ECHO Asia Seed Fact Sheet

Scientific name – *Plukenetia volubilis*

English common name – Inca nut, Inca peanut, sacha inchi, sacha peanut, mountain peanut

Asian common names – None

Variety –
- Lao

General description and special characteristics – Inca nut is a woody vining perennial plant in the Euphorbiaceae family native to the high altitude rain forests of the Andes in South America. It has been grown for centuries for the large seed and seed oil, which is used in cooking. The seeds are oval, dark brown, and 1.5-2 cm (.5-.8 in) in diameter.

Crop uses (culinary) – Inca nut seeds contain around 35-60% oil and 27% protein. The edible oil is rich in essential fatty acids, including Omega 3 lenolenic acid (about 50% of total fat content) and Omega 6 linoleic acid (about 35% of total fat content). The seeds are also rich in iodine, vitamin A and vitamin E. Raw seeds are inedible, but roasting after shelling makes them very palatable. The viscous oil is yellow to orange in color and used for cooking.

Crop uses (other) – Inca nut oil is interesting for its drying properties and is potentially useful in the manufacture of paints, varnishes and linoleum. The seed cake, after oil extraction, has a good quality protein content of 45-60% and is used in animal feeds.

Seasons of production – With adequate water and temperature, Inca nut will produce multiple times per year. Growth and fruit set are reduced in dry, cool seasons if no irrigation is provided.

Length of production and harvest period – Harvesting dry and mature fruit takes place 6-8 months after planting. After the first harvest, plants continue to fruit, and can be harvested every 20 to 25 days, with best yields during the rainy season.

Pollination – Inca nut is a monoecious plant, meaning it has separate male and female flowers, so pollination requires insects.

Plant spacing – Direct sowing requires about 1-1.5 kg/ha, with distance between rows 2.5-3 m (8-10 ft) and distance between plants 3m (8 ft).

Production methods – Sowing Inca nut seed is based on rainfall patterns. Generally seeds are directly planted in dry conditions at the beginning of the rainy season in order to guarantee good germination. When land is irrigated, it can be planted at any time of the year. For transplants, seeds should be planted between 45 and 60 days before rains begin.

Field preparation is done according to soil conditions. Inca nut can be sown on flat land, undulating land and on slopes with good drainage. In the Peruvian Amazon, land is prepared the traditional way, i.e. slashing and burning, but this practice destroys soil nutrients and soil biology. Plowing the ground to a depth of 0.3 – 0.4 m (1-1.3 ft) and adding organic matter or manure is recommended. Levelling is necessary to keep water from pooling and causing problems related to excess moisture. Once plants have taken, they should be weeded, pests controlled, trellised, and pruned for shaping and production.

When employing a trellis system, other short cycle crops such as peanuts, beans, cotton and other low growing crops can be planted in association between rows.

Known environmental conditions for production – Inca nut's natural habitat includes areas of altered vegetation or the margins of tropical wet forests or lowlands to an elevation of 900 m (3000 ft), though it will grow at altitudes up to

1700 m (5500 ft). Plants grow and mature at the temperature range characterizing the Peruvian Amazon: minimum 10°C (50°F) and maximum 36°C (96°F). Temperatures higher than the maximum will inhibit flowering, cause fruit to drop and increase nematode susceptibility, while temperatures below the minimum slow growth and flowering. Where light intensity is low or under shade, flowering diminishes and production is less. The number of days needed to complete flowering increases as well.

Plants require constant water for optimum growth, with uniform rainfall over 12 months of 850 – 1000 mm (33-39 in) being the best. Irrigation is therefore important for commercial production, but too much water will harm plants and increase disease damage.

Known soil requirements – Inca nut can adapt to a wide range of soil types, but the best are medium-textured (sandy clay loam, clay loam and sandy loam). Heavy clay and very sandy soils are less appropriate. The plant is hardy in that it does not demand high levels of nutrients. It grows in acidic soils (pH5.5 – 7.8) and with high concentrations of aluminum.

Known pests – Inca nut is susceptible to nematodes from a variety of genera: *Aphelenchus, Helicotylenchus, Meloidogyne, Trichodorus, Tylenchus,* and *Xiphinema*, many of which target the roots and kill the plant by the second year of production.

Similarly, damage can occur from fungi from genera *Fusarium, Stagonospora, Leptosphaeria, Rhizoctionia* and *Cronartium,* and the species *Colletotrichum*. Slug attacks have been reported in marshy soils.

Seed saving – Only brown capsules still attached to the plant are harvested, as those that have fallen could be contaminated. Capsules are then dried, usually in the sun. Some oil producing companies say that drying methods that are too hot can affect oil quality. Once dry, most, if not all, capsules will crack open and the seeds can be removed. Seeds can be stored in 50-70 kg (110-155 lb) sacks in dry places.

References –

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