Report on negative ion use in tomato cultivation

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Purpose:
Current agricultural practices involving agricultural chemicals are impeded by soil erosion, rising expenses, and pesticide residues.

The purpose of this experiment, then, is to avoid these problems while providing a safe and simple technology system for sustainable agriculture.

The expected results of this experiment are higher yields, increased growth, improved flavor levels, an improvement in disease resistance from thicker leaves and stems.

Additionally, the development of this technology will increase farm profits by reducing material expenses and stabilizing the agricultural crops.

Location of experiment
Pesticide free Tomato green house in Ishikawa-gun, Fukushima-ken, Japan

Green house size : 70×72 ㎡

Materials and method
Negative ionize atmosphere in the green houses with negative ion plates

- **Hang down 265 plates in half of the green house （35×72 ㎡）**
- **Approximately 50cm between the isles**
- **Dispersal of mineral water (300 L /hour, once a week)**

Attach small magnets (magnetic flux density 180mt) to promote negative ion generation by producing magnetic field.

Ion count

Without magnets

- **Positive ions : 2710**
- **Negative ions : 480**

With mangets

- **Positive ions : 7740**
- **Negative ions : 2350**

Measurement items

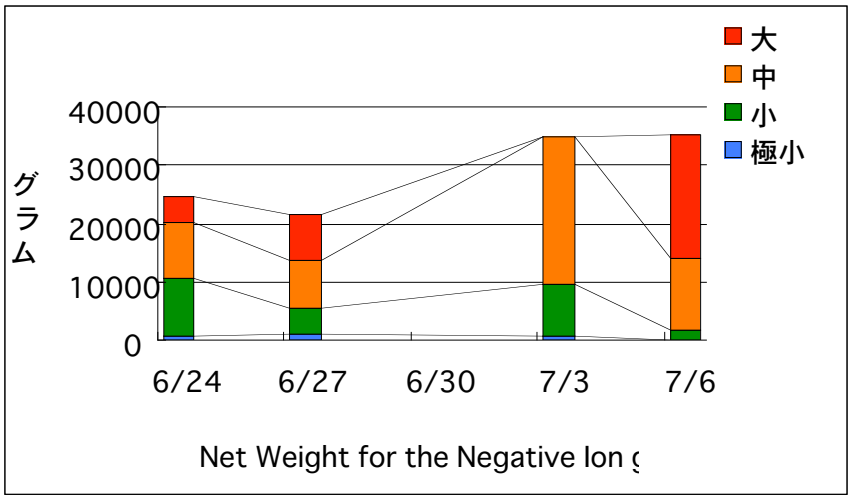
- **Temperature : everyday**
- **Humidity : everyday**
- **Crop weight : Every crop**
- **Positive and negative ions : every two weeks (negative ion area, control area, outside)**
- **Questionnaire for cultivators : every three days**

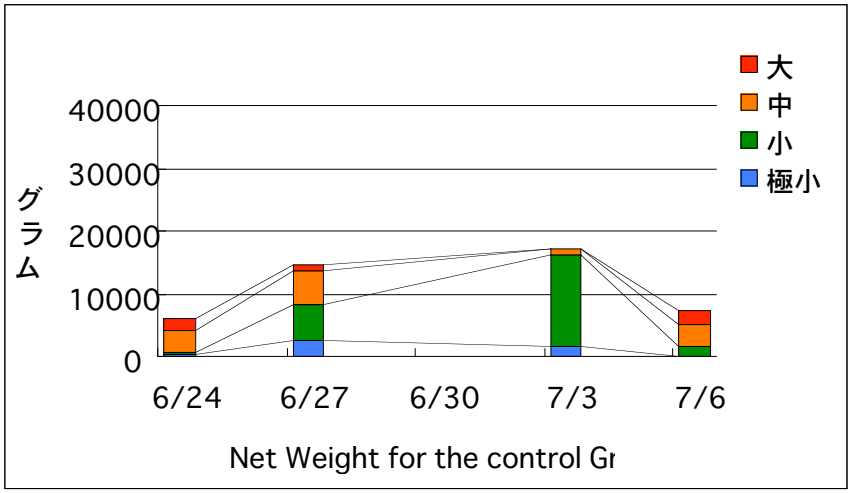
Experiment Dates:
May 22 - August 31, 2003

Comparison 1:

Increase in net weight:

Negative Ion group was 3 times heavier





Large size 7x

Medium size 4.2x

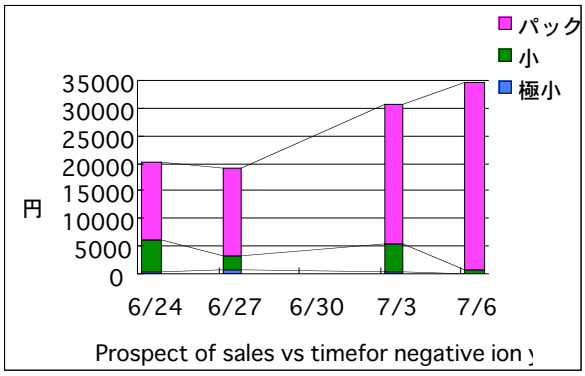
In the negative ion areas the size and yields of the tomatoes were increased.

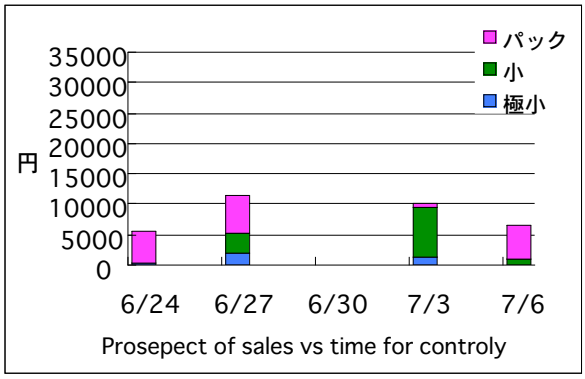
Comparison 2:

Prospective increase in sales:

（The value of the fruit in the negative ion area increased proportionally with the size of the fruit）

Sales were approximately 3 times higher





(avg. per day)
Negative Ion Area: ¥41,744
Control: ¥13,492

(Estimated per month)
Negative Ion Area: ¥1,252,320
Control: ¥404,760

Net sales per month: ¥847,560

very small: ¥ 30, small:at ¥ 50.... farm co-op ||
1 bag (800 g): ¥ 500 ||medium ¥ 25, large:¥ 50.... farm co-op price
参考写真

The greenhouse after hanging the negative ion plates

Negative Ion Plate

- Damage from disease appeared to be less in the negative ion area.
- The negative ion area showed a remarkable pattern of growth.

Control Group

Negative ion Group

Control Group

Negative ion Group

Conclusion:

In contrast to the immaturity of the stalk, the fruit's growth proceeded rapidly. This shows that while negative ions do not necessarily effect the growth of the plant, their effects are quite clear in the quality of the fruit.

In terms of disease, the plants undergoing negative ion treatment appeared to have fewer problems, but overall were the same as the control group. When considered with the fact that the negative ion fuit was substantially larger, it is clear that the per capita damage was reduced.

The low-water method caused a few problems, mainly because it proved difficult to apply. While the results clearly show that the mineral water treatment was successful, it is necessary to establish a precise method of treatment.