

# Papaya Seed Preparation, Germination and Cultivation

### History:

Papaya is a crop requiring care and attention, especially in the early stages of production. A well cared for and healthy crop can produce large yields of fruit and resist disease.

Solo papaya is a precocious, low bearing variety maturing its first fruits approximately 9 months after transplanting at a height of 3' or about 1 meter. There is little or no sterility, depending on season and growing conditions.

Fruit from hermaphrodite plants is pyriform in shape with a slight neck (pear shaped). Flesh is sweet with mild but distinctive Solo flavor and aroma. Total dissolved solids content ranges from 12% to 17%, with an average brix of 15.5% under good growing conditions.

All of the Hawaiian variety of papaya; Sunrise, Sunset, Waimanalo X-77 as well as the Certified Red Maradol and Gold Maradol F1 Hybrid produce a 66% Hermaphrodite and 33% Female gender mix.

The Vietnam, Taiwan and Mexican varieties of Papaya also produce a pyriform or elongated shaped fruit while the female fruit is very round. Some varieties produce a more distinct gender difference than others.

The sweetness of each particular variety is different and listed in our detailed variety descriptions.

The Tainung #1, #2 & #3, Known-You #1, F1 Solo Sunrise, Red Glory and Red Lady #786 produce a 50% Hermaphrodite and 50% Female gender mix.

In general, we have found the Hawaiian Solo varieties and Certified Red Maradol more adaptable to elevation changes than the Taiwan varieties. The Taiwan seeds tend to be considered lower elevation crops, where the Solo varieties can be grown in elevations up to 800 meters, assuming proper environmental conditions are met.

The solo papaya produces approximately 90 tons per hectare in Hawaii. Given optimal conditions seed should germinate within 15 to 30 days. Keep in mind that germination can take up to six months under less than desirable conditions.

In general, papaya crops require consistent watering without becoming water logged as the roots can rot easily.

During periods of drought many varieties of papaya will become sterile and no fruit production occurs.

The Waimanalo X-77 is particularly well suited for wet weather conditions. Waimanalo X-77 requires very consistent water as can experience fruit deformity and fruit drop during periods of drought.

### Seed Preparation:

1. Rinse seed in clean water 3 times to remove any residues
2. Place seeds in a cup or vessel with clean, room temperature water.
3. Allow seeds to soak for 24 hours. Remove seeds that have sunk and plant them.

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4. Drain all the water and fill again and let the remaining seeds soak for another 24 hours.
5. Plant the seeds that have sunk and discard the rest.

During the soaking phase make sure to use very clean water. If the water has bacteria or is dirty it can drastically reduce the % of germination.

### Germination:

Once the seeds have been saturated with clean water they can be germinated in several ways.

The two most common methods to germinate seeds is by using sterile potting medium or a cloth sling. You can start seedlings in sterile soil or seedling mix, in 4-inch pots and avoid dust and other vectors of soil born diseases. Seeds can also be germinated in cotton slings. Either way, the medium containing the seed needs to be sterile and kept moist at all times.

Given the correct environment (full days of sun and temperatures above 78 F), seeds will begin to germinate within 1 to 3 weeks depending on the variety.

If seeds are in slings, each germinating seed needs to be carefully transplanted to a pot with sterile soil once the tap root emerges.

During germination it is preferred to have seeds under cover to protect them from birds, rats and other pests that will eat the seed. Once the potted seedling reaches 4-6 inches in height it can be transplanted to the prepared planting location.

### Planting and Fertilization:

A prepared hole should be established prior to planting. New transplants adapt quickly to prepared soil and a large hole aids the plant in optimum growth.

It is best to dig a hole 24 inches wide and 24 inches deep. The removed soil can be mixed with fertilizer, mulch and other amendments before back filling occurs.

It is best to place two or three plants per hole since the gender will not be known until flowering occurs. Follow below instructions for optimal growth.

Optimum fruit yields are obtained with a pre-plant base of two pounds per hole of treble super phosphate (0-46-0), with an initial side-dress of up to 1/2 pound of (16-16-16). This is usually banded below the planting hole to avoid direct contact with the roots. This initial fertilization encourages the development of multiple fruits at each node.

There after trees are fertilized with 1/2 pound of (16-16-16) per month for the next nine months. Then the rate is increased to 1 pound (16-16-16) per month for the next nine months.

The final period of productive growth is usually managed with urea (46-0-0) at .19 to .3 pounds of actual Nitrogen (N) per tree every 8 to 12 weeks. The low rate (.19) is for wet conditions with low light and the high rate (.3) is for drier conditions with high sunlight.

The above rates can be adjusted according to the yield desired and the natural fertility of the soil in which they are grown. The pH of the soil should be above 5.8 for best results with a pH of 6.4 being considered optimum.

It is best to have all trees irrigated, as plants will develop stress after a few days without water.

Likewise, it is important to make sure drainage is very good as too much water will encourage root rot and plant death.

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During the plantation growth it is best to remove any dead leaves from the area as it will help to minimize disease.

It is also suggested to develop a consistent plan of preventative pest control. There are many philosophies regarding pest control and we do not encourage any particular methodology.

### Planting Strategy:

- 3 seedlings are planted at each site on a 7'x7'x12' grid. Depending on the method of harvest, plants can be spaced closer together to have as many as 1,000 sites per acre.
- At 3-4 months the strongest Hermaphrodite tree is selected and the remaining two are cut down. The Hermaphrodite will produce the largest quantity of fruit during the season.

These general instructions will assist you in developing a viable and thriving crop. Our experience has taught us that every region exhibits different climactic and environmental conditions and there is no general answer that will help everyone.