

**A CASE STUDY :**

# Major issues of tomato growers in Madanapalli division of Andhra Pradesh

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**ARTICLE CHRONICLE :**

**Received :**  
12.06.2018;  
**Accepted :**  
26.07.2018

**SUMMARY :** Tomato is one of the most popular vegetable crop in India. It is a high value crop, providing a good source of income to small scale farmers. In Chittoor district of Andhra Pradesh tomato is grown in an area of 20,000 ha throughout the year. Of which, 75% of tomato area is in Madanapalli division which is one among biggest revenue divisions in India. Despite of huge market facilities in the division, farmers are facing series of constraints during cultivation and marketing. Non-availability of quality seedlings, pest incidence throughout the year, increase in cost of cultivation, fluctuations in market price and malpractices in regulated markets are the major constraints faced by farmers in the division despite farmers are reaping good yields.

**How to cite this article :** Ravuri, Prasanna Lakshmi and Kumar, P. Ganesh (2018). Major issues of tomato growers in Madanapalli division of Andhra Pradesh. *Agric. Update*, 13(3): 373-378; DOI : 10.15740/HAS/AU/13.3/373-378. Copyright@2018: Hind Agri-Horticultural Society.

**KEY WORDS:**

Tomato production, Constraints, Madanapalli division

## **BACKGROUND AND OBJECTIVES**

Tomato (*Lycopersicon esculentum* Mill.) belongs to Solanaceae family is native of Peruvian and Mexican region. It is one of the most important protective foods because of its special nutritive value. It is a major source of vitamin A and C (Bull, 1989). It is one of the most versatile vegetable with wide usage in Indian culinary tradition. In India, it occupies an area of 797 thousand hectares with 20,708 million tonnes production (National Horticultural Board report, 2016-17). India ranks 2<sup>nd</sup> after China as for as the production is concerned. The largest production centers are in Southern and Central India – principally the states of Andhra

Pradesh, Telangana, Karnataka, Madhya Pradesh and Maharashtra. Increase in area of tomato largely due to increasing market demand and a differential higher rate of return for farmers as compared with other crops.

Andhra Pradesh occupies first place in tomato production with a yearly production of 5962.21 thousand tons. On an average Andhra Pradesh contributes to around 35% of total tomato production in India. But, the total demand for tomatoes in Andhra Pradesh is only 7% of India's demand which shows that 80% of the produce in Andhra Pradesh has to be either exported to other states or it should be processed and sold as finished goods. Concentrated hubs of tomato production in Andhra Pradesh are Madanapalli

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and Anantapur.

Madanapalli town is located in Chittoor district of Andhra Pradesh. It is one of the biggest revenue divisions in India covering half of the district (Western part) with 30 mandals. Madanapalli has relatively cooler temperatures ranges from 28 to 35°C during summer. Winter witnesses very low temperatures from 10-15°C (Durga Prasad, 2015). It receives annual rainfall of 800-850mm. The division is the horticultural hub of the district majorly known for growing of vegetables like tomato, brinjal; fruits like mango, pomegranate, papaya; flowers like chrysanthemum, roses and marigold. Climatic conditions are very much suitable for tomato cultivation because of which the crop is grown year round in the division. At present area under tomato in the district is 20,000 ha where 75% of area is in Madanapalli division only. Tomato production and marketing are the major sources of livelihood for a large number of farmers, transporters, middlemen and traders in this area. The division consists of market yards in every mandal for effective marketing. Madanapalli town itself has a very huge agricultural market yard for marketing of tomatoes alone. Apart from local markets in every mandal, daily on an average 400-600 tonnes of tomatoes are marketed from Madanapalli market only to different places of India depending upon the peak and non peak seasons.

Despite of these situations tomato farmers are facing myriad of constraints during cultivation and its value chain. The major constraints in tomato production and marketing includes

- Non-availability of good varieties / hybrids and planting material
- Insect pests and diseases
- Increased cost of cultivation
- Fluctuations in market price and malpractices in regulated markets
- Lack of storage facilities

#### **Non-availability of good varieties / hybrids and planting material :**

*Seed market is in the hands of private companies :*

Availability of quality planting material is one of the problems faced by tomato growers in the division. At present seed production is completely in the hands of private industries and public sector varieties / hybrids are very meagre in this area. None of the private hybrids have resistance to any pest or disease. Some of the reputed government institutes developed disease resistant

varieties in tomato but they are not reaching the farmer level. Even though some varieties has resistance to diseases, they are not preferred by consumers for table purpose because of their fruit shape or size hence they don't fetch higher market price when compared to private hybrids and farmers are invariably resorting to private hybrids with high yield potential and consumer preference.

#### **Farmers dependence on nurseries for seedlings:**

Nearly 90% of farmers stopped growing their own nurseries they mainly depend on nurseries for seedlings. In past, farmers dry the tomato seeds and used them for raising nurseries in their own fields. After the advent of high yielding hybrids they started purchase the seed from dealers and raised the seed in their fields. After nursery system came into existence, farmers started purchasing seedlings from nursery owners and now they depend more on seedling suppliers rather than seed sellers.

In the Madanapalli division, the sales of tomato seeds accounts for 3-4 tons per month. In majority areas, nursery owners doesn't have license also and they sell seedlings to the farmers. The right kind of variety with good quality may not be available sometimes with these owners. It is being difficult to identify the variety/hybrid of tomatoes and some unscrupulous nursery owners taking advantage of this situation sell spurious seedlings to farmers.

#### **Solutions :**

- Development of disease resistant, high yielding varieties/hybrids which are preferred by farmers. (Round/classic shape fruit is more preferable by consumers). It is important that after dissemination of information farmers must adopt the recent varieties/hybrids of tomato and other farming techniques in order to get higher returns (Sharma *et al.*, 2016).
- Awareness programmes has to be conducted by department of horticulture and Krishi Vigyan Kendras on growing own nurseries.
- Skill development programmes may be conducted to rural youth on raising nurseries and subsidy may also be given to them for establishing nurseries.
- Regular supervision of nurseries and cancellation of license in any fraud cases is compulsory by Government officials for supplying quality seedlings to farmers.

**Insect pests and disease incidence :**

Pest and diseases are major problems in tomato production and they cause upto 60-70% yield losses sometimes. As the crop is grown throughout the year, there will be abundant food for pests year round and losses reaches 90-100% at times. The major insect pests and diseases of tomato are enlisted hereunder.

Other than above pest problems, minor problems like leaf spots, wilt diseases also prevails which cause 5-10% yield losses to farmers. Generally farmers go for pesticide sprayings after a pest or disease appears in their field. This leads to increased cost of cultivation.

**Lack of awareness on IPM practices and indiscriminate use of pesticides :**

Most of the farmers doesn't know the difference between the insect damage and disease symptoms. When the farmer observes any pest incidence, directly moves to any pesticide shop by taking the sample of the symptoms. Generally these pesticide dealers gives minimum of 3-4 types of pesticides and growth regulators for crop improvement without knowing their compatibility. This inturn increase the cost of cultivation to the farmer and if the pesticides are not compatible with each other, crop damage may also occur and ultimately farmer is the looser.

Lack of awareness on integrated pest management practices like summer ploughing, use of *Neem* oil, pheromone traps, biocontrol agents like *Trichoderma*, *Pseudomonas* is one of the major reason for indiscriminate use of pesticides. Availability of pheromone traps, biocontrol agents is also limited unlike pesticides as minimum of 5-6 pesticide shops are there in each Taluk

but pheromone traps and BCAs are available at division or district level only.

**Non-adoption of protective kits while using pesticides :**

Non-adoption of safety kits while handling pesticides is one of the major area which is neglected by farmers. Safety kits consists of glasses, mask, gloves and full shirt avoid the risk of entry of pesticides into human body. Farmers are not showing interest to wear the safety kits as it reduces their spraying efficiency. Earlier these kits were provided by pesticide manufacturers along with pesticides but due to non-adoption, safety kits are not available in recent times with the dealers. If any farmer wants safety kit, he has to wait for weeks to get the kits.

**Probable solutions :**

- Capacity building programmes to farmers on pest identification and their management
- Popularization of IPM practices has to be done among farming community by conducting demonstrations in cluster approach and season long training programmes for better reach of technology.
- Awareness programmes on pesticide usage has to be conducted to make farmers acquaintance with harmful effects of pesticides. Protective kits must be supplied by manufacturers along with any pesticide.

**Increased cost of cultivation :****Peer group pressure :**

Impact of adjacent farmers who benefitted with use of any hybrid or application of high doses of fertilizers or pesticides will be more on small or marginal farmers. If

**Table 1 : Major insect pests**

Sr. No.	Insect pest		Damaging season	Per cent yield losses
	Common name	Scientific name		
1.	South American Tomato Leaf miner	<i>Tuta absoluta</i>	Winter <i>i.e.</i> from September to March	80-90%
2.	Sucking pests like thrips, leaf hoppers	<i>T.tabaci</i> , <i>F.schultzei</i> and <i>Amrasca biguttula biguttula</i>	Summer	15-20%
3.	Fruit borer	<i>H.armigera</i>	<i>Kharif</i>	5-10%

**Table 2 : Major diseases**

Sr. No.	Name of the disease	Damaging season	Per cent yield losses
1.	Late blight	Winter <i>i.e.</i> from September to March	85-90%
2.	Early blight	Year round	20-30%
3.	Bacterial canker	<i>Kharif</i>	25-30%
4.	Viral diseases like bud necrosis and leaf curl virus	Summer	30%

the price decreases suddenly all the capital that invested goes in vain.

#### *Indiscriminate use of fertilizers and pesticides :*

In order to increase the productivity, utilization of fertilizers and pesticides is a must. However, farmers use fertilizers indiscriminately from planting to harvesting. They dump hundreds of kilos of fertilizers during crop growth period. Because of this the soils get damaged leading to poor soil fertility and lower yields in subsequent years. On an average, 30% of farmers don't know about soil testing and soil test based fertilizer application because of which the production cost is increasing enormously.

If the market price of tomato is high, then farmers spray pesticides indiscriminately even though the pest is below ETL. They spray pesticides twice or thrice in a week if any pest is causing above 5% damage for getting higher yields. This is also one of the reason because of which the production cost is increasing drastically.

#### **Labour wages :**

Most of the farmers make use of outside laborers for different agricultural operations like planting, weeding, staking and harvesting etc. Wage rates of both male and female farmers has gone up by 20% during recent times and this inturn increases the cost of cultivation to the farmers. Shortage of labour is also a major problem during peak crop growing season as most of the laborers prefer to go for MGNREGS scheme where they get more amount than the wages given by the farmers.

On an average the production cost of tomato reached upto 70,000-80,000 per acre in recent times for different operations among which staking, fertilizer application, pesticides usage occupies upto 70% share in total production cost.

#### **Solutions :**

– Staggered planting may be adopted to reduce cost of cultivation and to sustain fluctuations in market prices.

– Judicious use of pesticides and fertilizers is compulsory to reduce the production cost. For this awareness has to be conducted among farmers about soil test based fertilizer application, fertigation for effective utilization of fertilizers. Indiscriminate use of pesticides must be stopped and for this prescription slips

by any scientist or agricultural officer has to be made compulsory for purchasing any pesticide.

– Mechanization: Use of implements for planting (easy planter), weeding (Three tined wheelhoes or power weeders) and fertilizer application (fertilizer dispenser) may be popularized for reducing cost of cultivation.

#### **Fluctuations in market price and malpractices in regulated markets :**

Marketing constraints or challenges arise due to many factors such as high transactional costs, distance from the markets, poor quality of products, lack of storage facilities, lack of financial support, inadequate property rights, inadequate and inaccessible market infrastructure, lack of adequate access to finance etc. (Matungul *et al.*, 2002). There is lot of fluctuation in market prices of tomato which is the utmost problem for tomato growers. It ranges from Rupees 4 to 60 per kilo of produce. Middlemen involvement is more and voice of farmer is very low while selling their own produce. Market agents play an important role in mediating between sellers and buyers. In the existing system, buyers reap greater benefits compared to the sellers/farmers during the mediating process.

In the present system, auctioning is followed as per marketing procedures. Marketing agents also help in giving loans to sellers/ farmers whenever necessary. Every seller is attached to only one marketing agent whereas buyers tend to buy from more than one agent. According to government regulations, market agents should take maximum 4% commission from any producer, yet they continue to charge 10% commission from the sellers. In general, buyers and sellers tend to be non co-operative while the marketing agents have to play a co-operative role with both buyers and sellers. In reality, co-operation on the part of buyers is greater compared to sellers with respect to marketing agents. Many studies on marketing of agricultural products showed that it is not as efficient as it should be to harmonize interest of the producers and consumers and thereby to provide an impetus for sustained growth of agricultural production. The system of marketing in India is supposed to be exploitative, collusive, economically inefficient and operating with high profit margin of intermediaries. The system consists of various malpractices and also deduct unauthorized charges for various reasons which results in the lower prices for produce (Mohd. Asmatoddin *et*

al., 2009).

### **Solutions:**

#### *Establishment of FPOs (Farmer Producer Organizations) :*

Farmer producer organizations helps farmers in getting maximum price to their produce. For this 100-1000 tomato farmers may form into a group and they can directly make contacts with retailers and sell their produce to any retailer with affordable price. This also helps to reduce production costs. Group members can run a fertilizer shop and pesticide shop or they can make deals with fertilizer/pesticide wholesalers for reducing the cost of fertilizers and pesticides. By this, the inputs costs also reduce and the farmers can get fair price during glut periods also.

#### *Government policies to reduce middlemen involvement :*

Strict government policies has to be made to restrict middlemen involvement like market agents commission should not exceed 4% for better survival of farmer.

### **Lack of post harvest technologies :**

Tomato is a highly perishable crop. However, the rate and extent of spoilage depends on several factors. The problems in disposing off the produce depress the farmers which effect the local tomato production and farm income negatively (Baliyan, 2009). To overcome this problem there is the need to develop simple, cost-effective and easily adaptable preservation techniques (Ellis *et al.*,1998). Tomato processing involves the transformation of fresh tomato produce into the tomato end products like tomato paste, tomato juice, tomato ketchup, tomato sauce inter alia. With 11% share of global production, India produces more tomatoes than any other country, except China. Despite this, less than 1% of India's tomato production is processed, way below the average of 26% for the world's top 10 tomato producing countries (Report of World Vegetable Centre, 2016). This impacts farmers by way of high post harvest losses and low returns during periods of market glut.

### **Solutions :**

Establishment of processing industries in the division is the ultimate solution for reducing losses to tomato farmers during glut period and to reduce post harvest

losses of tomato. Cold storage facilities should be provided in the vicinity of the market so that excess supplies maybe stored and used the next day.

Skill development training programmes on value addition to tomato has to be conducted for rural women or self help groups which creates self employment for the women and also decreases post harvest losses of tomato.

Establishment of cold storage facilities will also helpful to store the produce and it can be sold whenever prices are promising to farmers.

### **Conclusion :**

Tomato farmers are facing pre-harvest problems like high cost of cultivation, lack of technical knowledge, scarcity of labour, pest and diseases in the process of production of tomato. Post-harvest marketing problems like involvement of intermediaries, lack of cold storage facilities, price fluctuation, etc. are the major problems for tomato growers in the division.

These constraints can be avoided by strict government regulations on nursery owners, popularization of high yielding disease resistant varieties, creating awareness programmes to farmers on judicious use of fertilizers and pesticides, formation of FPOs, establishment of cold storage facilities and processing industries at division or taluk level to address issues of tomato growers.

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