

# 3G Cutting: An Advanced Technology Increasing Crop Production and Maximizing Farmer Profits

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## Abstract

Low fruit set poses a significant challenge for cucurbit growers, resulting in the development of small, underdeveloped fruits and ultimately weakening the mother plant. This issue is primarily caused by the reduction in beneficial insects and pollinators, driven by the excessive use of chemical pesticides and fertilizers. 3G cutting, a valuable inter-cultural practice involving the trimming of first and second-generation branches, has proven highly effective in enhancing fruit production in various crops, including cucurbits like bottle gourd, cucumber, pumpkin, etc. and solanaceous crops like tomato, eggplant, and chili. This technique promotes increased production by stimulating the development of a higher number of female flowers within the plant. Typically, first and second-generation (1G and 2G) branches exhibit a significantly higher proportion of male flowers compared to female flowers, with an approximate ratio of 14:1 in cucurbits. However, this ratio dramatically shifts in third-generation (3G) branches, where female flowers outnumber male flowers by a ratio of 2:1. It's crucial to remember that while fruits develop exclusively from female flowers, male flowers are indispensable for pollination. However, 3G cutting offers a scientifically sound approach for farmers to optimize fruit yield by maximizing the number of female flowers on the plant.

**Key Words:** Cucurbits, 3G cutting, Female flower.

## Introduction

To achieve optimal plant growth, development, and productivity, various cultural practices must be employed. Among these, 3G cutting has been demonstrated to significantly improve the plant's yield potential. As the word 3G in case of a network increases our internet speed likewise there is a technique called 3G cutting plants that increases our plant production in geometric ratio. Farmers can increase production drastically and exponentially if they know the exact technique of 3G cutting. 3G cutting can be simply described as the scientific process applied in plants to obtain greater production by increasing the number of female flowers through the process of pruning and trimming the tip of first and second-generation branches.

## Principle of 3G Cutting

Fruits develop exclusively from female flowers. An increase in the number of female flowers on a plant can significantly enhance fruit yield, while male flowers are essential for pollination. 3G



cutting is a technique designed to promote the development of more pistillate (female) flowers. After seed germination, only one primary branch, known as the first-generation branch (1G), continues to grow. If this initial branch develops a second branch, it is classified as a second-generation branch (2G). When this second-generation branch produces another branch, it is referred to as the third-generation branch (3G). Research indicates that the majority of flowers on the first and second-generation branches are predominantly male, this imbalance creates the impression of abundant flowering but results in minimal fruit production. In contrast, most female flowers are found on third-generation branches. 3G cutting restricts the growth of first and second-generation branches, promoting the development of third-generation branches. Proper pollination under these conditions enhances fruit set per branch and per plant, ultimately leading to higher overall yield and productivity. 3G cutting has been shown to effectively increase in female flowers and often achieving a more balanced ratio of male to female flowers. This ultimately translates to significant increases in crop production. For example, in the cucurbitaceous family, the male-to-female flower ratio can be dramatically altered by 3G cutting. Before the technique, the ratio might be as high as 14 male flowers to 1 female flower. However, after 3G cutting, the ratio can be reversed, with 1 male flower for every 2 female flowers. (Chaurasiya *et al.*, 2020)

### **Objectives of 3G Cutting**

The primary objective of 3G cutting is to maintain an appropriate balance between male and female flowers on the plant, ensuring optimal yield and significantly boosting crop production. (Singh *et al.*, 2021)

### **Steps of 3G Cutting**

3G cutting is a crucial inter-cultural practice for cucurbit cultivation, though its seemingly simple nature belies the sensitivity required for its successful implementation in the field

- The first step is to allow the main stem, which emerges from the seed, to grow unimpeded to a height of 6-7 feet with proper care and maintenance.
- Once the main branch reaches about 7-8 feet (gourds) or 5-6 feet (cucumbers & pumpkins), trim off the top by 4-5 inches.
- When the tip of the main branch is removed, it encourages the growth of side branches. This happens because the plant's energy, in the form of sugars produced through photosynthesis, is now channeled towards the development of these side branches
- Following the same procedure as for the primary branch, the apical portion of the secondary branch should be cut off when it reaches a height of 2-3 feet. This will induce the development of tertiary branches.



- The third-generation (tertiary) branches should be allowed to develop naturally while receiving the highest level of care and nourishment. This will likely promote a substantial increase in the number of female flowers, leading to a higher fruit yield. (Verma *et al.*, 2023)

### Drawbacks of 3G Cutting

While the 3G cutting method offers numerous benefits, it is important to acknowledge a few potential drawbacks, as understanding them is crucial for successful implementation.

- Before applying 3G cutting, farmers must acquire proper technical knowledge of the process. Without this, improper execution could damage the crop, leading to more harm than benefit. Therefore, it is essential to thoroughly learn the correct technique.
- After trimming the plant tips, the vegetative phase tends to extend, which can delay flowering and fruit formation.
- Additionally, pruning and trimming of the branches may increase the risk of disease and pest attacks, particularly fungal infections. Proper care, prevention, and timely management practices are necessary to mitigate these risks.

### Special Attention Should be Given to the following Point

1. Before the plant reaches the 5-leaf stage, do not allow any side branches to grow. If side branches appear, pinch them off to promote a stronger base.
2. Ensure adequate soil moisture during the 3G cutting process.
3. It is essential to keep the plant healthy and not overly bushy by minimizing the number of branches. This allows for better sunlight penetration and airflow, which are crucial for maintaining plant health, promoting vegetative growth after 3G cutting, and preventing fungal infections.
4. Even after adopting this method, fruit production may be reduced due to poor pollination caused by a lack of natural pollinators. To achieve better results, consider using hand pollination or planting flowering plants near the main crop to attract pollinators like bees and butterflies. (Chaurasiya *et al.*, 2020)

### Conclusion

The 3G cutting method holds tremendous potential, and farmers should be encouraged to adopt it to enhance both their production and income. This simple technique can significantly increase crop yields without relying on chemical fertilizers.

### References

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