PGR SECURE

Landrace potato onions in Finland

Potato onion (*Allium cepa* Aggregatum Group) is close to shallot (Ascalonicum Group), although producing larger bulbs and a stronger aroma. Potato onion is a northern onion type, supposedly of eastern origin. Potato onions were commonly cultivated in Finland (especially in the north and east of the country) until the mid 20th century, after which time the cultivation declined and has become very limited.

Morphologically rich variation amongst potato onions can be seen in size (from one to several centimetres in diameter); in shape (from round to oval); in color of the skin (from light yellow to light red); in resistance to virus and other deceases; in division of bulbs (from a couple to 15); and in storage resistance.

29 accessions of potato onions have been accepted for long term storage in field collections at MTT Agrifood Research Finland. The main field collection is situated in the Article Circle and the duplicate collection in the very south of Finland (latitude 600 N).

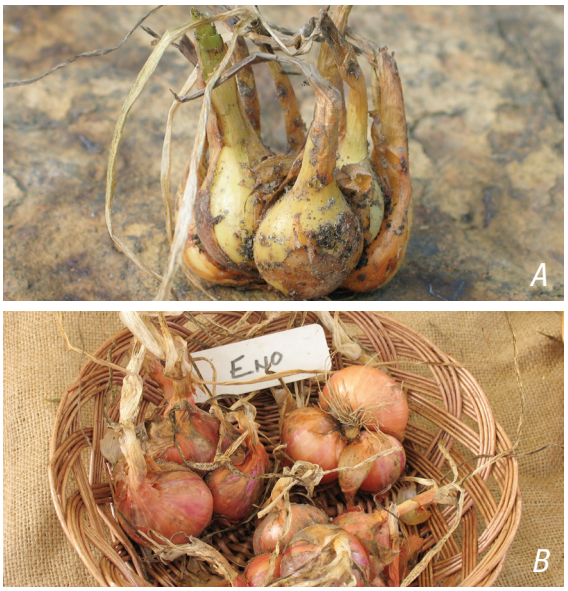
POTATO ONIONS *IN SITU*

In the PGR Secure project an inventory of *in situ* conserved potato onions in Finland was carried out. In order to contact growers a call for potato onions still in cultivation was released via local and national print and audiovisual media and public events (e.g. garden fairs).

We received 45 contacts of potato onion growers from throughout Finland. They were asked to send a couple of bulbs as a sample for DNA analysis and 41 samples were received. The bulbs were planted in pots and grown in a glasshouse to get a couple of centimetres of green shoot for DNA extraction. The potato onions in the national collection as well as the ones still in cultivation were analysed with nine microsatellite DNA markers developed for the *Allium cepa* group.

In total, 22 different genotypes (clones) were found by DNA analysis. Sixteen of them are already in the national field collection (*ex situ*). About half of the accessions of the national collection are overlapping clones (duplicates). Among the cultivated samples there were six genotypes that did not exist in the national field collection but which have now been included.

By tradition potato onion clones have been handed out to other home gardeners. *In situ* data include two particularly widespread potato onion landraces: the northern and eastern types. Additionally, four other landrace potato onion types have been cultivated in at least three different localities (municipalities).



A) A potato onion cultivated in central Finland. Photo: Maarit Heinonen/MTT
B) Potato onion 'Eno'. Photo: Maarit Heinonen/MTT

Finnish potato onions are conserved in the two field collections at MTT Agrifood Research Finland. Photo: MTT Archive

In most cases landrace potato onions are kept for several decades in the family. Many maintainers have also taken the potato onion bulbs along when moving to another locality. Today only one grows potato onions for local markets, while all other maintainers grow them for home consumption. In Finland potato onions are cultivated from the bulbs.

Potato onion needs 100 days to grow in southern Finland, but in northern Finland only about 70 days because of the longer daylight hours. Because potato onion is adapted to the northern environment, when cultivated in the south, heat treatment is required to avoid flowering (bulbs are kept for an hour at +40-42 °C in hot water). This treatment also helps bulbs to start growing. Because potato onion grows several bulbs, 20-30 cm of space is needed for each bulb planted. The 'neck' of the bulb should be above the soil surface, not covered by soil. Many home gardeners add ashes to the drill to prevent larvae of the onion fly (*Delia antiqua*).

POTATO ONION SAMPLES AT NIAB INNOVATION FARM

Five different genotypes of Finnish landrace potato onion are exhibited:

'Pudasjärvi HY 35 A' (NGB8283; FIN9) belongs to the widespread northern type and the clones are still cultivated in several home gardens around the Arctic Circle.

'Eno' (NGB17965; FIN31) belongs to the widespread eastern type and the clones are cultivated in eastern Finland near the Russian border.

'Lappeenranta HY 88B' (NGB8311; FIN25): some clones are cultivated in southeastern Finland (around N 61° E 28°).

'Pielavesi HY67B tai 67C' (FIN12) clones were cultivated until at least the 1980s in eastern Finland (around N 63° E 26°). The cultivation history of this clone can be traced to the Karelian Isthmus (around N 61° E 29°)—a former Finnish area. Today it is known to be cultivated in central Finland.

'Kuusamo 01' (NGB17970; FIN7) clones have been cultivated in the eastern part of Finland.

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