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# Unfruitfulness: Causes and Management

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Unfruitfulness is a major problem in many fruit crops and their varieties result in huge loss to growers and make fruit cultivation less profitable. Unfruitfulness in fruit crops refers to the state where the plant is not capable of flowering and bearing fruit. However, the causes of unfruitfulness can be broadly grouped into two categories: Internal and external factors. Fruits may be completely barren, fully self fruitful or partially self fruitful. Self fruitful varieties need no pollinizers like self unfruitful varieties. The causes leading to sterility include:

1) Impotence,
2) Incompatibility, and
3) Abortion of embryo.

## Impotence means when

- One or both the sex organs fail to develop adequately to the required stage so there is complete failure of the formation of flowers, or
- The abortiveness of the male and female organs.
- Other reason may be incompatibility.
- Yet another reason could be the abortiveness of the embryo.

## Sterility associated with internal functions may be related to

- Evolutionary tendencies due to the factors associated with the fundamental constitution of the protoplasm,
- Genetic influences, and
- Physiological reasons.

## Factors of unfruitfulness in fruit crops

### Internal Factors

A. Evolutionary Tendencies –
   1. Defective Flowers: Imperfect flowers, heterostyly and pollen impotency.
   2. Structural peculiarities
   3. Dichogamy
   4. Impotence of pollen
   5. Impotence from abortive flowers and seed from degeneration or aborted pistils or ovules

B. Genetic Influence -
   1. Sterility and unfruitfulness due to hybridity: Hybridity is responsible for seedlessness in some varieties. *E.g.* Peach-plum hybrid, Peach and sweet cherry, Pyronia (pear x

quince). Sedlessness in pineapple is considered to be due to hybrid nature of their ancestor similar in the case of banana.

2. Incompatibilty
    - Infertility
    - Reciprocal crosses

C. Physiological Influence –
    1. Slow growth of pollen tube
    2. Premature or delayed pollination
    3. Nutritional disorders

**External Factors**

A. Nutritive conditions
B. Soil type
C. Water supply: The drooping of flowers or partly developed fruits is more due to water imbalance.
D. Cultural practices
E. Season
F. Temperature: Fruit setting in male papaya plants under cool climate through the development of the pistils usually present in the male flowers.
G. Rains at the bloom: Rains affects fruit setting by affecting pollination, generation of pollen grain and even stamina fertilization.
H. Spraying: Sprays influence fruit setting by affecting pollinators and pollination.
I. Pests and diseases
J. Wind
K. Light: Low light intensities cause unfruitfulness in sour cherries, strawberry, delicious apple.
L. Age and vigour of the plant: In apple, old and vigorous trees set fruits better than young and vigorous ones.

## Management

1. Proper nutrition
2. Control of frost damage
3. Application of plant growth regulators
4. Use of suitable rootstocks
5. Control of pollination
6. Balancing fruiting and vegetative growth by pruning

## Conclusion

Unfruitfulness can be due to lack of balance between growth and fruiting and lack of flowering and poor fruit-set as the result of various internal and external factors in different fruits and their cultivars. So, it is necessary to make necessary corrective measures which should begin from planning level and extends to an established orchard. The crop/variety should be chosen on the basis of climate and edaphic factors. Different varieties should be cultivated and the introduction of effective pollinizer varieties and pollinator (Honey bee) is necessary. Thinning and crop regulation should be practiced and regular bearing varieties should be planted. Basically, planning should be done, so that the future will be problem free, and then, adoption of correct package of practices should be followed.