

## Green tea production technologies in Shizuoka

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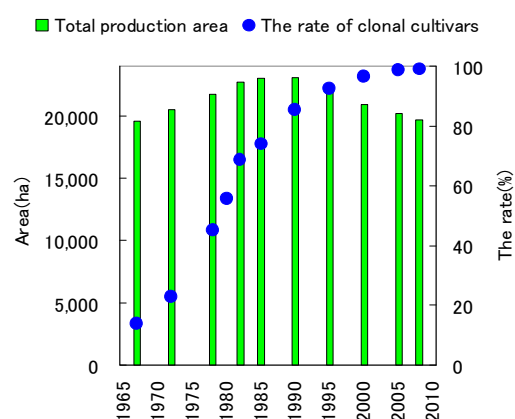
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The total production of tea in Japan in 2009 was about 86 thousand tons and area was about 47 thousand hectare. Shizuoka prefecture has 19 thousand hectare and dominates in production with about 43% of the total amount of Japanese tea. Main tea production areas in Shizuoka prefecture lie on the tablelands or along the basins of the mountainous regions. Their tea field landscapes are peculiar and beautiful.

Clonal area was accounted for about 19 thousand hectare in 2008. That's 99% of total production areas (Figure 1). Among more than 80 cultivars, in Shizuoka, 'Yabukita' occupies 93% of the total of clonal areas, followed by 'Sayamakaori', 'Okuhikari', in much less extents.

Tea shoots are plucked either by hand or mechanically. Portable machine for two persons is popular in plucking method. However recently riding machine is increasing. The amount of new shoots harvested by one person increases as following, hand plucking, hand-shear plucking, portable plucking machines for two persons, riding-type plucking machines (Table 1). Generally, tea shoots harvested by hand have high quality and make up for high grade Sencha or Gyokuro.

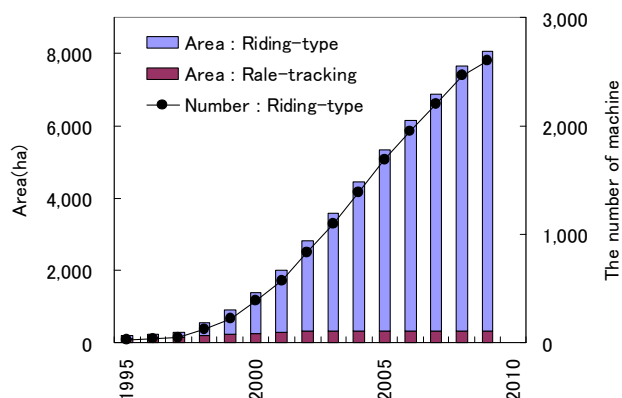
Recently the use of Riding-type plucking machines has increased rapidly. The area of that in 2009 was 7 thousand 7 hundred hectare and the number of that was 2 thousand 6 hundred (Figure 2). It can improve the operating efficiency and decrease the physical burden of an operator. There are container type and harvest bag type that accommodate method is different (Photograph 1, 2). Container type has large capacity, so it can harvest efficiently. Harvest bag type is compact size, so it's light weight and can turn in a small space



**Figure 1. Trend of clonal areas in Shizuoka**

**Table 1. Plucking efficiency**

Methods	The amount of new shoots per day per person		
Hand plucking	10	~	15 kg
Hand-shear plucking	100	~	200
Mechanical plucking			
Portable machine for two persons	700	~	1,000
Riding machine	4,000	~	5,000
Self-rail-tracking machine	2,000	~	3,000



**Figure 2. The use of riding-type plucking machines**

and be transported by small scale truck and low price relatively. Harvesting time with container type is 450 minutes per hectare. The efficiency of harvest bag type is inferior to container type, because of taking too much time to change harvest bags (Figure 3).



Photograph 1. Container type



Photograph 2. Harvest bag type

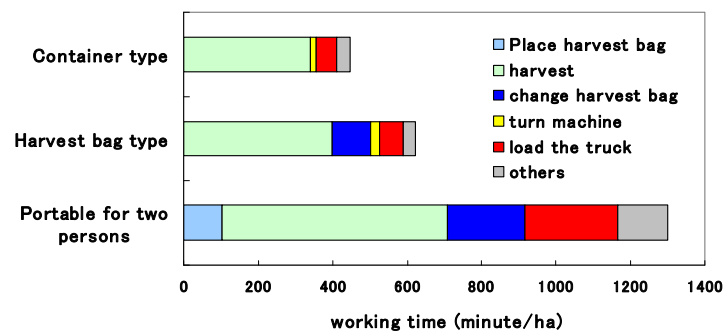


Figure 3. Operating efficiency of riding-type machine

The reasons riding-type machine has increased are development of compact machine, expansion of farm scale of each farmers, reclamation of large-scale tea field, administrative supports for simple improvement to introduce machines.

Frost falls in early spring damages the shoot tips of the first crop, and subsequently causes the maximum loss of farmers' income. There are three methods (Covering, air stirring, and freezing) for protection against frost. Anti-frost fans are put in from 6 to 8 meters altitudes and prevent frosting by blowing stirring warm air to the tea field. The air stirring method with anti-frost fans is most popular in Shizuoka prefecture (Photograph 3).

After serious damage of 1980, the protection against frost has increased. Anti-frost fans are used in

more than 8 thousand hectare of tea fields in Shizuoka Prefecture (Figure 4).



Photograph 3. Anti-frost fan

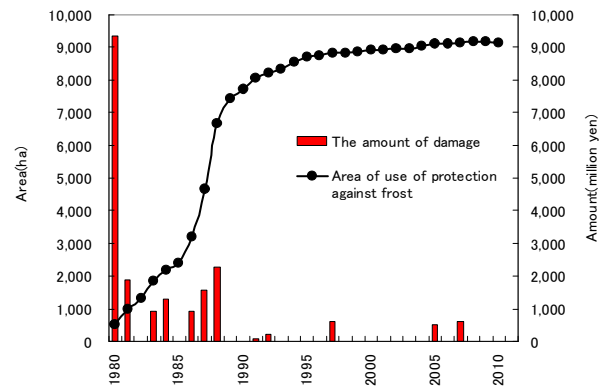


Figure 4. The use of the protection against

In 1965, the number of crude tea factory was more than 8 thousand in Shizuoka prefecture, but it has decreased to about 2 thousand. Recently individual factory has decreased and corporate factory has increased (Figure 5, 6).

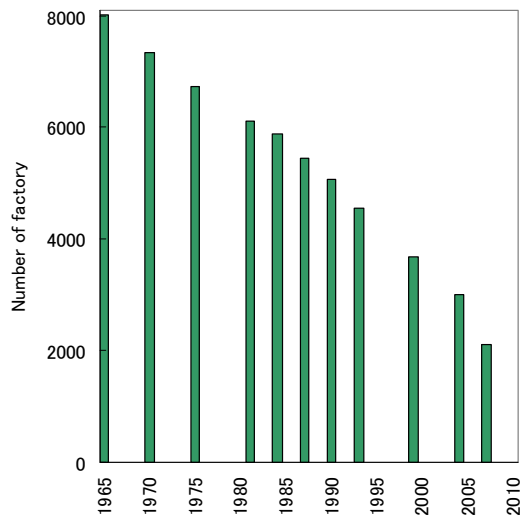


Figure 5. Trend of the number of crude tea factory

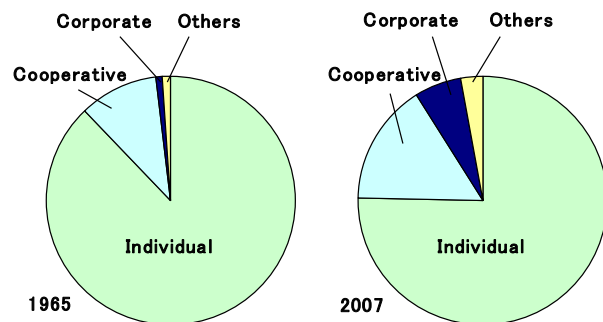


Figure 6. The ratio of factory forms