Major pest and disease

The most common disease and pest in Bhutan at present are scab and stem borer.

Scab disease

Scab is caused by a fungus (*Cladosporium caryigenum*) and is the most important disease in pecan.

Early symptoms are the appearance of numerous small, brown to black spots, especially on the underside of the leaves. The spots become larger and merge until the entire leaf turns black. Immature leaves drop off.

Similar spots are visible on the shuck of the nut resulting in delayed development and misshapen nuts.

Control

Proper management of tree canopy for airflow and sunlight will keep the orchard from fungal growth. Spray fungicide before flowering and after fruit set to control scab.

Photo 3. Pecan nut shells damaged by scab (red arrows).

Stem borer

Stem borer (*Anoplophora sp.*) is the most damaging pest in pecan trees. Red-brown granular excretions around the base of the trunk are observed and it is discharged by the pink colored larvae.

Control

keeping the orchard clean by collecting all the dead twigs and leaves from the orchard floor and burning. Spray insecticide.

Nutrient management

Depending on the soil test results, pecan orchards may need fertilizers to correct soil pH and other micro and macro nutrients deficiencies. The two most important nutrient required are;

Nitrogen: Pecans must have nitrogen to grow well. Apply nitrogen at bud break in April and again in May and June.

Zinc: is essential for maximum leaf expansion and pecan growth. Most of the soil is deficient in zinc and therefore it is necessary to spray during the onset of spring every-year.

Potassium and phosphorus: Potassium is required for translocation of carbohydrates, regulation of osmosis, and the activation of enzymes within the pecan tree. Phosphorous is needed to store energy and produce of wood and nuts. The whole amount of potassium and phosphorous fertilizer can be applied in March together with first dose of nitrogen. Wood ash can also be applied as it contains about 4% of K and less about 2% P.

Agriculture Research and Development Center
Bajo Wangdue Phodrang
Department of Agriculture, Ministry of Agriculture and Forests

PECAN NUTS

New Variety Release

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Integrated Horticulture Promotion Project
2016-2021

The Knowledge of Pecan

Background

The pecan (*Carya illinoensis*) is a deciduous sub-tropical plant. It belongs to the walnut family.

Pecans are native to the lower Midwest and Southeastern United States. It is one of the most desirable trees to plant, due to their size, nutritious nut and natural beauty as a shade tree in home yards. Other pecan producing countries include Australia, Mexico, China, Argentina, Israel and South Africa.

Climate and Soil

The ideal climate for pecan production is short and cold winters, and long and hot summer with no early or late frost. It requires both chilling and heat. The average monthly maximum temperature should be higher than 28°C during summer and lower than 23°C in winter. The average monthly minimum temperature during the summer must be above 16°C.

Pecan can be grown in varied soil that are deep, well drained and well aerated. Soils that allow water penetration to depth of one to two meters are optimum.

Photo 1.
Harvest maturity indicator.

Planting

Planted at a spacing of 7 X 7 m, 9 X 9m. Pit size of 1meter x 1meter x 1meter should be dug and filled with mixture of soil, well decomposed FYM/compost (20-25 kilogram), and 200gram single superphosphate and mulch with saw dust, dry straw or crop residues aids growing condition by conserving moisture and aiding in weed control.

Propagation

The rootstock are raised through seeds and grafted after 2-3 years.

Training and pruning

Pecan trees are trained to modified central leader. The training and pruning of the trees is carried out for the first four to five years. Right after planting, about 1/3 to 1/2 of the plant is removed. This encourages more vigorous, upright shoots from the two to three nodes below the cut. One of these shoots can be selected as the centre leader during the next dormant season.

Harvesting

Pecans must be harvested as soon as when the shuck begins to open.

When about 60 to 70 percent of the nut clusters have open shucks, harvesting can begin. The most easy and effective way of harvesting is to shake the tree branches to drop the nuts. Some varieties will drop almost all their nuts. The nuts can be stored at room temperature for as long as 6 months.

Photo 2. Modified central leader tree form at ARDC Bajo.

Description of varieties

Cultivar	Avg. nut wt (g)	Avg. nut diameter (mm)	Avg. nut length (mm)	Avg. kernel Wt (g)	Nut shape	Nut color	Full bloom date	Harvest time
Bajo Thasa Targo-1	6.9	21.8	36.9	4.4	Oval to oblong	Reddish brown	March-April	October-November
Bajo Thasa Targo-2	6.8	21.6	38.0	4.5	Oval to oblong	Reddish brown	March-April	October-November