

## A new cultivar “Tsuyuhikari” for green tea.

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### Summary

‘Tuyuhikari’ was originated in Shizuoka Tea Experiment Station in 1970 from cross seedlings of ‘Sizu 7132’(♀)×‘Asatuyu’(♂). ‘Tuyuhikari’ was tested for characteristics of clonal plants as ‘70-30-302’ from 1982 to 1987, and after that it was also tested for local adaptability and for specific character from 1991.

As a result of the tests, this clone was found to be high quality, yielding and resistance to disease. ‘Tuyuhikari’ has been applied for registration since 2000.

The characteristics of ‘Tsuyuhikari’ are as follows

1. The shape of the plant is intermediate and the growth is greatly vigorous. The young leaf shows a slightly long elliptic shape, light green color and medium size.
2. ‘Tuyuhikari’ is 2 days earlier than ‘Yabukita’ both flushing and plucking times. It is strong resistance to disease especially for anthracnose, and it is stronger than ‘Yabukita’ about damage of the matured leaf caused by winter frost. The yield is greater than that of ‘Yabukita’, especially for the young plant age.
3. The quality of 1st crop is as good as ‘Yabukita’. The color of liquor became bright green color when it’s steamed longer than usual. ‘Tuyuhikari’ is adapted to all green tea area of Shizuoka prefecture because of its resistance to disease and its tolerance to cold.

### Introduction

Currently ‘Yabukita’ is account for 90 percent of all tea cultivars in Japan. Recently circumstances of tea producing has changed very much such as diversifying of eating habits, a preference for drinks becoming variety and to compete with other beverages. In addition, to cultivate only ‘Yabukita’ has brought forth a lot of problems.

Therefore Japanese government, Shizuoka tea experiment station, private breeders has bred many superior cultivars to resolve the situation. Shizuoka tea experiment station has originated three tea cultivars ‘Yamanoibuki’, ‘Koushun’, ‘Tsuyuhikari’ which has superior characters for several years. And these three cultivars are expected to become important in Shizuoka prefecture. I explain ‘Tsuyuhikari’ one of them.



Fig1 New shoots of first crop

### History

‘Tuyuhikari’ was originated in Shizuoka Tea Experiment Station in 1970 from cross seedlings of ‘Sizu 7132’(♀)×‘Asatuyu’(♂). ‘Tuyuhikari’ was tested for characteristics of clonal plants as ‘70-30-302’ from 1982 to 1987, and after that it was also tested for local adaptability and for specific character from 1991.

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### Characteristics of growth and shape

The shape of plant is medium type, the spread of tea bush is wide and the growth is greatly vigorous. Matured tea plants have same number of buds of first crop as 'Yabukita' and the weight of 100 new shoots becomes slightly heavy. The young leaf shows a slightly long elliptic shape, light green color and medium size. The mature leaf shows green color and long oval shape. The mature leaf size and gross shows same as 'Yabukita'.

Table 1: Morphological characters of tea bush

Cultivar	Shape	Spread	Vigor of plant
Tsuyuhikari	Medium type	Wide	Very vigorous
Yabukita	Little erect type	Medium	Little vigorous
Sayamakaori	Medium type	Medium	Vigorous
Kurasawa	Little spread type	Wide	Vigorous

### Physiological characters and yield

'Tsuyuhikari' is 2 days earlier than 'Yabukita' both flushing and plucking times. It is stronger than 'Yabukita' about damage of the matured leaf caused by winter frost. It is fairly resistance to blister blight and greatly resistance to anthracnose.

New shoots are bud weight type. Yield of first crop and annual yield is greater than that of 'Yabukita', especially for the young plant age.



Fig.2 New shoots of 1st crop

Table 2: Sprouting time and Plucking time

Cultivar	Sprouting time		Plucking time		Earliness of 1st crop
	Date	Comparison with 'Yabukita'	Date	Comparison with 'Yabukita'	
Tsuyuhikari	Apr. 2	-2days	May. 2	-2days	Slightly early
Yabukita	Apr. 4	-	May. 4	-	Intermediate
Sayamakaori	Apr. 3	-3days	May. 3	-2days	Slightly early
Kurasawa	Apr. 1	-1day	May. 2	-1day	Slightly early

Note: Data were averages of the experiments at Shizuoka tea experiment station from 1993 to 1997.

Table 3: Yield of green leaf and resistance to coldness and disease

Cultivar	Yield(kg/10a)		Cold resistance	Resistance to Anthracnose
	1st crop	Annual		
Tsuyuhikari	500	1,053	Hardy	High resistance
Yabukita	380	780	Little hardy	Susceptible
Sayamakaori	443	970	Hardy	High susceptible
Kurasawa	409	884	Little hardy	Medium

Note: Data of yield were averages of the experiments at three different experiment places (Kikugawa-cho, Fuji-city, and Nakakawane-cho) in Shizuoka pref. from 1995 to 1997.

### Quality

The quality of 1st crop is as good as 'Yabukita'. The color of liquor became bright green color when it's steamed longer than usual. 'Tsuyuhikari' has flavor in harmony with remarkable refreshing aroma and mild taste.

Table 4: Quality of 1st crop

Cultivar	Appearance		Quality of liquor		
	Style	Color	Aroma	Color	Taste
Tsuyuhikari	102	101	102	96	97
Yabukita	100	100	100	100	100
Sayamakaori	102	92	94	94	91
Kurasawa	109	99	96	95	90

Note: Data refer to the percentage of each quality compared with the control cultivar 'Yabukita' as 100. And data of quality were averages of the experiments at three different experiment places (Kikugawa-cho, Fuji-city, and Nakakawane-cho) in Shizuoka pref. from 1993 to 1997.

#### Local adaptability

'Tsuyuhikari' is adapted to all green tea area of Shizuoka prefecture because of its resistance to disease and its tolerance to cold. It is suitable cultivar for environment-friendly cultivation due to the resistance to disease especially for anthracnose. It is expected that 'Tsuyuhikari' will be able to combine with 'Yabukita' or take the place of 'Yabukita'.

#### Points to notice for cultivation and tea manufacturing

It is easy to cultivate 'Tsuyuhikari' because of its resistance to disease and its tolerance to cold. As 'Tsuyuhikari' has strong vigor of plants, it is necessary to pay attention to bush formation of young plant age, skiffing and pruning for increasing number of bud.

The color of liquor became bright green color when it's steamed longer than usual. But 'Tsuyuhikari' has tender leaves, so it is not necessary to be steamed for a long time to prevent losing its appearance.



Fig.3 Tea plant of 'Tsuyuhikari'