

# Processing Cucumber "Leyi 1" and High - Yield Propagation Seed Technology

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**Abstract:** "Leyi 1" was the Cucumber, high yield, strong resistance, and suitable for processing into the old salting melons crisp. It was bred by cooperating between Qinzhou Institute of Agricultural Sciences and Guangxi Dexi Agricultural E-Commerce Co. Ltd by selecting of the excellent mutation plant through the multi-generation cultivation and observation of local cucumber mutants. In 2016, it passed the review of New vegetable variety Approval Committee in Guangxi, and the certification number was Guishen Vegetable 2016003. "Leyi 1" is a new cucumber again developed by Qinzhou Vegetable Station, after the successful breeding of processing cucumber "Qinyu No.1". "Leyi 1" is the cucumber of infinite growth, climbing herb, strong growth potential, high-yield and easy management. Its stems are thick, quadrangular, deeper green, Large leaf, and Medium side vine. The whole growth period of "Leyi 1" is about 120 days in spring cultivation, collected 55~60 days after sowing (about 110 days, and collected 40~45 days after sowing in summer and autumn). "Leyi 1" had succeeded in enriching the raw material melon resources of the traditional cucumber of melons crisp processing industry in Qinzhou. Now, it had been popularized in Qinzhou, and we had explored a set of "Leyi 1" High yield seeding production techniques, In order to further expanding the area of fieldstone.

**Keywords:** "Leyi 1" Cucumber Seed Technology, Seed Propagation, High Yield Cultivation, Harvesting of Seed Melon

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## 1. Characteristics

"Leyi 1" is the cucumber of infinite growth, climbing herb, strong growth potential, high-yield and easy management [1]. Its stems are thick, quadrangular, deeper green, Large leaf, and Medium side vine. The whole growth period of "Leyi 1" is about 120 days in spring cultivation, collected 55~60 days after sowing (about 110 days, and collected 40~45 days after sowing in summer and autumn). The yield of seed melon mainly comes from the lower flower of main vine, and the first female flower was at 6 or 7 knot.

"Leyi 1" female flower rate was about 40% (the originals are about 10%), higher setting ratio of fruits. "Leyi 1" young melon was green, the maturation yellow, oval, smooth, the meat was thicker, and the cavity smaller. the single melon of "Leyi 1" had a weight of 400~600g, and a melon perimeter of 18~24 cm, and a transverse diameter of 5.0-7.5 cm, a meat thickness of 1.1-1.5 cm, and had a good commodity rate. Under different cultivation conditions, the yield of "Leyi 1" was 3, 000~5, 000 kg/667m<sup>2</sup>, with Strong resistance to

disease and adversity Besides.

"Leyi 1" is brittle and hard in skin, suitable for processing into the old salting melons crisp, and the pickled cucumber tasted crispy and has a traditional flavor.

## 2. High - Yield Technology for Producing Seeds

### 2.1. Breeding Time

"Leyi 1" could be planted in every season in Qinzhou, but it was better to breed in autumn and winter. Generally, it was selected from late September to late October which produced seeds quality were better with full and high germination rate.

### 2.2. Sowing

#### 2.2.1. Seed Quality

Seed purity  $\geq$  95%, seed cleanliness  $\geq$  98%, germination rate  $\geq$  90%, seed moisture  $\leq$  8%.

### 2.2.2. *Seeds Quantity*

It was suggested that the optimum density of "Leyi1" would be in the range of from 3000 to 3500 stem per 667m<sup>2</sup>, and 3500 seeds (about 100 g) need to be sown.

### 2.2.3. *Seeds Treatment and Germination*

The seeds allowed soaked in hot water for 15min( about 55°C) with stirring, then added cold water, reduce the temperature to normal(about 35~37°C), soaked for 2 ~ 4h, then washed, Drained, wrapped with moist cloth for germination under 28 ~ 30°C.

### 2.2.4. *Selecting Seedling Plate and Disinfection*

The seedling plate size was 570mm × 280mm × 45mm (length × width × height), with 54 holes, were immersed in a 1000-fold potassium permanganate solution for 10 min.

### 2.2.5. *The Matrix Configuration*

The seedling substrate was made of high quality peat, vermiculite and perlite as the mixed matrix, according to the volume ratio of 3:1:1, added GB compound fertilizer 1kg~2kg /kg; organic matter 2.5% ~ 3%; available phosphorus 20 ~ 40 mg / kg; available potassium 100 ~ 140 mg / kg; alkaline nitrogen 120 ~ 150 mg / kg; carbendazim 600 times solution. The seedling substrate was loose, fertilizer, and better retention capacity of The fertilizer and water, with the porosity 60-70% and the water content 50%-60%; pH 5.5~7.5

## 2.3. *Grow Seedlings*

### 2.3.1. *Nursery Equipment*

It was nursery that seedling facilities, equipment of Greenhouses, seedbeds, plugs, yellow plates, sprinkler systems, shade nets, etc.

### 2.3.2. *Pay Attention to Cooling and Ventilation*

The temperature in mid-September is still relatively high In Qin Zhou. Therefore, it was recommended to use the shade net and pay attention to ventilation, avoiding high temperature burns.

### 2.3.3. *Prevention and Control of Diseases and Pests During Seedling*

It was paid attention to spraying to prevent damping-off and wilt disease after the emergence of the seedlings. General used 25% benzimidazole 44 wettable powder 400 times liquid and 80% methyl thiophanate WP 500 times liquid Spray, 1 time apart from 7~ 8 days, totals of 2.

### 2.3.4. *Watering and Fertilizer Management During Seedling*

In order to the strong seedlings, the water management was mainly controlled and not poured after the seedling had come out. The water supply was mainly watering or spraying. Using 0.2% compound fertilizer watering or 0.2% KH<sub>2</sub>PO<sub>4</sub> solution sprayed 1 time when the seedlings was 1~ 2 true leaves.

## 2.4. *Acclimatization*

Greenhouse film was gradually carried out for 3-4 days of hardening, when the seedlings had 3-4 true leaves, and could be transplanted to the field after applying 0.2% of compound fertilizer solution for 1 time.

## 2.5. *Planting*

### 2.5.1. *Ridging and Using Organic Fertilizer*

The organic fertilizer was mixed per 667m<sup>2</sup> total with decomposed farmyard manure 2000kg, calcium magnesium phosphate 50kg, zinc and boron 0.5kg, together composted for 15~20 days. The ridge width was 1 m, the ditch width between ridges was 0.5m, depth 0.3m, and the fertilization ditch with a depth of 0.15m in the middle of the ridge surface, was applied to The organic fertilizer 50kg/667m<sup>2</sup> (the ratio of NPK is 15:15:15 ), and fully mixed, then covered the fertilization ditch with the soil.

### 2.5.2. *Planting Specifications*

The planting hole was made according to the line spacing of 0.7m and the plant spacing of 0.3m.

### 2.5.3. *Weather of Planting*

The weather of planting was carried out on sunny afternoon or cloudy.

### 2.5.4. *Selection and Dosage of Strong Seedlings*

Selecting seedlings of 3000-3500/667m<sup>2</sup> with 3 ~4 good true leaves, thick stems, deep green, no pests and diseases; transplanted to filed.

## 2.6. *The Management of Field*

### 2.6.1. *The Planting Rack*

Usually, setting up a support frame was generally carried out before and after the seedlings were spit, using the "人" frame, tying the vines in time [4].

### 2.6.2. *Low Notes Melons Were Reserved for Seed-Production*

Generally, the low melons (about 2~3 note) on the main vines were left for seed-production which rich and full, and the side vines must be removed. Only 2 melons should be kept for each vine which could have more fuller seeds [10]. Therefore, we should go on the first top dressing when the first true leaf of the plant coming out, and shoot for the early flowers.

### 2.6.3. *Pollination with Artificial or Bees*

Cucumber was a cross-pollinated crop that used to be artificially assisted or bee pollination to increase yield [3]

### 2.6.4. *Watering and Fertilizer Management*

#### a. *Watering management*

The principle of management was small watering and many times, to avoid flooding and keep the soil moist. At the same time, pay attention to the drainage work in the rainy days.

#### b. *Topdressing management*

The organic fertilizer was mixed per 667m<sup>2</sup> total with In addition to f base fertilizers, "Leyi 1" should be applied per 667m<sup>2</sup> total with compound fertilizer (nitrogen, phosphorus and potassium ratio of 15:15:15) 35 kg, K<sub>2</sub>SO<sub>4</sub> 30kg, and 46% urea 25 kg. KH<sub>2</sub>PO<sub>4</sub> was be sprayed depending on the growth of the melon, and the top dressing was generally carried out with irrigation [9].

### 2.7. The Right Amount Fertilizer of Boron and Phosphate

The main influencing factors of "Leyi 1" seed yield were low temperature and weak illumination. The weak growth and disease caused by this result led to "Leyi 1" not or less producing seeds. Appropriate amount fertilizer of boron and phosphate were applied to increased the seed setting rate. Boron had the function of controlling water in the crop body, which can promote the formation of vitamin C, which could improve the stress resistance of the crop, such as the resistance of drought and disease. Phosphate was beneficial to the formation and enrichment of seeds. In production, it was need to spray the right amount of KH<sub>2</sub>PO<sub>4</sub>, superphosphate, or borax depending on the plant growth situation [8].

### 2.8. Pest Control

Studied show, the major diseases of "Leyi 1" were downy mildew and anthracnose; pests were aphids, whitefly, and the prevention and control should be in accordance with "prevention first, comprehensive prevention", and adhere to the principle of "agricultural prevention, physical control, biological control, supplemented by chemical prevention and control" [2].

## 3. Harvesting of Seed Melons and Collecting

### 3.1. Melons Were Harvested

Generally, the harvest of "Leyi 1" was selected on a sunny day, after the melon was fully matured, and the seed melons were placed on the ventilated indoor shelf for 6 days, then the seeds and melon pulps were taken out together after opening, and placed in a container for fermentation 2 days, then rinsed clean, and taken out the plump seeds that had been submerged into the bottom to place on the crucible to dry [7].

### 3.2. Seeds Were Collected

Seeds were collected when their water content was less than 8%, the 1000-grain weight was 25-30 g, and the cleanliness up to 98%. Then collected them into the sealed container which Low temperature (10~13°C) and dry to storage for dormancy [5].

### 3.3. Seed Dormancy Release

The method of releasing seed dormancy should be: 1) removed the "hard" nature of the seed coat, reduce the obstacles of the seed coat on germination, and increase the

germination rate; 2) Low temperature layering to accelerate seed ripening, promote seed germination; 3) chemical substances and stimulating Seed germination, such as treating the seed with hydrogen peroxide to slightly corrode the seed coat for enhancing the permeability of the seed coat. At the same time, the oxygen released by the hydrogen peroxide could increase the oxygen concentration and provide more oxygen to the seed.

4) Water rinsing and light treatment to relieve dormancy [6].

## 4. Conclusion

Conclusion: the melons crisp of cucumber is a traditional processing product with a long history in Qinzhou City. It has a good color, fragrance and taste, and enjoys a good reputation in China. At present, one of the reasons that restrict the development of this industry is the unbalanced supply of raw melon all the year round (generally, it can only be planted in spring). "Leyi 1" can be planted every season in Qinzhou with a good yield and commodity which greatly alleviates the original situation. Obviously, it is great significance to popularize "Leyi 1" in large-scale in Qinzhou City, and the high-yield breeding technology is necessary in order to accelerate popularization, which is the purpose of our exploration.

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