Review Article

3G Cutting an Innovative Tools in Cucurbitaceous Crops to Boost the Production and Doubling the Income of Small Farmer in a Per Unit Area.

Abstract

3G cutting is a most popular and successful inter-culture operation in cucurbits plants like; bottle gourd,cucumber, pumpkin, sponge gourd, bitter gourd, etc. as well as in plants like tomato, eggplant, chilli, lady finger for a small patch of land. Low fruit set is a growing issue in cucurbits, and when it does, extremely small-sized fruits develop and degrade on the mother plant.This is the main problem that farmers are currently facing.This problem arises due to rapid decrease in beneficial insects and other pollinators as a result of haphazard use of foliar fertilizer and chemical pesticides. 3G cutting is a scientific process to get higher production from plants by increasing numbers of female flowers in the plant by practices like trimming and pruning of 1st and 2nd generation branches. Generally, 1G branches and 2G branches have more no. of male flowers than female (approximatelyin the ratio of 14:1) whereas this ratio goes up to 1:2 in 3G branches. We are all known that fruits grow from female flowers.While one male flower can pollinate several female flowers, this does not imply that there is no need for male flowers. Male flowers are necessary for pollination. Thus, 3G cutting is the finest scientific practice for farmers to maximize the quantity of female flowers and fruit yield.

Comment [A1]: How can you explain this ??

Keyword: Cucurbits, 3G Cutting, Female flower and Fruit Yield

Introduction

Different multicultural operations must be used to acquire the best results from plants in terms of growth, development, and productivity.One of them, 3G cutting, has been shown to directly enhance the plant's output capabilities.Even in a tiny plot of land, 3G cutting is a revolutionary method for enhancing your yield per plant, especially for cucurbits like cucumber, sponge gourd, bottle gourd, bitter gourd, snake gourd, pumpkin, and ridge gourd.

Sep 3, 2021 if you know what 1g, 2g, 3g, 4g, and 5g mean, figuring out the advantages of a cell phone's underlying technology is easy. The terms 1g and 2g denote the first and second generations, respectively, of wireless cellular technology. As you can anticipate, later generations are quicker and include enhanced or new functions. On the basis of the cell phone generating system, this technology is also used in cucurbitaceous and other vegetable crops.

The 3G system outperformed to the others in terms of cutting-edge technology generation.The use of 3G cutting in agriculture can result in the highest productivity possible per unit of land area.To promote the growth of the third (tertiary) branch in any crop, excluding the first and second generation branches, is referred to as 3G. Only one main branch, designated as

the first, continues to grow after the seed germination (First generation). If this initial branch produces a second branch, it is considered a second branch (Second generation). Further, it is referred to as third generation when this second generation branch produces another branch (Third generation).

According to the research studies, the bulk of the flowers on the first and second generation branches are male rather than female, resulting in a relatively modest ratio of 14:1 (Male: Female) flowers in the branch, giving us the misleading impression of extensive flowering but with very little fruiting.Consequently, the majority of the female flowers are located on 3rd generation stems.Better fruit set per branch and then per plant, as a result of appropriate pollination under these circumstances, ultimately results in higher production/yield per branch or per plant. The preservation of the third generation branch should be prioritized over other branches.

Why is 3G cutting needed?

The beneficial insects necessary for pollination are rapidly disappearing as a result of the careless application of chemical pesticides. As a result, Cucurbitaceae crops experience very poor pollination.Cucurbit includes several gourds like cucumber, ridge gourd, ash gourd, bitter gourd, bottle gourd, bitter gourd, and pumpkin.Low fruit set is a growing problem, and when it does occur, extremely little fruits emerge that degrade in the mother plant.Most farmers around the world, including those in Nepal, are affected by this problem.To increase yield when growing cucurbits, 3G cutting is one of the most crucial cross-cultural practices to be used. When cutting 3G, the following actions should be followed.With the right maintenance and attention, the main branch that grows from the sown seed should be allowed to flourish. Hermaphrodite plants, or those that belong to the Cucurbitaceae family, produce both male and female flowers.The quantitative relationship between male and female flowers determines how many fruits are produced. The fruit set that progressively produces more will increase as the number of female flowers increases.A quick and easy process known as 3G cutting, which can substantially boost your output, can be used to maintain the quantitative relationship of male to female flowers.

Comment [A2]: Very long Introduction! Please give an essential information!

Purposes of 3G Cutting

Maintaining the right quantitative relationship between male and female flowers in the plant is the primary goal of 3G cutting, which also exponentially increases crop production.

Principle of 3G Cutting

We are well aware that pistillate flowers turn into fruit. The formation of fruits is therefore ultimately dependent on pistillate flowers, albeit male flowers are also necessary.In other words, if a plant produces more pistillate blooms, we will also produce more fruits.In order to increase the quantity of pistillate flowers on a plant, 3G cutting is used. In most crops, the

proportion of male and female flowers is generally unbalanced. Staminate flowers will therefore be more numerous than female flowers.

What is 3G Cutting?

Third generation cutting in any crops is simply referred to as 3G. When first (primary) and second (secondary) generation branches are removed from a plant by cutting or pinching, the third generation (tertiary) branches are encouraged to grow. One major branch, known as the first (first) generation branch, is the only one to continue growing after seed germination. The primary branch generates second generation branches, which are further branches.Any second generation branch that develops into another branch is known as a third generation branch.

According to research, the Cucurbitaceae family's first and second generation branches generate roughly 14:1 more male than female flowers on average (male: female).The result is a severely poor fruit set while giving growers the mistaken impression that major flowering is occurring.On the other hand, third generation branches typically yield a wider variety of female flowers than male blooms. In order to increase output, more female flowers must be present and must be properly pollinated in order to set more fruits per branch and plant.

Steps of 3G Cutting:

- 3G cutting is very important inter-culture to growing of cucurbits & very slight influence in some solanaceous which appear easy but are sensitive in the field.

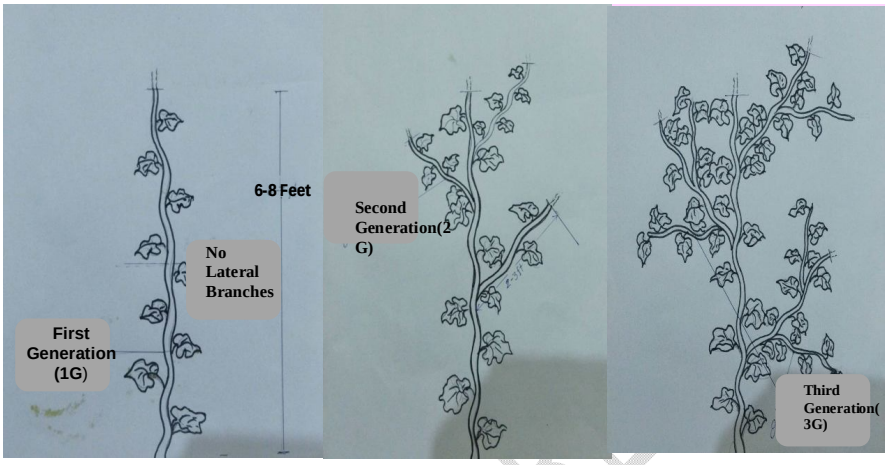
- Firstly, the main branch growing from the sown seed must be allowed to grow properly up to the height 6-7 feet with careful care and maintenance.

- After the main branch reached at the height about 7-8 feet (gourds) or 5-6 feet (cucumber & pumpkin), 4-5 inches should be removed from the plant's growing tip.

- It promote the formation of secondary branches after the apical portion is removed.This is because of translocation of photosynthesized food to the secondary branch.

- After the secondary generation branch has reached a height of 2-3 feet, the upper apical portion of this branch should also be cut off, much like the previous one. This will now encourage the development of tertiary or third generation branch.

- The third (tertiary) generation branches should be allowed to grow and bear fruit with the best fertilization and care possible. This plant may lead to heavily blossoming with female flowers.



1G Cutting **2G Cutting** **3G Cutting**

Advantages of 3G Cutting

A recently developed technique in agriculture is called 3g cutting. Thus, these fantastic benefits have been discovered by numerous researchers that are working on this technique.

- You can enhance overall crop yield very simply without using chemical fertilizers and the overall crop production can be raised by using this strategy alone.
- If you're a farmer who loves to practice of organic farming then 3g cutting technique is very useful for you.
- A farmer having a small land holding who can also enhance the crop production. Many small land holding farmers are prevalent in developing nations.
- Therefore, they are unable to grow crops over a vast area to make a profit. Therefore, they can use this strategy in the crops that are growing in the same field to get higher yield.
- Increase overall production of farmer to adopt this technology and will also increase the net profit of farmer. It can also lead to better quality livelihood of rural farmers.
- Although, many urban farmers have been also utilizing this strategy as well to increase production and profit from small landholdings.
- As a result, you can increase total yield without investing extra money, except expertlabours(in case of large farms).
- This method is used in plants to enhance fruit size and quality.
- After using 3g cutting, many farmers observed better fruit size and quality.

Disadvantages of 3G Cutting

- It should go without saying that there are a few drawbacks after so many benefits and getting to know them is crucial.
- Before applying 3G cutting, the farmer must have technical knowledge about this process.
- Without technical knowledge a person can also damage the crop. Hence,it may cause more harm than benefit. Thus, learning the complete process becomes very necessary.
- At the time of flowering and fruit formation of plant can be delayed as the vegetative growth occurs rapidly and also more number of branches are produced. So, you'll have to wait a little before seeing the incredible outcome.
- This is not easy to practice of 3g cutting in a large farm. The work may be challenging and will require proper attention and time.Hence, the farmers with large land holdings can't practice this technique very easily. If labour will be hired then too, they should be skilled enough to carry out the process correctly.
- Due to pruning and trimming of branches of crop, there may be chance of disease and pest attack. Mainly fungal infection can occurs. So, proper care and prevention should be taken.

Unique Focus of 3G cutting

- ✓ Lower 4-5 leaves of plant do not develop (bear) any branches i.e. secondary branches.
- ✓ Cut the apical plant part to getsecond-generation (2G) branches at 12 leaves stage i.e. just above the 12th leaf.
- ✓ Apical portion of plant (main branch) must be cut off when plant height reaches at 7-8 feet tall.
- ✓ Maintain appropriate soil moisture beforestart cutting tips of the branches. Do not keep dry soil during the process and also plant remains healthy and not bushy.
- ✓ To promote vegetative growth after 3G cutting, the plant requires enough sunlight. Furthermore, it assists in reducing the growth of fungi.

3g Cutting in Cucumber

- Maintain healthy growth of the plant. Allow it to reach a height of 5 to 6 feet.

- Don't prune out the growth of any side branches below the height of first 5 leaves in the plant. After attaining this height, you can permit side branches to grow.

- When plant attain 5 to 6 feet height then pinch out the growing tip of main branch.

- After this cutting 1st generation branch will promote to bear of many 2G branches.

- After that 2g branch grow up to 1 to 2 feet long when it reaches desired length then cut the tip of 2 generation branches.

- After a few days, you'll start to see a lot more 3G branches emerging. They will produce abundance female flowers and hence, will result in increased yield.

Figure 1: Made 1,2,3GCutting

Figure 2&3: Fruiting after 3G Cutting

Essential 3G Cutting information

A technique known as "3G cutting" is carefully pruning and clipping branches to increase the number of 3G branches bearing female flowers. 3g cutting balances the ratio of male to female flowers on the plant, increasing production. This helps in the plant's ability to produce more fruit, which increases yield.

Therefore, even after you use this method, there may be reduced fruit production because of poor pollination that occurs since there aren't enough natural pollinators. For better results, use hand pollination in this situation, or grow particular flowering plants near the primary plant that attract pollinators like bees and butterflies.

Comment [A3]: Where is the material and method?

Conclusion

As a conclusion, we now know that 3G cutting in plants has enormous potential. Farmers should be aware of this method to maximize their production and income. This technology can increase overall crop production very easily. Using this technique simply, can help to boost overall crop production without the utilization of chemical fertilizers. Unfortunately, if we don't know how to do it, then plant can die and lose all of its production.

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Comment [A4]: Where is the data analysis?