.01
2018-19	16	13.5	51500	53500	192000	162000	140500	108500	1:3.7	1:3.02
2019-20	16.3	14.5	51250	53750	195600	174000	144350	120250	1:3.81	1:3.23
Mean	15.7	13.6	52583.3	52983.3	189200	164000	138116.6	111016.6	1:3.67	1:3.08

Yield

Data presented in Table 1 revealed that under demonstration yield was found to be higher than farmers practice during the years 2017-2018, 2018-19 and 2019-20. The demonstration recorded yield of 15, 16 and 16.3 t ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 15.7 t ha⁻¹. Whereas, farmer practice recorded yield of 13, 13.5 and 14.5 t ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 13.6 t ha⁻¹.

Economics

Perusal of the data presented in the table 1 revealed that gross returns, net returns and C: B ratio were higher in demonstration over farmers practice. Gross returns of demonstration were 180000, 192000 and 195600 Rs ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 189200 Rs ha⁻¹. Whereas, in farmer practice, gross returns were 156000, 162000 and 174000 Rs ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 164000 Rs ha⁻¹. Net returns of demonstration were 129500, 140500 and 144350 Rs ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 138116.6 Rs ha⁻¹. C: B ratio of demonstration was 1:3.5, 1: 3.7 and 1:3.81 during 2017-2018, 2018-19 and 2019-20, respectively with mean of 1:3.67. Net returns in farmer practice were 104300, 108500 and 120250 Rs ha⁻¹ during 2017-2018, 2018-19 and 2019-20, respectively with mean of 111016.6 Rs ha⁻¹ and C: B ratio were 1:3.01, 1:3.02 and 1:3.23 during 2017-2018, 2018-19 and 2019-20, respectively with mean of 1:3.08. Thus, favorable cost benefit ratio and higher net returns in demonstration proved the economic viability of the assessed technology and convinced the farmers on the utility of technology provided at real farming situation. The results are in agreement with the finding of Thirugnanavel *et al.*, obtained highest number of fruits (224) and yield per tree (11.15 kg) sprayed with GA3 50 ppm (50 mg/l) in June – July; Cycocel 1000 ppm (1 g/l) in September and KNO₃ 10 g/l of water in October. Higher yield in mango as reported by Sanyal *et al* by KNO₃ also supported that present study. Similarly, Prabhu *et al.*, revealed that sprayed acidlime with GA3 50 ppm in June + cycocel 1000 ppm in September + KNO₃ 2% in October recorded highest number of fruits tree⁻¹ (1003), weight of fruits (48.60 g) and average fruit yield (28.96 kg tree⁻¹). Similarly, Aruna devi ^[1] *et al.*, revealed that growth, yield and quality parameters such as tree spread, fruit set percentage, fruit retention percentage, number of fruits per tree, yield per tree, juice volume, acidity and ascorbic acid were found to be higher in the treatment combination of PP333 1.5g a.i/m² + NAA 200ppm. Nawaz *et al.* also stated that highest acidity of 1.04% was observed with 15 ppm NAA spray followed by 20 ppm NAA spray in kinnow mandarin

Adoption

A total of 60 farmers in an extent of 175 ha adopted the technology for flower regulation in acid lime.

Outcome

Per plant 1400-1700 fruits were obtained when compared to farmer practice (Not following flower regulation practices) were 800-1000 fruits per plant. Increase in net return was 138116.6 Rs /ha

Dissemination method

Technology spread through Frontline demonstrations, training programmes and advisories. Upscaling of technology was done in convergence with Department of Horticulture.

Advantages

Acid lime trees sprayed with GA3 50 ppm in June + cycocel 1000 ppm in September + KNO₃ @ 10 g per litre in October recorded the highest number of fruits tree⁻¹ (1400- 1700). Productivity increases during the period of high demand which fetched good market price.

Conclusion

The flowering regulation practices were found effective over farmer's practice.

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