Combined Proceedings IPPS 74:49-51. 2024.

Consideration of Planting Materials for *Phalaenopsis* Seedlings Taken Out of the Bottle.

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Keywords: orchid, transplanting, tissue culture, acclimatization

Summary

Survival in Phalaenopsis planting material was successful using polystyrene foam. It significantly reduced time, cost and improved uniformity.

INTRODUCTION

When planting *Phalaenopsis* seedlings which were obtained by sterile sowing or culturing, it is common to wrap them tightly in sphagnum moss, as this allows for good rooting and growth. However, in addition to the rising cost of sphagnum moss, wrapping it tightly is a lot of work, and the survival rate varies greatly depending on the skill of everyone.

Therefore, we conducted a survey of the survival rate, growth, and planting time, using foam polystyrene as an alternative material to sphagnum moss, for the following reasons, (1) it is inexpensive and easy to obtain; (2) it is highly durable; (3) it suits the characteristics of Phalaenopsis, which is to spread its roots on tree branches and trunks in well-ventilated places; (4) by clamping it firmly, it has the same

effect of fixing the roots as tightly wrapping sphagnum moss; (5) it does not require much work; and (6) there is little difference in skill between people.

MATERIAL AND METHODS

Phalaenopsis (cultivar unknown) were grown in the greenhouse at Shizuoka Prefectural Agricultural and Forestry College. There were four treatments with 40 plants in 2 replicates per plot. Treatments include sphagnum moss or polystyrene foam substrates with or without mist.

Phalaenopsis seedlings were taken from the bottles on July 2, 2023, and planted in sphagnum moss or foam polystyrene in hard black polyethylene pots. On November 13, 2013, after checking for survival, the areas without mist were moved to the greenhouse. At that time, Hyponex (6-10-5) fertilizer at 1,000th dilution was sprayed on all surviving plants. Final evaluation was on February 7, 2014.

RESULTS AND DISCUSSION

The growth of the *Phalaenopsis* was visually observed. We surveyed four students majoring in potted plants who are familiar with planting from bottles, compared with the time when they were planted in sphagnum moss and polystyrene foam.

The survival rate was 90% for plants grown in sphagnum moss without mist, while all other treatments showed 100% survival.

The time it took for students to transplant 25 *Phalaenopsis* seedlings using polystyrene foam took 1/4 the time it took to wrap them tightly in sphagnum moss (**Table 1**).

Table 1. Comparison of times to transplant 25 *Phalaenopsis* seedlings in sphagnum moss vs. polystyrene foam substrates.

Planting materials	Student	Time
Sphagnum moss	A	39min. 14 sec.
	B	42min. 28 sec.
	C	44min. 45 sec.
	D	45min. 15 sec.
Foam polystyrene	E	11min. 34 sec.

Although the growth of plants in polystyrene foam were generally inferior to that in sphagnum moss, the difference in growth were small and the growth was uniform (**Fig. 1**). Growth in plants in polystyrene foam that were misted was better than those that were unmisted (**Fig. 1 B and D**).

Conclusion

The reason why growth in the polystyrene foam area was poorer than that of the sphagnum moss area is thought to be because polystyrene foam does not have water retention, and therefore there was a lack of nutrients from the weekly fertilization. Therefore, it is thought that growth in plants with mist, which was consistently moiste, was better than those that were not misted.

In conclusion, it seems that polystyrene foam can be used as a planting material for *Phalaenopsis*, as it significantly reduces time, cuts costs, and eliminates differences between individuals due to the reduced effort required, and has a good survival rate.

In the future, we would like to try methods such as sandwiching sphagnum moss between sheets of polystyrene foam to make up for nutrient deficiencies.

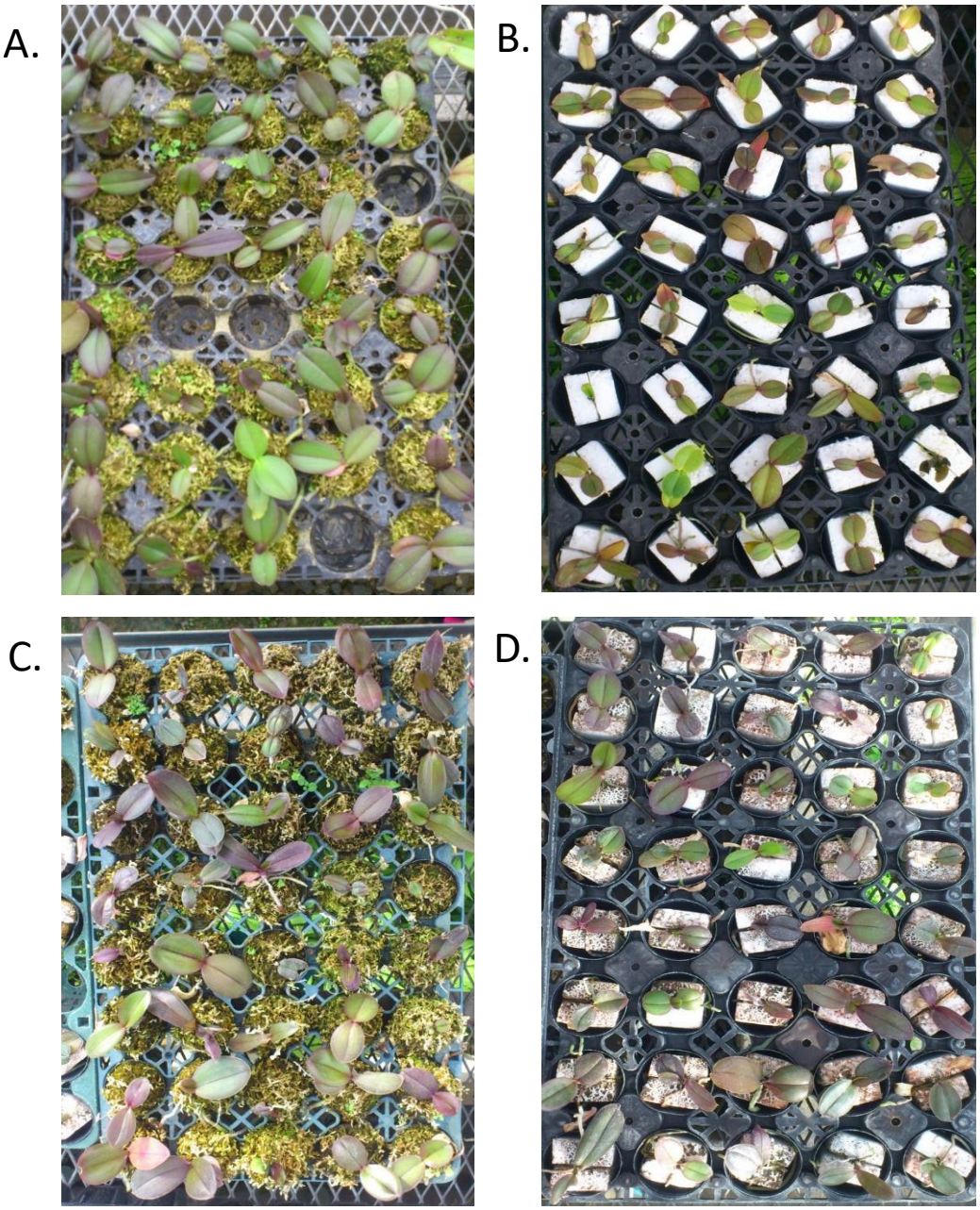

Figure 1. *Phalaenopsis* transplant growth in A) sphagnum moss without mist, B) polystyrene foam without mist, C) sphagnum moss with mist and D) polystyrene foam with mist.