Biology 515

Synergistic effect of bacillus natto ,lactic acid bacteria,and yeast

Member　Rune Kanemaru　Yuka Shikakume　Makoto Kawamoto　Airi Wakamatsu
Advisor　Mr.Nobuhiko Imani　Mr.Syuichi Uetomi

Motivation

These days, a lot of chemical fertilizers are used in agriculture. Therefore, we decided to look for the way to grow plants with something harmless for us such as bacillus natto,lactic acid bacteria and yeast.

Prior Research

“The relationship between sprout and bacteria”

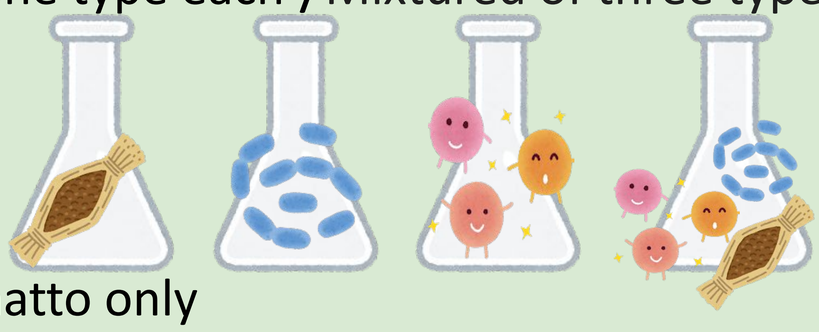
from the Nara Gakuen Issue Research Papers

- Sprouts with lactic acid bacteria grow the fastest.
- Sprouts with natto did not grow well.
- Sprouts with yeast was the least withered. The leaves are dark in color and the stems are thick.

Research methods

Sprouts by culture solution

①one type each /Mixtured of three type



②natto only

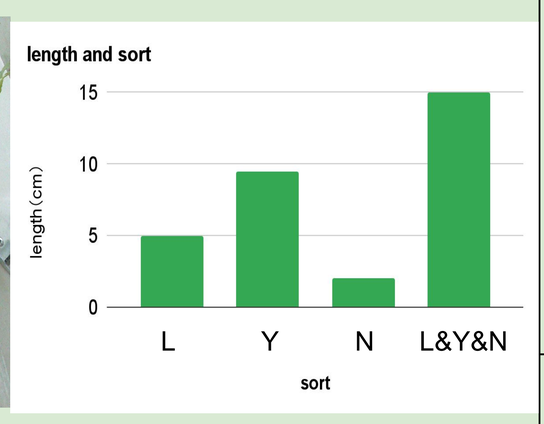
③lactic acid bacteria and bacillus natto
bacillus natto and yeast
lactic acid bacteria and yeast

Supposition

By mixing bacteria,plants will grow well.
We think that yeast will make plants grow strong.

Result

①

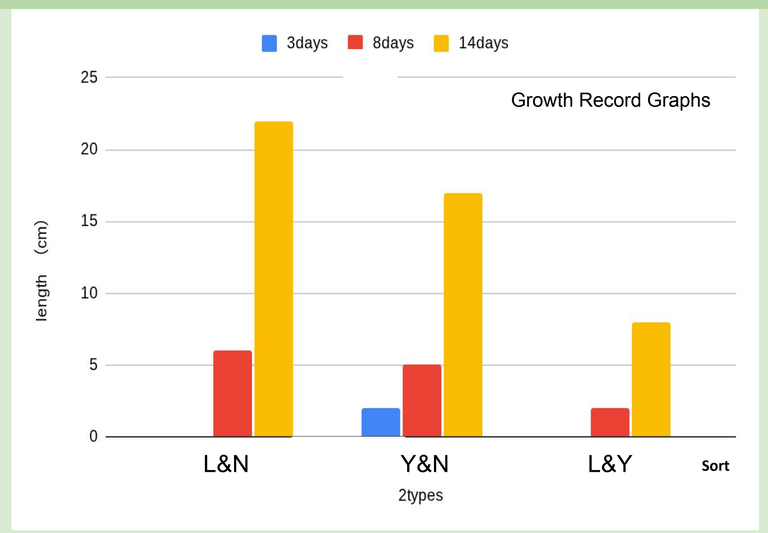


- Sprouts with yeast grew the fastest.
- Sprouts with bacillus natto did not grow well.

②

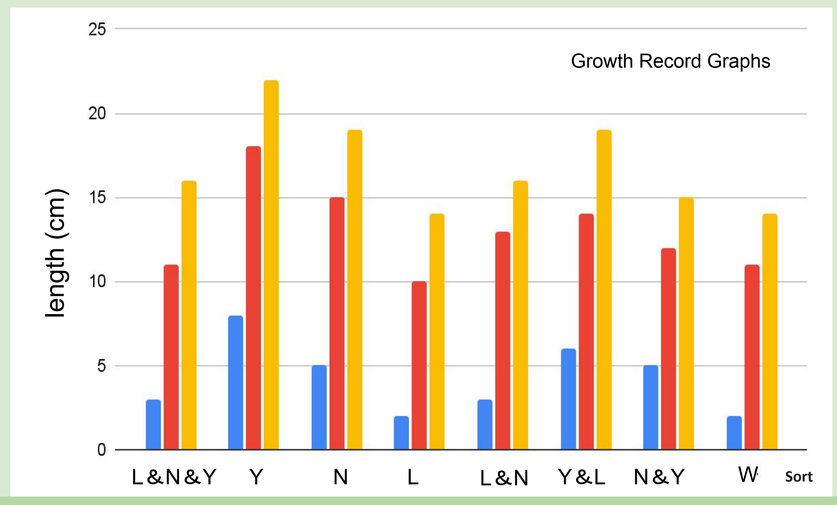
- Sprouts with bacillus natto did not grow well.

③



The cultures containing bacillus natto (blue and red) made sprouts grow well.

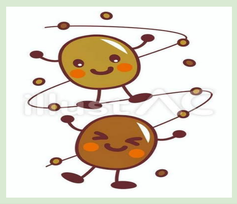
④

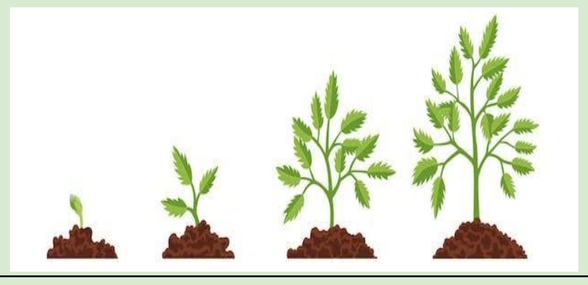


The results are partially different from the results in ①～③ due to a change in the experimental method.

Conclusion

A yeast only culture make the plants grow.
Bacillus natto have an ability to activate lactic acid bacteria and yeast.There is a bacteria that works well by combining other bacteria together.





References

https://drive.google.com/drive/folders/0

https://www.city.kasaoka.okayama.jp/uploaded/attachment/8171.pdf