

On the key techniques of planting and managing wax gourd

Boli Ma

Shandong Zhongtai Green Ecological Agriculture Technology, Weifang 262700, China; mabl@sina.com

CITATION

Ma B. On the key techniques of planting and managing wax gourd. *Probe - Plant & Animal Sciences*. 2021; 3(1): 1359.
<https://doi.org/10.18686/ppas.v3i1.1359>

ARTICLE INFO

Received: 21 July 2021
Accepted: 28 September 2021
Available online: 14 October 2021

COPYRIGHT

Copyright © 2021 by author(s).
Probe - Plant & Animal Sciences is published by Universe Scientific Publishing. This work is licensed under the Creative Commons Attribution (CC BY) license.
<https://creativecommons.org/licenses/by/4.0/>

Abstract: As a cucurbitaceae plant, wax gourd is an annual vine, mainly produced in tropical Southeast Asia and in southern China. With the continuous development of science, technology and economy, winter pumpkins have so been planted in various parts of China. Because wax gourd is rich in nutrition and has specific functions in healing swelling, heat compensation, diuretic, etc., people like wax gourd more and the demand for it is increasing.

Keywords: wax gourd; planting; management techniques

There are many fruits of wax gourd. It can not only be used directly, but also its peel and seeds can be used as medicine. Compared with other vine plants, the roots of wax gourd have more roots; the stems are energy-saving and adventitious; the absorption capacity is strong, the absorption area is relatively wide, and the adaptability of wax gourd to soil is relatively wide. Therefore, it is loved by farmers and is planted in a large area.

1. Soil farming

The roots of wax gourd penetrate into the soil, and the growth cycle is very long, so in order to achieve high yield, there must be enough fertilizer water to grow well, and the soil of wax gourd must be ploughed early and exposed to the sun, which will accelerate the soil and form loose soil phenomenon.

At the same time, the growers should apply enough fertilizer according to the soil conditions, each part of the soil should use 2500~3000 kg of livestock manure, and calcium superphosphate should be used as the basic fertilizer. In order to better carry out irrigation and drainage in the early rainy season and lay a good foundation for the high-quality growth of wax gourd.

2. Sowing scientifically

When sowing seeds, the planter should choose the seeds of wax gourd with full grains, which can be soaked in cold water for 24 h or 50 °C water for 10 minutes, stirred at intervals, and then left naturally for about 10 hours. When the placing time is up, the planter should fish out the seeds, wrap them in a wet cloth, put them in a tile basin, and cover the tile basin with a warm cloth to keep warm. When everything is ready, place them in an environment with a temperature of 25~30 °C for germination acceleration. The planter should wash the seeds with warm water every morning and every night when the seeds are germinated, and the seeds can be sown after five to six days. The sowing method of wax gourd is the same as that of cucumber [1]. When wax gourd is in seedling stage, the temperature of sowing bed should be kept at 25~30 °C. After 7~8 days, wax gourd seedlings will grow.

In seedling stage, there should be enough fertilizer, which can be watered once

a day, so as to transplant its true leaves to reach two true leaves, and then put them into a nutrition pot. When four to five true leaves appear, the planting work can be carried out.

3. Close planting rationally

The area unit of wax gourd is closely related to the number of plants planted and the weight of single fruit. Scientific close planting can increase the production of wax gourd. Therefore, farmers should reasonably carry out close planting work according to the actual situation, and reasonably arrange the management among varieties, seasonal environment and cultivation methods in order to achieve the goal of high yield [2]. If there is a situation of climbing the ground, it should be densely planted in autumn; when planting small wax gourd, it needs to be densely planted; although the fruit of large wax gourd is large, its quantity is small, so it needs close planting.

4. Loosening soil

After the fixed value work is completed, the planter should carry out intertillage and soil loosening work for seven to ten days, and start intertillage in time before fertilization or after rain to avoid soil hardening. At the same time, the wax gourd festival is easy to grow but has adventitious roots. When climbing the ground, the wax gourd vine grows to about 34~65 cm, the vegetables should be harvested as soon as possible, and the branches and vines should be deeply ploughed once, so that the branches and vines are evenly distributed in the fur, and then squeezed, and a piece of soil is squeezed every three to four parts [3], thus producing unstable roots of grape knots, and then improving its absorption capacity to avoid falling flowers and fruits.

After cultivation, soil is cultivated and tendrils are pressed. After planting, soil is loosened by cultivation for 7~10 days, and before fertilization or after cultivation, the soil is prevented from solidifying. Adventitious roots are easy to grow on the winter melon festival. When the vines grow to 33~66 cm, the vines are pressed 2~3 times later, and a clod is pressed every 3~4 knots to promote the adventitious roots of the vines to increase the ability to absorb fertilizer and water, and prevent the vines from being blown away by the wind, thus causing flowers and fruits to fall. Hanging the vines and building the whole vines. Winter melon is generally pruned by a single vine, leaving only the main vines, and removing the

side vines in time. When the vines are more than 66 cm long, each plant will be inserted with a bamboo pole. First, the vines will be wound around the poles, and the clods will be pressed on the vines to promote the growth of adventitious roots and increase the ability to absorb fertilizer and water [4]. After that, the upper part of the vines will be led to the shelves for tying, and the vines will be tied once every 30 cm. Small wax gourd, early maturity, early and many fruits, 2~4 melons per plant; Large late-maturing species, with 1~2 melons per plant, bear big melons.

5. Fertilizer management

Winter melon needs a lot of water, especially in the early and middle stages of fruiting. Therefore, it is necessary for farmers to add plant fertilizer once or twice when winter melon seedlings grow, and properly carry out plant breeding to develop root system. When the vine length reaches about 34–51 cm, it is necessary to topdress about 500–1000 kg of manure once, and apply a small amount of fertilizer before flowering to avoid the phenomenon of falling fruits and vegetables. When the first melon weighs 0.5 kg, a large amount of fertilizer is needed for human excretion. 1500–2000 kg of human manure is applied to each acre. After the second melon is planted, it is necessary to apply heavy fertilizer once, and 2000–2500 kg of human manure is applied to each acre. Or 15~20 kg of chemical fertilizer should be applied until most of the autumn melons are born, so that the hasty chemical melon fertilizer can be filled, and the wax gourd can achieve a good yield increase effect.

6. Pest control

6.1. Agricultural control

Firstly, practice crop rotation. It is suggested to tip over with rice, avoid continuous cultivation, avoid continuous cropping or interplanting with solanaceous fruits, and should be intercropped with non-melon crops.

Secondly, clean the countryside. To reduce the spread and accumulation of bacteria, it is necessary to remove sick plants, melons and other sick residues in time, burn them intensively or bury them deeply, and reduce the transmission sources of infection. In the field, plants should not be destroyed as much as possible to avoid bacteria infecting the wounds on melons, such as weeding, fertilizing and picking vines.

Thirdly, it is necessary to select excellent disease-resistant and disease-tolerant varieties, and choose Xingshu Heiguan, Baixing series varieties and other domestic excellent varieties.

Fourthly, popularize the technology of soil testing and formula fertilization. Scientific and rational formula fertilization, increase the use of organic fertilizer and phosphorus and potassium fertilizer.

Fifthly, cultivate strong seedlings. Popularize planting techniques, implement disease-free soil plants, plant strong plants and improve disease resistance. Popularize nutrition tray or nutrition cup to raise seedlings, and plant them when the seedling age is 2~3 true leaves.

Sixthly, enough space for planting. It is advisable to plant 700~850 plants every 667 m², and pay attention to timely removal of excessive tendrils, flowers and young fruits, so as to facilitate ventilation and daylighting and reduce field humidity.

Seventhly, covering with plastic film on high ridges and erecting three-dimensional cultivation.

It is suggested to choose sandy soil with high altitude, good drainage, loose and fertile soil and easy handling and transportation. Deep turning, ditching and draining, baking and drying frozen blanks years ago. The use of high-altitude plastic film can resist the invasion of rain and cold, making plants more resistant, which can be

widely used by farmers who can afford it, and can effectively prevent the spread of bacteria in the field. Implement three-dimensional scaffolding cultivation, reduce the humidity in the field and reduce the occurrence of diseases. Ridge-forming and furrow-making according to the width of 2 m (including furrow), with the width of 40–45 cm and the depth of 25–30 cm; If the plot exceeds 30 m, open the waist ditch, which is 45~50 cm wide and 35~40 cm deep; Surrounded by ditches with a width of 45~50 cm and a depth of 55~60 cm, the three ditches are connected and the drainage is smooth; covering with plastic film with width of 2 m. When winter melon is full, it can avoid direct contact with soil, which is helpful for ventilation and reduce the occurrence of diseases.

Eighthly, manage water scientifically. At proper temperature, soil moisture is the decisive factor leading to spike disease in winter. When transplanting, enough water must be poured after transplanting to protect plant

species or when plants take root, transplanting water can promote root system to penetrate into soil. When you put melons on the shelf, you need more water to keep the soil dry, and keep the melons dry after they are wet. Under high temperature in summer, irrigation after irrigation is strictly prohibited, watering time must be available in the morning and evening, fur irrigation must be carried out for a long time, irrigation before raining or drying for a long time is strictly prohibited, and water in border ditch should be drained in time after heavy rain.

6.2. Medicine control

Firstly, soil disinfection in seedbeds and greenhouses. One kilometer of 45% sodium bisulfide per square meter of seedbed, 15~20 kg of fine soil, mix well, and then sprinkle for disinfection; When planting in greenhouse soil, use 800 times solution of 45% sodium bisulfide to drench melon holes as root fixing water, or use 1 000 times solution of 45% sodium bisulfide to spray on the surface of soil after land preparation and before transplanting; Direct seeding planting, applying 3~5 g of 45% sodium bisulfide raw powder directly to each hole, covering fine soil about 0.5cm thick, and then covering the soil with seed buds.

Secondly, seed disinfection. The seeds of wax gourd can be soaked in 800 times solution of 72.2% Pulike aqua or 25% Yishuangling wettable powder for 30min. Then, the seeds were soaked for 3~6 h at normal temperature, washed with clear water and germinated.

Thirdly, timely medication. Epidemics rarely occur in transplantation stage, and occur in large quantities from plant formation to flowering stage under high temperature and high humidity, and pathogens spread rapidly. Therefore, protective agents such as 600-800 times solution of 53% Jinlei Domil Granule or 800-1,000 times solution of 70% Ethyl-aluminum-manganese-zinc are generally used for spraying from seedling to adult stage. At the early stage of the disease, 40% aluminum phosphate wettable powder 250 times, 77% kocide particulate wettable powder 500 times, 64% anti-virus alum wettable powder 500 times, 72% Kekangling wettable powder 600 times, 58% metalaxyl manganese zinc wettable powder 250 times, 77% kocide particulate wettable powder 500 times and 64% anti-virus alum wettable powder 500 times can be used alternately. Spray once

every 5~7d, and spray continuously for 2~4 times. When removing too many tendrils, flowers or young fruits, or causing plant wounds after heavy rain and strong wind, the above-mentioned agents should be sprayed immediately for protection.

7. Harvest and storage

When the early winter melon reaches the normal edible state, it can be harvested. Usually, the value of melon is 40-50 days. Farmers pick early melons, which may make the vines grow and bear fruit. Each plant can harvest about 4-5 melons and fruits, and the harvest will end at the beginning of autumn. When planting premature ripe wax gourd, it is necessary to harvest it in the past when it matures, and it will bear fruit in about 50~60 days after planting. It is necessary to harvest wax gourd in early autumn, and it must be cut with scissors when harvesting, otherwise it will damage the vines. In order to get more income from planting, you can also store it to prolong the delivery time, but the stored wax gourd must be completely mature, and the processing

must not collide with each other, or throw it over, otherwise the storage will not last long and there will be no good economic benefits.

8. Conclusions

To sum up, famers of wax gourd should explore effective planting methods constantly, learn the latest planting management techniques, and carry out planting more scientifically to increase the yield and get better benefits.

Conflict of interest: The authors declare no conflict of interest.

References

1. Meng X. Cultivation techniques of high yield and high efficiency with mulch of winter melon (Chinese). *Anhui Agricultural Science Bulletin*. 2019; 26(11): 54, 105.
2. Lu Z, Lu Z. Cultivation techniques for wax gourd (Chinese). *Shanghai Vegetables*. 2019; (1): 27-30.
3. Wang Y, Yang B. Key points of wax gourd planting management techniques (Chinese). *Jilin Vegetables*. 2018; (6): 27.
4. Gao J. Key points of winter melon planting management (Chinese). *Shandong Science and Technology News*. 2018; 6: 2.