

## Several factors relating on rooting of strawberry young plants

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### ABSTRACT

Most of strawberry cultivars are clonally propagated. Although Sashinae is a nursing method suitable to raise simultaneously a large amount of young plants, it is disadvantageous for smooth rooting. We examined effects of pretreatment, 3-day reservation under 5°C (RT), 3-day wilting under a wet and dark condition (WT) and 3-hour dipping into different concentrations of NAA solution (NT), on rooting of young plants in late June 2008. After each pretreatment, they were nursed for 10 days under shading and sprinkle water condition. All plants including the control rooted well. It was concluded that protecting the young plants from drought by in the early stage of nursing was significant for rooting.

**KEYWORDS;** Clonal properagation, Rooting, Strawberry young plant

### INTRODUCTION

Most of strawberry cultivars are clonally propagated using young plants formed on several nodes of runners that grow from a parental plant. In Japan, there are two methods to raise young plants, Sashinae and Ukepotto. The former is a method rooting in a pot a young plant cut off from a runner, the later is a method fixing a young plant on a runner in a pot until rooting. The former is accomplishable to raise simultaneously a large amount of young plants but often disadvantageous for smooth rooting (Saito etc., 2008). We studied effects of several pretreatments on rooting of Sashinae plants.

### METHODS

The experiments were conducted using a cultivar uneasy to root, Toyonoka, in late June 2008. To promote the rooting, several treatments, which were 3-day reservation under 5°C (RT), 3-day wilting under a wet and dark condition (WT) and 3-hour dipping into different concentrations of NAA solution (NT), were applied to young plants prior to nursing. The rooting was investigated after 10-day nursing under the condition of 80% shading and frequent sprinkle water (for 3 minutes every 1 hour in daytime). The young plants in RT and WT were treated on runners and thereafter cut off from runners for nursing. The young plants in NT were cut off from runners and immediately applied each treatment and thereafter nursed.

### RESULTS AND DISCUSSIONS

The cold reservation, wilting and 4 - 16 mg·L<sup>-1</sup> NAA treatments were all effective to rooting. The control plants nursed without pretreatments also showed sufficiently high rooting activity. However, the rooting styles differed between the control plants and pretreatment plants.

Namely, the cold reservation, wilting and NAA treatments induced new adventitious and lateral root formation, while non-pretreatment mainly promoted the growth of original short adventitious roots. The results suggested that the cold reservation and wilting treatment raised internal auxin concentration in nursing. Anyway, it was concluded that protecting the young plants from drought by shading and sprinkle water in the early stage of nursing were dominant for quick rooting.

Table 1. Effects of several treatments on rooting of young plants propagated by Sashinae.

| Pre-treatment | Concentration<br>(mg · L <sup>-1</sup> ) | Number of roots (per pl.) |                 |                 | Length of the longest root (mm) |                 |                 | Percentage of rooting (%) |                 |                 |
|---------------|--|---------------------------|-----------------|-----------------|---------------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|
|               |  | 1 <sup>st</sup>           | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 1 <sup>st</sup>                 | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 1 <sup>st</sup>           | 2 <sup>nd</sup> | 3 <sup>rd</sup> |
| Cont.         | -  | 9.7a                      | 17.1a           | 13.2a           | 44.5a                           | 70.9a           | 83.9a           | 100                       | 100             | 100             |
| RT            | -  | 12.3a                     | 20.7a           | 12.3a           | 57.3a                           | 74.0a           | 72.2a           | 89                        | 100             | 100             |
| WT            | -  | 9.0a                      | 20.7a           | 14.9a           | 64.9b                           | 66.2a           | 67.3b           | 100                       | 100             | 89              |
| NAA           | 0  | 15.6a                     | 23.4a           | -               | 65.7a                           | 63.8a           | -               | 100                       | 89              | -               |
|               | 4  | 24.3b                     | 23.0a           | -               | 62.9a                           | 69.3a           | -               | 100                       | 100             | -               |
|               | 6  | 20.2a                     | 24.0a           | -               | 59.1a                           | 59.5a           | -               | 100                       | 100             | -               |
|               | 8  | 24.2b                     | 22.6a           | -               | 64.5a                           | 63.6a           | -               | 100                       | 100             | -               |
|               | 10                                       | 20.4a                     | 17.3a           | -               | 70.1a                           | 63.3a           | -               | 100                       | 100             | -               |
|               | 12                                       | 20.7a                     | 17.3a           | -               | 62.4a                           | 66.7a           | -               | 100                       | 100             | -               |
|               | 16                                       | 17.3a                     | 20.0a           | -               | 64.1a                           | 73.9a           | -               | 100                       | 89              | -               |

1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> represent the order of young plant formation on a runner and 3<sup>rd</sup> plants are youngest. Values followed by the same letter in each column are not significantly different (analysis of variance: 5%).



Cont. RT WT NAA 0 mg · L<sup>-1</sup> IAA 8 mg · L<sup>-1</sup>  
Date of Sashinae: 23<sup>rd</sup> June 27<sup>th</sup> June

Fig. 1. Effects of several pretreatments on rooting of young plants after nursing.

The 1<sup>st</sup> young plants.

## REFERENCES

Saito, Y. etc. 2008. Stimulation of rooting by exposing cuttings of runner plants to low temperatures to allow the raising of strawberry seedlings during summer. J. J. Soc. Hort. Sci..