Increasing the number of cherry blossom

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There are a lot of cherry blossoms in our old school. However, almost all of them were cut down 10 years ago. The purpose of our research was to keep and increase cherry blossoms in Sanko high school. In the first experiment, we researched whether we make cutting or not. From the result of the first experiment, we judged that we past those could increase them by cutting. In the second experiment, we used auxin which is one of the plant hormones. From the result of the second experiment, auxin concentration is better lower and lower. In conclusion, it is possible to increase cherry blossoms and we can remain our cherry blossoms.

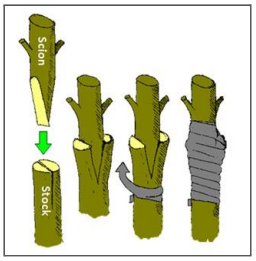
1 Introduction

There are two kinds of cherry blossoms in the Sendai Sanko high school ground.” Someiyoshino” is popular and famous, and it has pink and white flowers. “Ukon Sakura” is very rare. It has yellow flowers and there are 27 in Japan.
Now, I will tell you about our background.

Fig, 1 Cherry blossoms of our old school

Fig, 2 Ukon Sakura

Please look at Fig, 1 and Fig, 2. These are pictures of cherry blossoms in our old school.
There were many trees at that time.
However, almost all of them were cut down by renovation work 10 years ago.
Because of it, there are only few trees now.
We thought that Sanko, s traditional trees might disappear.[1] So, we researched how to increase the number of cherry blossoms.



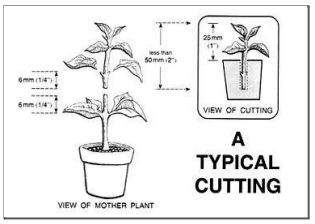


Fig3, grafting. Fig4, cutting

There are two ways to increase the number of cherry blossoms.

Fig, 3 shows grafting. This way is to connect a branch to another one. It has a high success rate but it is necessary to use special techniques and tools so the way is difficult for us [2]. Fig, 4 shows cutting. This way is to cut a branch of a tree and only plant it in the soil so we can do this way easily[3].

From these things, we made a hypothesis which is “We can increase the number of cherry blossoms by cutting.

2 Experiment1

Method

Here is how our experiment was done.
(1) We chose a new branch of Someiyoshino in Sanko ground.
(2) We did the cutting.
Then, we cut branches diagonally because we want to expand the area where they can absorb water. And we cut leaves in half to decrease the amount of transpiration.
(3) We did watering every morning and evening.

Fig,5 Experiment1

If the roots grew,it can be said that the experiment is successful.And we count the branches that have grown.

Result and consideration

Next is our result.We planted 12 branches and 6 of them grew.The data from previous research shows that researchers planted 66 branches and 12 of them grew(4).From this result,we can say our method could be promising. Why did our method show good results? We think the factor is “to use new branches.” Plants have a cycle about care the body from some damages,and new branches one faster than old ones for about cure cycle.Cutting is a technology which use this cycle.So,we think the factor which lead to our good method is to use new branches.Now we show the results of our experiment.

Fig,6,7 Results

The left picture(fig,6)shows success roots and the right picture(fig,7)shows failure roots.Some roots are grown in two weeks and some are grown in one month.

3 Experiment2

Method

(1)We prepared four container,water,IAA^{-4} IAA^{-6},IAA^{-8}mol/L.
IAA is one of Axin,which are plant hormones.(Plant hormones have the function of controlling growth or reaction for them.It is made by themselves.Particularly,Auxin can promote the cell division and length of cells.
(2)We past there four branches at 20 degrees.
(3)We observe them once every 1 week and record them.

Result and consideration

In experiment2,we found four calluses from water container,three of these from IAA^{-8} container and one of that from IAA^{-6} container.Callus are a mass of cells which are made by plants and not have a grown into a root yet.This shows they did activity cell divisions.From this,they have high possibility to make a root in the future.The highest deta of branch which is likely to have roots is water’s one.And second highest deta is IAA^{-8}’s one.This means the smallest Auxin strength or not to put them maybe more effective to make roots.

Fig,8 water container(cutting from 4 weeks ago).

Fig,9 IAA^{-4}container(cutting from 4 weeks

ago).

Fig,10 IAA^{-6} container(cutting from 4 weeks ago).

Fig,11 IAA^{-8} container(cutting from 4 weeks ago).

4 Future work

There are three future works in our research.

(1) cutting with a larger number.
(2) to do experiment 2 with lower concentrations of IAA solution
(3) observing the future growth of the cuttings

(1) Only 12 branches of Someiyoshino could be used in Experiment 1.So, in the future, We would like to do experiments so that a higher rooting rate can be obtained with a larger number of branches.This time, we conducted this research using Somei Yoshino.However, We would like to do experiment with Ukon Zakura when it becomes possible to obtain a stable and high rooting rate in Someiyoshino in the future.Eventually, we would like to establish a method to increase both Somei Yoshino and Ukon Zakura, and protect the cherry blossoms of our high school.
(2) As can be seen from Experiment 2, the lower the IAA concentration, the more suitable it was for plant growth.I would like to investigate the optimum auxin concentration that can obtain the highest rooting rate.And,we used IAA in this experiment.However, there are other types of auxin, indole-3-butyric acid (IBA) and synthetic auxin naphthalene acetic acid (NAA).So,we would like to see if the same effect appears again.And,there are gibberellin and cytokinin that show the same growth promoting effect.These effects have been shown to promote cell elongation, promote seed germination,break dormancy, and promote lateral bud growth.[5]We would like to investigate them in more detail and find the plant hormones that most promote the growth of plants.
(3) Of the 6 branches whose rooting could be confirmed in this experiment, 4 are still growing (2021.7).In the future, We would like to investigate how to manage this branch, which will lead to the final success of cuttings such as germination and flowering.

If we can establish a method to increase the number of cherry blossoms, the increase in cherry blossoms will lead to an increase in foreign tourists in particular, and We think that Japanese society will develop further.Therefore, it can be said that this research is closely related to the local community in the future.Also,we hope that more students in Sanko are interested in this fact and continue this research.

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