

The Control of Root Systems by the Use of Slit Containers

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Last autumn, we started to sell CS plug-trays with 40 and 88 holes. These were developed to incorporate the theory of controlling a root system by the use of slit containers. This theory is as follows:

A large proportion of the water supplied to the medium in a plastic container is drained through the hole at the bottom of the container, but because of surface tension, some of the water remains at the bottom of the container and on the inside lower surface of the container. Some condensation is formed on the inside surface of the container due to the differences in temperature between day and night. This only allows roots to take up water, as a result root distortion can occur, leading to root circling around the inside surface of the base of the container without forming many new roots. In order to prevent root circling and to encourage the formation of new roots, it is necessary to get rid of the remaining water at the bottom of the container.

Slit containers prevent root circling and the CS plug tray avoids root circling or looping owing to the slits. Excess water can be drained out of the container and be dispersed evenly in the soil. The roots stop growing as they reach the inside surface of the container, the root tip ceases growth when it comes in contact with the container wall, and many new roots are formed from the proximal part of the tap root.

As a result, the medium is used effectively and sound root growth is fostered. Therefore, one can grow bigger seedlings in slit containers and the plants can stay in them longer.

In addition to the above, other features include the projection and slant of the four corners leading the water and roots downward, the four upper corners prevent the plant from leaning and the wedge-shape of the container makes replanting easier.

Also because of the steep downward slant, the seedling is easier to remove.

The container is made of thick polystyrene, therefore, sufficiently strong to use several times.

When shipping seedlings, it is possible to bend the plug tray into a semi-circle (40 and 88 hole trays) thus saving space. The opening of the plug tray is wide enough to insert your hand.

By placing the plug tray in a basket, it can be moved easily (40 and 88 hole trays). Also, keeping the plug tray on the ground allows good drainage and ventilation, leading to healthy growth.

The important point is that a seedling with a sound root structure will grow on quickly after transplanting in the field. Good conditions during the early stages of the seedlings' growth have a beneficial effect on their later growth. Because of demands for international standard sizes from the flower and vegetable industry,

five sizes of plug trays with 72, 128, 200, 288, and 406 holes are now available.

Besides these plug trays, there are also slit containers that are octagonal in shape (24-mm-diameter size). As plant roots have a tendency to grow toward the corners of containers, this shape utilizes this tendency to prevent root circling. A slit container is an effective method of controlling the growth of the root. By direct planting of the seedling into this container, there is no need to transplant again before shipping. The cultivation time is shortened thus keeping costs low. The container is designed to be handled by the upper part for convenience.

New Plant Varieties Bred by the Sakata Seed Corporation

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Osteospermum. Our new cultivars open their flowers when the sun is not shining and even at night. They are only 20 to 25 cm tall. They can be shortened with growth retardant and are therefore useful in pots or as bedding plants.

***Impatiens* — New Guinea Cultivars**. Our new cultivars also flower in summer and they grow into big plants faster than overseas cultivars. They are suitable for bedding plants or for use in pots and containers. Six colors are available: purple, scarlet, white, red, salmon, and bright pink.

***Dianthus* — Potted Carnations**. Our cultivars grow even at low temperatures. They can be used in many ways including small to large pots.

Pelargonium. We now offer a new series which have shiny and smart-colored flowers, with only a slight blotch at the center of the flower, or sometimes none at all. They are multiflorous, resistant to *Botrytis*, and easy to grow.

Clematis. Our seven new cultivars are good for use in pots because they do not need any supports. They are multiflorous, flower lower down the stem than existing cultivars, and are available in six colors: purple-blue, shell-pink, blue, white, rouge, and pink.

Mid-sized *Campanula* Cultivars. These new cultivars are F₁ dwarfs. They germinate uniformly, grow well, and require little chilling. After bolting, treatment with a growth retardant produces a compact plant. Usually they flower in May without heating but should they be required in March or April, artificial heat and extra lighting is needed. Three colors are available: pink, white, and blue.

Nemesia. Our new cultivars have bigger flowers and stronger stems. They can be grown at low temperatures, close to freezing point, and are sold only in the cell tray. Three colors, yellow, rosy-red, and white have been produced.