



## Fruit Drop in Litchi (*Litchi chinensis* Linn)

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### INTRODUCTION

Litchi (*Litchi chinensis* Sonn.) is sub-tropical evergreen fruit crop that belongs to sapindaceae family. It is regarded as “Queen of fruits” and widely grown in south-east Asian countries including China, India, Taiwan, Thailand, and Vietnam. Together India and China account for 91% of the world litchi production. In India, litchi is mainly grown in Bihar, Assam, Tripura, West Bengal, Orissa, Punjab, Uttar Pradesh, Uttarakhand, Chhattisgarh, Jharkhand and Himachal Pradesh. It is a prime source of income for thousands of farmers in Bihar and West Bengal. Bihar ranks first in area and production of litchi in the country, however its productivity is very low in comparison to other states of India. As the plants require specific climatic conditions for better flowering and fruiting therefore its area is restricted to only few packets and its fruiting period also differs with the growing locations. Litchi produces three types of flower in each panicle and each panicle encompasses hundreds to thousands of flowers depending on the age and varieties. Only low percentage of flower develops into fruit and reaches maturity. Generally, litchi trees suffer from heavy fruit drop between fruit set and maturity and only a small proportion of it from 2 to 18 per cent fruit was carried to maturity in different cultivar (Stern et al., 1997). Fruit drop is one of the widest spread problem of most tropical and subtropical fruits and litchi is not beyond of this problem (Lal et al., 2017).

### Factors influencing fruit drop:

#### Improper pollination and fertilization

- A heavy fruit drop has been experienced during first and second weeks after blooming.
- Most of the litchi flowers up to the stage of 3 weeks were dropped out due to improper pollination and fertilization.

- In the absence of pollination or improper pollination, the ovary abscises and falls.
- It is assumed that pollination supplies the necessary stimulus for the development of ovary. The stimulus is in the form of auxin.

### **Embryo abortion**

- Shriveling and blackening of the ovule were found in litchi dropped fruit during fourth week of fruit set.
- Generally, degeneration of the ovule or embryo abortion, which hinders normal fruit development, seems to play an important role in induction of the abscission process at early stages of fruit development.

### **Insect pests**

- Seed and fruit borer (*Conopomorpha* spp.) is the major constraints in litchi production. It has been seen that infestation of fruit and seed borer suddenly increases during fifth week after fruit set and causes heavy fruit drop.

### **Abscission layer**

- At the time of maturity fruit drop increases and embryo abortion is totally reduced. As the fruit proceeds towards maturity, the temperature rises and consequently as a result of abscission layer formation the fruit drops. Also, at maturity seed become fully matured (brown colour) and there is rise in abscissic acid (ABA) which is diverted to the pedicle and causes abscission.

### **Prevention Strategies for Fruit Drop in Litchi**

- Optimum supply of water, sunlight, recommended dose of fertilizers and planting the orchard in slightly acidic soils discourage early fruit drop.
- Early detection and management of disease or pests (check with your local nursery to find out what sprays are best for your fruit tree).

- Fruit bagging is another strategy to prevent fruit drop. Netting, keeps birds off trees but not insects, however, bagging the fruit protects it from both. To bag a litchi tree, use any kind of paper bag. Place the bags around individual panicles about six weeks after the tree has fully bloomed (the fruits will be about  $\frac{3}{4}$  of an inch to 2 cm long). Secure the bag by simply stapling or tying it around the stem.
- Two foliar spray of 0.2% Boron for ensuring better pollen germination, fruit growth and development and for enhancement of fruit retention.
- Two foliar applications of Planofix @ 4ml per 5 litres of water may be done at an interval of 15 days when fruits attain peanut size.
- The application of plant growth regulators like NAA at 20-30 ppm, GA, at 20-25 ppm, 2,4-D at 10-20 ppm are effective in minimizing fruit drop when sprayed on panicles, before the flower opening.
- The sprays of ZnSO<sub>4</sub> @ 0.2% and synthetic auxins like 3,5,6-TPA can reduce the fruit drop.

### **CONCLUSION**

Fruit drop is most common problem in litchi during initial period of fruit development (one month after fruit set) that continues till ripening. Improper pollination and fertilization trigger flower and fruit lets drop while embryo abortion promote fruit drop at pea stage. The attack of fruit borer starts right from fifth week to till ripening and abscission enhances drop of full mature fruit at the time of repining. Therefore, the knowledge of stages of fruit drop and associated factors is very important for the grower to effect control of fruit drop.

### **REFERENCES**

- Stern RA, Kigel J, Tomer E and Gazit S. 1995. 'Mauritius' lychee fruit development and reduced abscission after treatment

- with the auxin 2,4,5-TP. Journal of the American Society for Horticultural Science.; 120, 65-70.
- Mohyuddin AI and Mahmood R. 1993. Integrated control of mango pests in Pakistan. Acta Hort. 341:467-483.
- Stern RA and GazitS. 1997. Effect of 3, 5,6- trichloro-2-pyridyl-oxyacetic acid on fruitlet abscission and yield of 'Mauritius' litchi (*Litchi chinensis* Sonn.). Journal of Horticultural Science. 72: 659-663.