

Aimed at deodorizing fertilizers as well as promoting the utilization of bamboo

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Abstract

Mountainous areas in Japan have several problems. One of them is that the reduction in the people who treat bamboo groves leads to uncontrollable expansion of its habitat area. Another is that organic fertilizers, which are attracting attention due to soaring fertilizer prices, often have a strong ammonia odor, which is one of the reasons why young people shy away from working as a farmer. In order to solve these two problems at the same time, it can be effective to use bamboo charcoal to use a deodorizer because it has positive effects especially against ammonia. In this study, the relevance between the amount of bamboo charcoal and its deodorizing effect against organic fertilizers is examined in the first experiment, and the effect of bamboo charcoal on plant growth is investigated in the second experiment. The first experiment shows that the amount of bamboo fertilizer corresponds to how powerful the deodorizing effect is, and the second experiment showed that some fertilizers improve plant growth. From these results, we conclude that adjusting the bamboo charcoal content according to the degree of odor of the fertilizer can reduce odors more effectively without inhibiting plant growth.

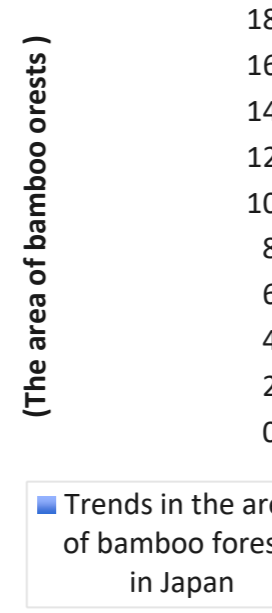
Backgrounds

Bamboo damage

Many farmers abandoned bamboo forests since Japanese rapidly growth

It has been expanding over long time

It arouse the landslide or wild-animal disasters



This is triggering environmental problems

Finding new ways to use bamboo

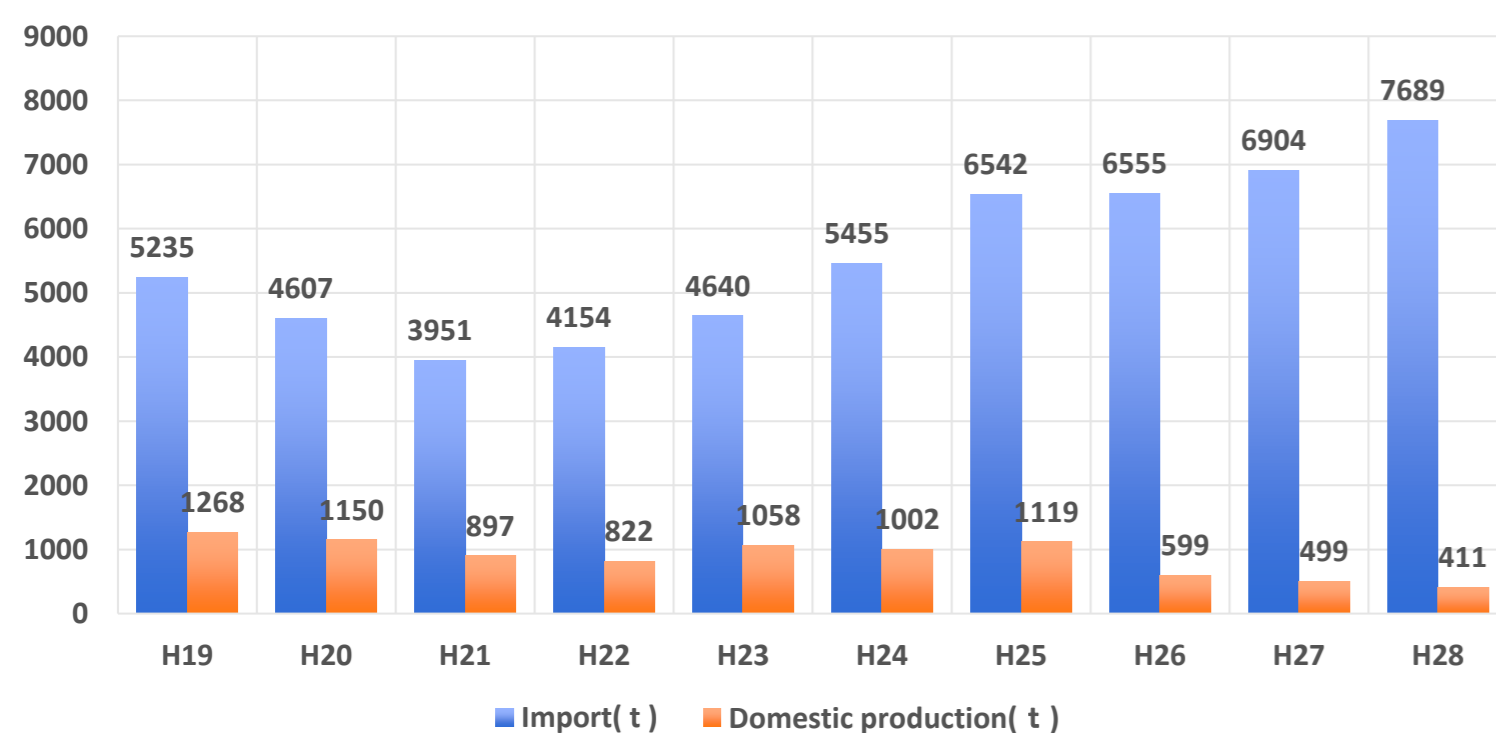
Bamboo charcoal

Deodorizing effects

Foster the plant's growth

Use with fertilizer

However, Japan is depending on the import



Sludge fertilizer

Made from sewage treatment sludge

Generates a bad odor

Gives a bad image

Improving odor of sludge fertilizer

Research Method1

Outline

Deodorizing effects on sludge fertilizer

- Subject: 40 second-year students who were randomly selected
- Equipment: Sample A :100g sludge fertilizer + 5,10,15,20% bamboo charcoal
Sample B :100g sludge fertilizer
- Procedure:
 - (1) Select Sample A or Sample B and smell it.
 - (2) The odor in (1) was set to be 3 on a scale of 1 to 5
 - (3) Smell the odor of the other sample.
 - (4) Evaluate the smell on a scale of 1 to 5 compared with (2).
 - (5) Process (1) to (4) repeated with different amounts of bamboo charcoal(5g, 10g, 15g, and 20g).

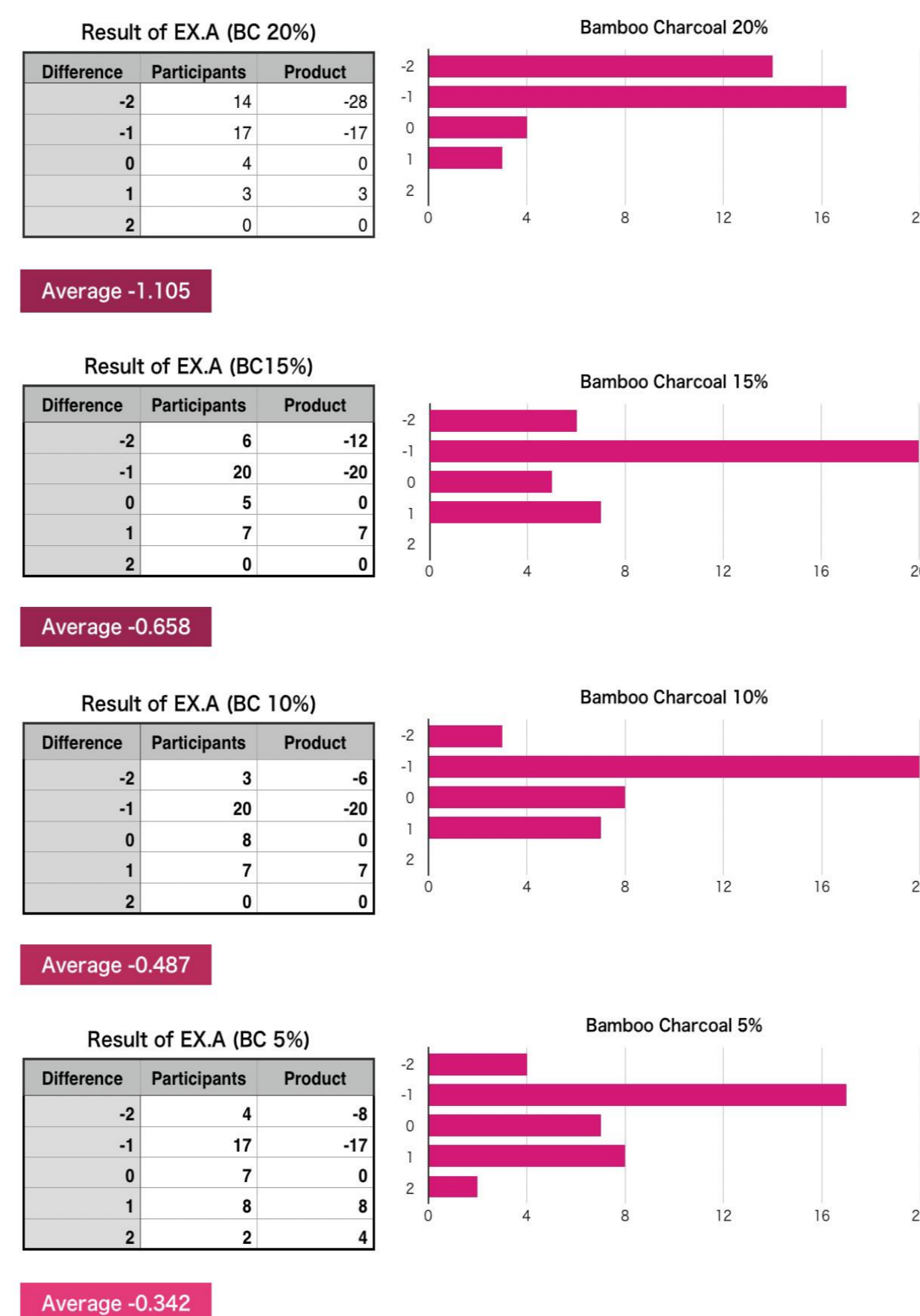


Research Result1

large

Deodorizing Effect

Small



Discussion1

- The more the ratio of the bamboo charcoal is increased, the higher the deodorizing effect would become.
- Adding bamboo charcoal to other fertilizers would give similar results.

Research Method2

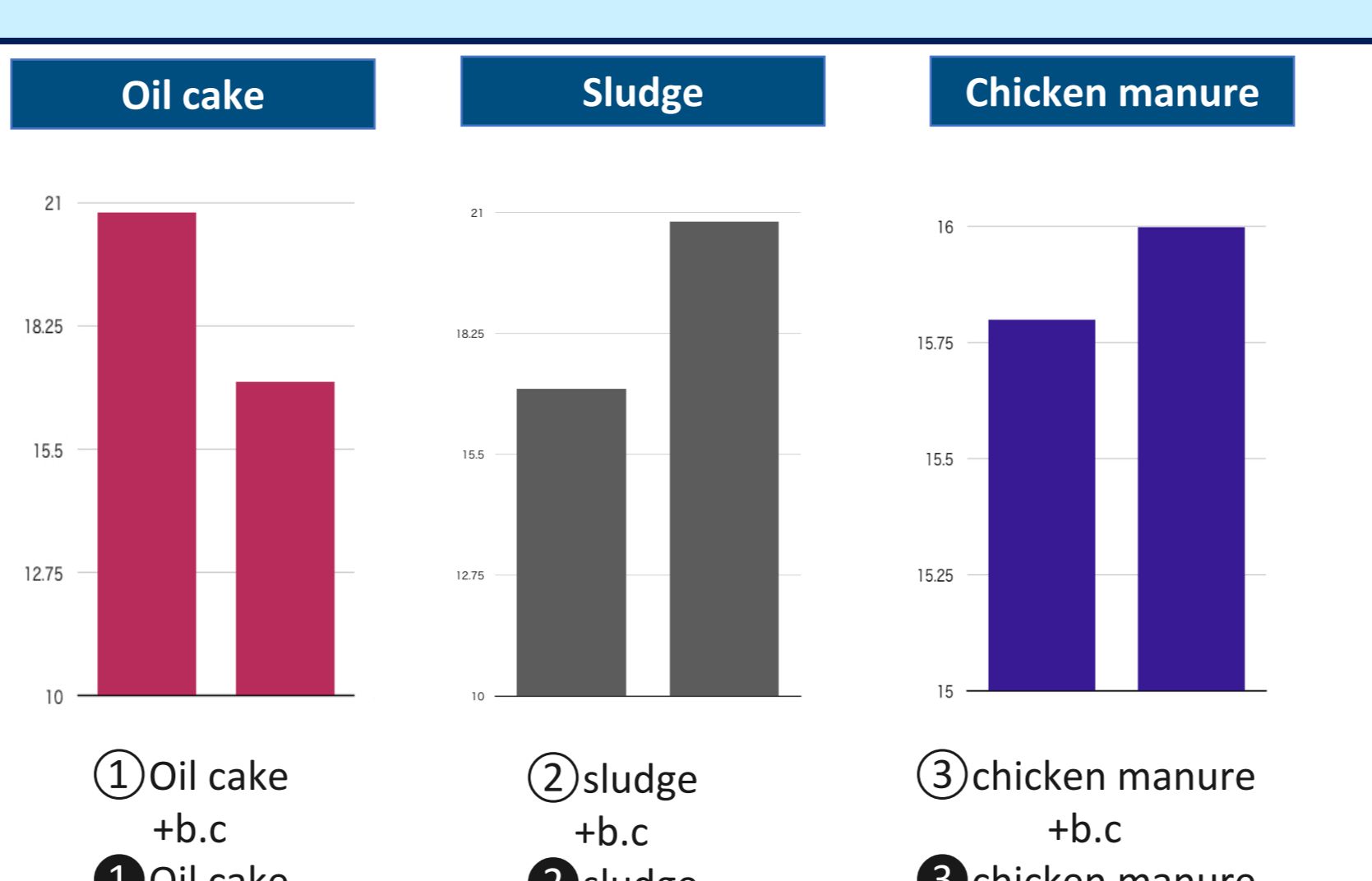
Outline: Impact on the plant's growing

broccolis
soil + fertilizer (+ bamboo charcoal)

A month later

Harvest them by cutting their stem, and measure their weight.

Research Result 2



Weights(g)	1st	2nd	3rd	4th	5th	Average	standard deviation
①	15	18	20	19	10	16.4	3.611
②	22	21	20	21	20	20.8	0.748
③	16	16	13	19	17	16.2	1.939
④	24	22	21	20	14	20.2	3.370
⑤	13	19	13	21	19	17	3.347
⑥	16	15	16	15	17	15.8	0.748

Change rate:

- Oil cake 0.81 times
- Sludge 1.22 times
- Chicken manure 1.03 times

Standard deviation
The value of sludge smaller

Discussion2

- The small amount of phosphoric acid in oil cake hindered broccolis from growing
- The small amount of growth inhibiting component in sludge and nutrient retention capacity of bamboo made broccolis grow more. Also, they made the standard deviation small.
- Probably, the calcium contained chicken manure and bamboo charcoal are alkaline, which made broccolis grow less.

Conclusion

- It can be said that bamboo charcoal would be an appropriate new way to use
- The appropriate amount of bamboo charcoal for both deodorization and growth promotion should be examined.

References/Acknowledge

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