



Production constraints being faced by acid lime growers of Andhra Pradesh

L. Mukunda Lakshmi and K.T. Venkata Ramana

Citrus Research Station (Y.S.R. Horticultural University), TIRUPATI (A.P.) INDIA

(Email : lmukunda@gmail.com)

Acid lime cv. BALAJI a canker resistant high yielding Acid lime clone was developed and released for commercial cultivation in AP during 2006 (Madhavi *et al.*, 2000). It is occupied an area of 30,000 ha in the state. In India acid lime is grown in the states of Andhra Pradesh, Karnataka, Maharashtra, Punjab, Rajasthan and Uttarakhand in a total area of 125457.00 ha from which about 1617783.00 tonnes of production is obtained annually. In Andhra Pradesh the acid lime is grown in an area of 0.48 lakh ha with a production of 7.31 lakh MT and the productivity of 15.00 MT per ha. Acid lime is grown in almost all the districts of AP and the largest area is in semi arid regions of Nellore, YSR Kadapa, Prakasam, Guntur, West Godavari, East Godavari, Nalgonda, Mahaboobnagar and Anantapur districts. Nellore district has the major area (21128 ha) of acid lime contributing 50 per cent of total production (316920 MT). Gudur town of Nellore district is having the largest market for acid lime in the country.

Production constraints :

Use of uncertified, poor quality and diseased planting material: Acid lime is commercially propagated by seeds and due to true nucellar embryony (30-90%) disease free planting material can be obtained. In view of the regular demand for the fruits, the farmers are forced to grow acid lime even with the locally available selections. Introduction of canker tolerant clonal selections namely Balaji and Petlur selection -1 are profitable to the farmers. But, the registered nurseries are unable to meet the farmers demand for the supply of canker tolerant seedling planting material. In this context the AICRP center at Tirupati has taken a leading role in production and supply of canker tolerant acid lime planting material of Balaji which has become very popular among the farmers of Andhra Pradesh, Tamil Nadu and Karnataka states and is in very high demand.

Planting in shallow, poor and calcareous soils: Most of the acid lime growing belts of Andhra Pradesh are calcareous soils with excessive salts, defective drainage system and presence of hard pan in sub soils. In view of the regular demand for the fruits in the market, farmers

are forced to grow even in calcareous soils. The most important nutritional disorder in crop grown in alkaline soils with high carbonates is Iron deficiency, the so-called "lime-induced chlorosis or iron chlorosis. Iron chlorosis is a major yield limiting concern. Based on the experiments carried earlier, farmers are being advised to rectify the problem by 0.25 per cent foliar sprays with ferrous sulphate salts four times in a year (June, July, Jan and February) or soil application of 20kg of FYM enriched with Ferrous sulphate @ 100-150g/plant once in a year.

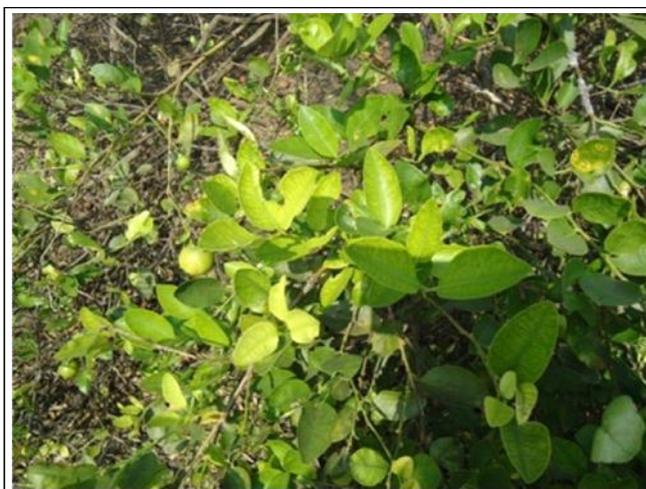


Fig. 1 : Iron chlorosis in calcareous soils

Initial slow growth of seedling raised plants: Seedling trees are very slow in growth and comes to bearing after four years of planting. Hence, some farmers are purchasing four year old seedlings directly from the private nurseries @ Rs. 200-250 per plant, which are susceptible to canker and gummosis diseases. Tristeza viral disease affected plants are also noticed in some of the orchards of Nellore district where the budlings are used as planting material and acid lime growers of Guntur (Tenali region) are adopting closer spacing's of 5x5 and 4x4. The recommended spacing for acid lime is 6x6 m. As a result there have been high incidences of diseases like root rot, twig blight, gummosis and felt disease. During the cyclonic rains the problems become severe due to damp weather and due to high water

table in the soil for prolonged periods.



Fig. 2 : 4x4 spacing adopted by farmers



Fig. 3 : 3 Year old acid lime seedlings purchased from private nurseries

Lack of awareness on intercrops: Farmers are growing exhaustive intercrops (line Banana, Maize) and solanaceous vegetables (Tomato, Chillies, Brinjal and Tobacco) in acid lime and sweet orange orchards which deprive for essential nutrients and moisture and also increases the incidence of nematodes.

Poor water and nutrient management practices: Majority of acid lime growing farmers are applying manures and fertilizers around the trunk. The fertilizers should be applied by making a shallow trench around the tree with two feet width half the distance away from the trunk where maximum number of fibrous roots are accommodated. The fertilizers will be applied when the foliage is fully matured. It was also noticed that 50 per



Fig. 4 : Acid lime intercropped with maize



Fig. 5 : Acid lime intercropped with banana

cent of the farmers are not aware of inorganic fertilizers (Urea, Super Phosphate and Muriate of potash) and 50 per cent of the farmers are applying only complex fertilizers due to non availability of Farm yard manure and oil cakes. Location specific recommendation for the state *i.e.* balanced application of 80kg FYM+ 8kg neemcake+1600g of urea + 4000g of SSP+ 1500g of MOP per plant per year in two equal splits is recommended to the farmers. Majority of the gardens the trees are drying due to faulty irrigation methods and mounding the soil around tree trunk. This practice results in poor aeration to the root system and also arrest the supply of moisture and nutrients to the shoot system. Hence, it is suggested to follow double ring method of irrigation or keep the drip laterals away from the tree trunk and trunk should be pasted with 1 per cent Bordeaux paste once in a year before on set of monsoon. *Fruit drop and Lack of crop regulation commensurating market demands during summer:* To minimize fruit drop during summer spraying with Planofix



Fig. 6 : Mounding soil around tree trunk region

@1ml/4.5l of water or 2,4-D @ 1g/100l is recommended. Foliar spray with GA₃ 50 ppm June + Cycocel 1000 ppm during September followed by spray of potassium nitrate at 1 per cent during October is the most promising and economically viable technology for maximizing the fruit yield, quality and benefit cost ratio (2.43) for the Acid lime growers during summer in Andhra Pradesh when the demand for the fruits remain very high.

Poor quality of the fruits: Among different pests, citrus butterfly, mites and leaf miner, aphids and black flies are the major constraints in the production and quality of acid lime. These pests are being managed effectively with spraying of botanicals and recommended pesticides at the appropriate stages.

Declining of acid lime gardens: Declining is seen in most of the acid lime growing belts of Andhra Pradesh and it was studied through continuous surveying to find out the factors responsible for declining. Wide spread occurrence of bacterial canker, greasy spot, bark and wood splitting, tristeza virus and dry root rot alone or in combination are the primary causes for acid lime declining.

Lack of proper packing, cold storage infrastructure and marketing: As a routine farmers are packing the fruits in fertilizer or gunny bags and transporting to the nearby markets which is leading to post harvest quality loss. Further there are no cold storage facilities either at farmer level or at market levels for acid lime in the state. Packing, transportation and marketing fruits treated with 2, 4-D @ 50ppm and packed in alkathene lined gunnies was effective in reducing the losses by 76 per cent at the end of 20 days of storage. The use of microperforated polythene bags was found effective in maintaining greenness and firmness. In order to reduce the post harvest



Fig. 7 : Multiple stems and tree trunk affected with bacterial canker on local selection



Fig. 8 : Felt disease Incidence on twigs



Fig. 9 : Dry root rot affected acid lime

losses of acid lime, infrastructure facilities like on farm storage and refrigerated transport system should be sufficiently geared up to meet out the challenge of handling and marketing of acid lime while maintaining the natural quality of the product.

Lack of processing plants: There are no processing units in the state to produce variety of value added products from acid lime. Limes can be processed into lime juice packed into consumer preferred sizes or can be pickled. Farmer needs to be given assistance in getting small scale processing units established in their holdings by providing subsidies under government schemes (State and Central).

Prospects of acid lime cultivation:

- There is a vast scope to promote acid lime

cultivation in different parts of Andhra Pradesh particularly coastal districts.

- There is a scope to introduce clones suitable for preparing pickles.
- Scope for export of dry black acid lime fruits and also other value added products by adopting new technologies.
- Productivity and quality of acid lime can be increased by adopting drip irrigation, INM through fertigation and integrated approaches for pest and disease management.
- Need to introduce canker tolerant root stocks
- Need to establish small scale industries.

Received : 20.08.2016

Revised : 17.11.2016

Accepted : 27.11.2016

SUBSCRIPTION FEE

HIND AGRICULTURAL RESEARCH AND TRAINING INSTITUTE 418/4, SOUTH CIVIL LINES (NUMAISH CAMP), MUZAFFARNAGAR-251001 (U.P.)

JOURNAL	Annual Subscription Fee		Life Subscription Fee	
	Individual	Institution	Individual	Institution
International Journal of Plant Sciences	1000/-	2000/-	10000/-	20000/-
International Journal of Agricultural Sciences	1000/-	2000/-	10000/-	20000/-
Agriculture Update (Journal of Extension)	1000/-	2000/-	10000/-	20000/-
The Asian Journal of Horticulture	1000/-	2000/-	10000/-	20000/-
An Asian Journal of Soil Science	1000/-	2000/-	10000/-	20000/-
International Journal of Agricultural Engineering	1000/-	2000/-	10000/-	20000/-
International Journal of Plant Protection	1000/-	2000/-	10000/-	20000/-
Veterinary Science Research Journal	1000/-	2000/-	10000/-	20000/-
International Journal of Processing and Post Harvest Technology	1000/-	2000/-	10000/-	20000/-
International Journal of Forestry & Crop Improvement	1000/-	2000/-	10000/-	20000/-
Advance Research Journal of Crop Improvement	1000/-	2000/-	10000/-	20000/-
Research Journal of Animal Husbandry and Dairy Science	1000/-	2000/-	10000/-	20000/-
International Research Journal of Agricultural Economics and Statistics	1000/-	2000/-	10000/-	20000/-
Universal Research Journal of Extension Education	500/-	1000/-	5000/-	10000/-
Rashtriya Krishi (English Magazine)	300/-	1000/-	5000/-	10000/-
राष्ट्रीय कृषि (हिन्दी पत्रिका)	300/-	1000/-	5000/-	10000/-

Draft should be made in the name of the Journal.....from any NATIONALIZED BANK PAYABLE AT MUZAFFARNAGAR -251001 (U.P.), INDIA.

AGRICULTURE UPDATE

An International Journal of Agricultural Extension

ONLINE ISSN : 0976-6847

RNI : UPENG/2006/16372

Accredited By NAAS : NAAS Rating : 2.73

ISSN : 0973-1520

visit : www.hindagrihorticulturalsociety.co.in; www.researchjournal.co.in