

Lyis: Sunflower Potato (*Helianthus tuberosus*)

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1 Introduction to *Helianthus Tuberosus*

Helianthus Tuberosus, also known as Sunflower Potato, is a perennial plant that reaches a height of up to 2.4 meters (7 feet). It is hardy in zones 4-9, making it suitable for various climates. This plant produces beautiful yellow flowers in October and ripens its seeds in November. Sunflower Potato is a hermaphroditic plant, pollinated by bees and flies. It has a rich historical and cultural background, and its edible tubers have been used for culinary purposes and the leaves are edible too.

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2 Historical and Cultural Context

Helianthus tuberosus which is latin for tuberous sunflower and can be translated as Sunflower Potato. It is also known as Jerusalem artichoke, sunroot, sunchoke, topinambur and earth apple. It is native to eastern North America and holds a rich historical and cultural significance. Native Americans of the Great Plains cultivated this large, coarse sunflower and introduced it to white settlers in the early 1600s. The edible tubers of the plant were widely consumed by Native Americans and continue to be appreciated for their nutritional value. In fact, the tubers were even enjoyed by the renowned explorers Lewis and Clark during their expedition in 1805. The common name "Jerusalem" is derived from the Italian word "girasole," which means "turning to the sun," alluding to the plant's characteristic heliotropic nature. The references to artichoke are due to it having inulin which is also found in artichokes. The name topinambur derives because a brazilian of the Tupinamba tribe presented a Canadian sample to the Vactican.

3 Planting Outdoors

To grow Sunflower Potato, plant the live plant seedlings in pots during the growing season, ensuring they have enough time to establish roots. This plant thrives in well-drained soil and can tolerate sandy loam, clay loam, and heavy clay soils. It prefers mildly acidic to neutral pH levels but can grow in mildly alkaline soils as well. Choose a sunny location, as Sunflower Potato does not grow well in shade. Provide moist soil and protect it from maritime exposure. Spacing and depth recommendations should consider the plant's growth habit and root pattern, allowing enough room for its runner spreading by rhizomes or stolons.

4 Transplanting

Transplant the Sunflower Potato seedlings once they are large enough to handle. Use deep pots to accommodate the tap root and provide enough space for the plant to grow. Place the plants into their permanent positions as soon as possible, preferably in their first summer. Consider protecting them from the cold during the first winter. Alternatively, you can sow the seeds directly in situ, providing protection from mice and cold temperatures.

5 Ongoing Plant Care

Water the Sunflower Potato plants regularly, keeping the soil moist but not waterlogged. Adjust the watering frequency based on soil dryness, ensuring the plant receives adequate moisture. Fertilize the plants according to a schedule that includes all seasons, taking into account the plant's growth and fruit production requirements. Pruning is generally not required for Sunflower Potato unless there are specific growth issues. Be aware of common pests and diseases and take necessary measures to prevent and treat them. Planting wildflowers around the Sunflower Potato can attract beneficial insects that help control pests and promote pollination.

It is best to maintain three separate sunflower potato patches, if you wish to enjoy the leaves, tubers and flowers.

6 Edible Uses

6.1 Leaves

The leaves are edible from spring until autumn, though they have little hairs on them to defend from insects, so they are best processed such as via blending, drying, or cooking before eating. Notably if you use a plant for leaves, it will not have many tubers, and will not have flowers. The leaves store well, so can dry or otherwise preserve large quantities for winter eating.

When picking them can often simply pinch off the top cluster of leaves, which are the freshest and smallest. the plant will regrow new ones within a week or two. You can fertilizer with a balanced fertilizer and one high in nitrogen and calcium such as calcium-nitrate to encourage more palatable leaf production. Can add micronutrients so that you have more nutritious leaves.

6.2 Tubers

The tubers of Sunflower Potato are edible parts of the plant. You will not be able to find edible tubers in the spring, summer or autumn, they only form after the frost kills the top part of the plants, and the energy in the leaves and stems is transported into the tubers, and remain usable until they resprout in the spring. In early spring if you dig up the tubers after they have sprouted, you will find that the tubers are hollow, since the energy that was in them was taken out to use for the plant to grow.

To optimize for tuber production do not pick the leaves, but do pick off the flowers when they form. Can also apply a balanced fertilizer, micronutrients and one high in potassium and phosphorous to encourage large tuber production.

6.3 Digestion

The tubers are rich in inulin, a pre-biotic sugar that provides bulk without many calories, some of it transforms to fructose after hard frost, giving the potatoes their sweetness. Some people may have difficulty digesting inulin if eaten in large quantities as it is a prebiotic, causing discomfort or flatulence, this can often be remedied by starting with small amounts, and having probiotic lactic

acid bacteria such as kefir or tibicos. It is also possible to ferment the tubers in brine with lactic acid bacteria, to make them easy to digest. The roasted tubers can be used as a coffee substitute, and the inulin can be converted into fructose. Inulin is common in many other plants as well, such as chickory root, dandelion greens and cactus pear. So some suggestions apply to eating those, start slow, and take with probiotics for most pleasant experience.

6.3.1 Harvesting

You can harvest them most easily using a garden fork at any point in the winter, two weeks after the first hard frost when the ground is not frozen. They do not store well when out of the ground so are best used or preserved immediately, though if you wish to keep them fresh, you can keep them in well drained sand, in a shed that is near freezing. They can survive up to 1-2 weeks in the fridge.

6.3.2 Cooking

The tubers can be consumed raw or cooked. After experiencing frosts, the tubers develop a pleasant sweetness. Many people like them fresh, as they are crispy and delicious. They can be cooked and used in various culinary preparations similar to potatoes, though they have a different texture. If cooking then lightly frying them in oil gives the best texture. They have a much shorter cooking time than potatoes.

7 Storage Methods for Sunflower Potatoes

Sunflower Potatoes, or *Helianthus tuberosus*, can be stored using various methods to preserve their quality and extend their shelf life. Here are three common storage methods:

7.1 Fermentation in Brine with Lactic Acid Bacteria

One method of storing Sunflower Potatoes involves fermenting them in brine with the help of lactic acid bacteria. This process not only helps to preserve the tubers but also enhances their flavor and nutritional value.

To do this, clean the tubers and place them in a brine solution made with a mixture of fresh water and salt. The tubers should be fully submerged in the brine. The lactic acid bacteria present naturally on the tubers will initiate the fermentation process. Though you can add some tibicos grains and sugar to help it along. Allow the tubers to ferment at a cool temperature for a specific period, usually a few weeks. The result is a tangy and probiotic-rich product that can be used in various culinary preparations.

8 Dehydrating

Dehydrating Sunflower Potatoes is another effective storage method. Similar to dehydrating chicory root, the tubers can be sliced or grated into thin pieces and then dried using a dehydrator or an oven set at a low temperature. The dried Sunflower Potato slices can be stored in airtight containers in a cool, dry place. Rehydrating the dried tubers before use can bring back their original texture and flavor. Dehydrated Sunflower Potatoes can be used in soups, stews, or as a nutritious snack.

9 Storage in Moist Sand near Freezing Point

Another traditional storage method for Sunflower Potatoes involves keeping them in moist sand near the freezing point. After harvesting the tubers, clean off any excess soil and place them in a container or crate filled with slightly moist sand. Make sure the tubers are not touching each other. Store the container in a cool and dark location where the temperature remains near freezing but does not dip below it. Regularly check the tubers for any signs of spoilage or rot, removing any affected ones to prevent the spread of decay. This method can help maintain the quality of the tubers for an extended period, allowing you to enjoy them fresh over the winter months even if the ground freezes outside.

By employing these storage methods, you can ensure the long-term preservation of your Sunflower Potatoes, extending their usability and allowing you to enjoy their unique

flavors and nutritional benefits even beyond the harvest season.

10 Propagation

10.1 Tuber-Based Propagation

The Sunflower Potato, or *Helianthus tuberosus*, can be propagated using tubers, which are the underground storage organs of the plant. The tubers should be planted as early as possible in the spring when the soil is workable. Late planting can result in reduced yields and smaller tuber size. Choose whole tubers or pieces weighing around 50 grams (2 ounces) for planting. Larger pieces do not increase yield, and smaller pieces may decrease it, but will still yield a viable plant if grown in a pot. Plant the tubers like potatoes, covering them to a depth of up to 10 centimeters.

It is important to note that if the first frosts occur before the end of November, there may not be viable seeds produced. Therefore, tuber-based propagation is a reliable and commonly used method for cultivating Sunflower Potatoes.

10.2 Seed Propagation

Seeds can also be used to propagate Sunflower Potatoes. Sow the seeds in the spring in a cold frame, ensuring they are large enough to handle. Once the seedlings are of sufficient size, transplant them into individual pots and allow them to grow in a

greenhouse for their first winter. Plant them out into their permanent positions in late spring or early summer, after the last expected frosts. Keep in mind that the plants may not produce viable seeds if the first frosts occur before the end of November.

10.3 Division

Another method of propagation for Sunflower Potatoes is division. This can be done in either spring or autumn. Divide the plants by carefully separating the tubers and replanting them. Spring division is preferable as it allows the plants to establish and grow throughout the growing season.

10.4 Basal Cuttings

Basal cuttings can also be taken in spring. Harvest shoots when they are about 10 to 15 centimeters long, ensuring there is plenty of underground stem attached. Pot the cuttings up into individual pots and keep them in light shade, either in a cold frame or greenhouse, until they have rooted well. Plant them out in the summer, allowing them to establish and grow in their permanent positions.

By utilizing these propagation methods, you can expand your Sunflower Potato collection and enjoy their delightful flowers and nutritious tubers. Remember to choose the method that suits your preferences and growing conditions, and take into account the timing of frosts to ensure successful propagation.