

The Daio Wasabi Farm Project

Nagano (長野市 *Nagano-Shi*), is the capital city of Nagano Prefecture, located in the northern part of the prefecture near the confluence of the Chikuma and the Sai rivers, on the main Japanese island of Honshū. As of April 1, 2011 the city has a population of 387,146. The total land area is 834.85 km².

Nagano is most famous for Zenkō-ji, a 7th century Buddhist temple which overlooks the city. A million tourists visit Nagano annually, the gateway to a variety of sightseeing spots. Nagano was originally a small town in Kamiminouchi District built around the hilltop temple, the largest wooden building in eastern Japan, but the city now encompasses locations that were within Sarashina, Hanishina, and Kamitakai districts as well.

Like most of Honshū, Nagano has a humid subtropical climate, although its location in a sheltered inland valley means it receives less precipitation than any part of Japan outside Hokkaidō. The city still receives heavy winter snow totalling 2.57 metres over four months from December to March.

Wasabi (ワサビ(山葵), originally 和佐比; *Wasabia japonica*, also known as Japanese horseradish, is a member of the *Brassicaceae* family, which includes cabbages, horseradish, and mustard. Its root is used as a condiment and has an extremely strong flavor. Its hotness is more akin to that of a hot mustard rather than the capsaicin in a chili pepper, producing vapors that stimulate the nasal passages more than the tongue. The plant grows naturally along stream beds in mountain river valleys in Japan. There are also other species used, such as *W. koreana*, and *W. tetsuigi*. The two main cultivars in the marketplace are *W. japonica* cv. 'Daruma' and cv. 'Mazuma', but there are many others.

Wasabi is generally sold either as a root which is very finely grated before use, or as a ready-to-use paste in tubes. In sushi preparation, sushi chefs usually put the wasabi between the fish and the rice because covering wasabi until served preserves its flavor. Fresh wasabi leaves can be eaten, having the spicy flavor of wasabi roots.

Because the burning sensations of wasabi are not oil-based, they are short-lived compared to the effects of chili peppers, and are washed away with more food or liquid. The sensation is felt primarily in the nasal passage and can be quite painful depending on amount taken.

Wasabi is difficult to cultivate, and that makes it quite expensive: as high as Yen1000 to Yen 500 per pound. Outside Japan, "real" wasabi is rare, and colored horseradish-based substitute is normally used instead; in the United States, wasabi is generally found only at specialty grocers and high-end restaurants.

Wasabi have allyl isothiocyanate, which is produced by hydrolysis of natural rhizome thioglucosides (conjugates of the sugar glucose, and sulfur-containing organic compounds); the hydrolysis reaction is

catalyzed by myrosinase and occurs on when the enzyme is released on cell rupture caused by maceration—e.g., grating—of the plant's rhizome. The unique flavor of wasabi is a result of complex chemical mixtures from the broken cells of the rhizome, including those resulting from the hydrolysis—glucose, and other methylthioalkyl isothiocyanates: 6-methylthiohexyl isothiocyanate, 7-methylthioheptyl isothiocyanate, and 8-methylthiooctyl isothiocyanate. Isothiocyanates inhibit microbe growth, with implications for preserving food against spoilage and suppressing oral bacterial growth.

Few places are suitable for large-scale wasabi cultivation, and cultivation is difficult even in ideal conditions. In Japan, wasabi is cultivated mainly in: Izu peninsula, located in Shizuoka prefecture, Nagano prefecture, Shimane prefecture, Yamanashi prefecture, Iwate prefecture. There are also numerous artificially cultivated facilities as far north as Hokkaidō and as far south as Kyūshū. As the demand for real wasabi is very high, Japan has to import a large amount of it from China, Ali Mountain of Taiwan, and New Zealand.

In Nagano wasabi is produced in Daio Wasabi Farm, on an integration of wasabi farming and tourism. The Daio farm receive tourist that come to visit how wasabi is produced, and also the tourist want to eat many of wasabi dish provided in the farm. This system is very sustainable because the Daio farm can get cash income from different sources such as selling fresh wasabi roots and fresh wasabi leaves, and also from the restaurants and shops.



Fig 1. Daio Wasabi farm map.

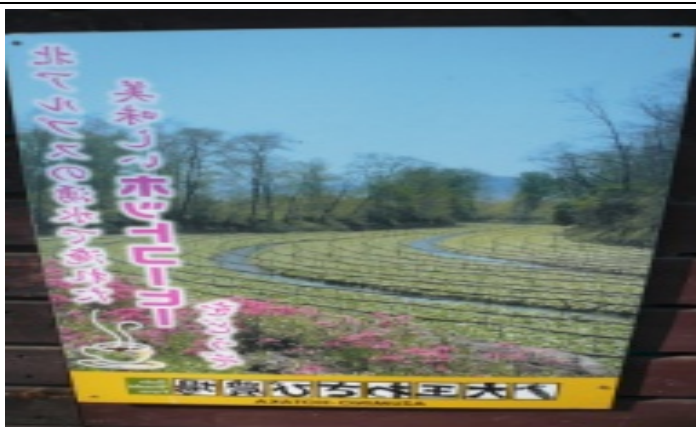


Fig 2. In Daio farm eco-tourism make more profitable the entrepreneurship.



Fig 3. Inside the Daio farm there are many facilities for tourist, in the restraints there have many wasabi



Fig 4. Wasabi Ice-cream is one attraction, it is very

dishes.



Fig 5. Wasabi green beer is another attraction for the tourist, delicious!

delicious.



Fig 6. An high quality wasabi root, these quality is the most expensive in farm dor.



Fig 7. In wasabi shop everybody want to buy an souvenir “omiague” mostly made from wasabi.



Fig 8. The irrigation system of wasabi require clean water, and in Daio farm it is made by the gravity method.



Fig 9. there are some boats, and the tourist can ride it across the chanel in the farm.



Fig 10. The Majestic Matsumoto castle in Nagano.