

# Planting Adaptability of Four Kinds of Common Vegetables in Shanghai

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**Abstract** [Objectives] To explore the planting adaptability of vegetables in Shanghai. [Methods] In this paper, cowpea (*Vigna unguiculata* (L.) Walp.), cucumber (*Cucumis sativus* L.), eggplant (*Solanum melongena* L.) and potato (*Solanum tuberosum* L.) were selected as experimental materials and planted in the open air. The growth status, the occurrence of diseases and insect pests, and the taste evaluation of these four kinds of common vegetables were mainly studied. [Results] The results showed that the four kinds of common vegetables in Shanghai had strong growth, strong adaptability, less pests and diseases, and good taste. [Conclusions] The cowpea, cucumber, eggplant, and potato are suitable for planting in Shanghai.

**Key words** Cowpea (*Vigna unguiculata* (L.) Walp.), Cucumber (*Cucumis sativus* L.), Eggplant (*Solanum melongena* L.), Potato (*Solanum tuberosum* L.), Planting applicability, Shanghai

## 1 Introduction

Cowpea (*Vigna unguiculata* (L.) Walp.), also known as fresh kidney beans, is native to Africa, belongs to the Leguminosae, cowpea vine vegetables, pods for its edible part. Cucumber (*Cucumis sativus* L.) is vine vegetable belonging to the genus *Cucurbita* of the family Cucurbitaceae, and its edible part is its fruit. Eggplant (*Solanum melongena* L.) is herbaceous vegetable belonging to *Solanum* in the family Solanaceae. Its edible part is fruit, which is rich in nutrients. Potato (*Solanum tuberosum* L.) is also herbaceous vegetable belonging to *Solanum* in the family Solanaceae, and it can be used as vegetable and grain crop, and its edible part is its tuber.

At present, the research on cowpea, cucumber, eggplant and potato mostly focuses on cultivation techniques, fruit quality changes<sup>[1–5]</sup> and pests and diseases<sup>[6–10]</sup>, but less on planting adaptability. Therefore, we studied the planting adaptability of these four kinds of common vegetables in Shanghai.

## 2 Materials and methods

**2.1 Selection of experimental field** We selected the vegetable picking area in Shanghai Chenshan Botanical Garden as the experimental field, which is located in Songjiang District, Shanghai. The soil fertility is medium, the soil is clay, and the soil is alkaline.

**2.2 Experimental materials** We selected cowpea, cucumber,

eggplant and potato as experimental materials. Among them, cowpea is Luyuanshuai; cucumber is Zhongshou 35 hybrid variety; eggplant is Xi'nan Hongli; potato is Xisen 6.

**2.3 Experimental methods** The vegetable seeds were firstly sowed in a plug tray, and then planted and transplanted after the seeds emerged for one month. Before transplanting, 4 500 kg/ha of organic fertilizer and 600 kg/ha of compound fertilizer (15 : 15 : 15) were applied to the experimental field, and then the soil was ploughed mechanically, and then the vegetables were planted at a certain distance.

**2.4 Applicability evaluation** In the aspect of adaptability evaluation, it was mainly detected from the aspects of plant growth status, pest and disease status, and taste evaluation. In terms of plant diseases and insect pests, it mainly depended on whether there were obvious plant diseases and insect pests; the taste evaluation grade was divided into three grades: good, medium and poor, and the conclusions were drawn by the tourists who participate in the picking.

## 3 Results and methods

**3.1 Growth performance of cowpea** As shown in Fig. 1, the variety is a trellis variety; the plant grew vigorously; it was planted in the last ten days of March; the pods started to mature in June; the pods began to blossom and born pods from the fourth node, and then each node blossomed and born pods; the pods were green and straight; the fruit length was 60–80 cm, and the single weight was 20–30 g; there were few plant diseases and insect pests, high temperature resistance, less plant diseases and insect pests, it can be made into fried cowpea, and has good taste.

**3.2 Growth performance of cucumber** As shown in Fig. 2, this variety was planted in the last ten days of March and matured in the last ten days of May; the cucumber plants of this variety grew vigorously, with strong growth vigor and good heat resist-

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ance; the main vine produced cucumbers, the cucumber length was 32 – 40 cm, the single weight was 260 – 300 g, the color of the melon skin was dark green, with thorns and moderate thorns; the melon strip was straight, with light green flesh and seeds. This variety was planted in the open air and matured in the first ten days of June and could be harvested. It is also suitable for planting in early spring. This variety of cucumber can be made into tossed cucumber or fried cucumber, the taste is delicious.



Fig.1 Growth performance of cowpea



Fig.2 Growth performance of cucumber

**3.3 Growth performance of eggplant** As shown in Fig. 3, eggplant had strong growth potential, good heat resistance, high fruit set rate, oval fruit, purplish red pericarp, white green flesh, fruit length of 20 – 30 cm; 6 – 8 cm thick; the weight of a single fruit was 200 – 300 g; it had strong stress resistance and few pests and diseases. It can be made into fried eggplant and has good taste.

**3.4 Growth performance of potato** As shown in Fig. 4, the potato growth period of this variety was about 90 d; the germinated tubers were planted in early March and harvested in early June. This variety had green leaves and stems, vigorous growth, white flowers, long oval tubers, smooth yellow skin, yellow flesh, many

fruits, and single weight of 210 – 250 g. The variety had few plant diseases and insect pests. It can be made into shredded potatoes or potato slices with delicious taste.



Fig.3 Growth performance of eggplant



Fig.4 Growth performance of potato

## 4 Discussion

Vegetables are delicacies on the table and can provide all kinds of necessary nutrients for human beings and necessities for human daily life, so vegetables play an increasingly important role in human life. Spring and summer are suitable for sowing and planting of these four kinds of vegetables in most parts of the country.

The results showed that the varieties of cowpea, cucumber, eggplant and potato selected in this experiment had good water tolerance and heat tolerance, and the pests and diseases of these four kinds of vegetables were less. From the point of view of maintenance and management, these four kinds of vegetables need fine maintenance, can not lack water and fertilizer, need to pull weeds frequently, and should be harvested in time after maturity. Their fruits can be eaten in time, can also be placed in a ventilated place, is not easy to rot, is storable, and can be stored for more than 2 weeks without any problem.

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