

Patch Budding in Aonla (*Emblica officinalis*)

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Aonla (Indian gooseberry) scientifically known as *Emblica officinalis*. It is a deciduous tree that has been cultivated across the Indian subcontinent for centuries. The challenge with growing aonla from seeds is that it produces plants with considerable genetic variation—some trees might produce small, sour fruits while others bear larger, sweeter ones. Seed-grown trees also take significantly longer to start bearing fruit, sometimes it's take six to eight years compared to just three to four years for budded plants.

Introduction

Patch budding has emerged as the commercially preferred method for aonla propagation across India, particularly in major growing states like Gujarat, Uttar Pradesh, Rajasthan, and Maharashtra. The technique works exceptionally well for aonla because the tree has relatively thick bark that's easy to work with, and the larger contact area created by the rectangular patch promotes stronger union formation between the scion and rootstock.

What is patch budding?

Patch budding is a standard vegetative propagation method used in aonla (Indian gooseberry) to produce true-to-type, high-yielding plants. It is a technique where a rectangular piece of bark containing a single bud is cut from a scion and fitted into an exact matching rectangular opening stripped from the rootstock's bark. It is best performed during the active monsoon season (June to August) on 1-year-old seedling rootstocks at a height of about 20–25 cm.

Timing of patch budding

The success of patch budding depends heavily on choosing the right time. In most regions of India, the optimal period extends from mid-May to September, coinciding with the active growing season when both rootstock and scion bark separate easily from the underlying wood. Regardless of location, avoid budding during extremely hot, dry weather or heavy rainfall. Early morning or late evening hours provide optimal conditions when temperatures are cooler and humidity levels are naturally higher.

Preparing the rootstock

Success in patch budding begins with selecting appropriate rootstock material. seedlings should be healthy, vigorous, and approximately six to twelve months old with stem diameter around pencil thickness—roughly eight to twelve millimeters.



Selecting and preparing scion material

The quality of your scion material directly determines the characteristics of your future trees. Select bud wood from mature, disease-free aonla trees that have demonstrated superior fruit quality, yield, and adaptation to local conditions. Popular commercial varieties in India include Kanchan (NA-4), Krishna (NA-5), NA-6, NA-7 and Banarasi, each offering different attributes suited to various growing conditions and market preferences.

The ideal scion wood comes from current season's growth that has recently matured and shows well-developed, plump buds. The best buds are usually found on shoots that have recently completed their growth flush.

Patch budding procedure

1. **Double cut the budwood.** Center a plump, healthy looking bud between the budding knife blades. Begin on the left side of the bud and with firm pressure rotate the knife to the right. Make the double cut through the bark and approximately 1 ½ inches long.
2. **Double cut the stock.** Select a smooth, convenient location on the stock. Make a double cut approximately 1 ½ inches long, by rotating a double bladed budding knife around the stock.
 - **Complete preparation of stock.** Connect the double cut on the right side with one perpendicular cut. This can be done with one of the budding knife blades or a single bladed knife.
 - **Raise the bark** on the stock with a flip of the knifepoint or the tongue attached to the cut end of some budding knives.
3. **Complete preparation of the patch for removal from the bud wood.** Connect the double cut on both sides of the bud with two perpendicular cuts. Loosen the patch containing the bud at all four corners with the knife point. Hold the patch with the bud located between the left thumb and index finger. Twist the left hand toward either direction. With the right hand, rotate the bud stick in the opposite direction.
4. **Transfer the patch from bud stick to stock.** When completely loosened, pick up the patch containing the bud between the knife and thumb or finger and quickly place in the matrix on the stock flush with the right side of the connecting (perpendicular) cut made on the stock. The bark flap on the stock is then creased and torn or cut to fit the patch. A slight overlap of the bark flap over the patch can be left.
5. **Seal the patch.** Wrap with polyethylene plastic budding tape, rubber budding strips, or masking tape. Several other materials, such as waxed cloth and grafting tape, may be used successfully. Pull the wraps firmly and allow them to overlap slightly to seal out excessive air and water and to prevent drying. Cover all exposed areas well. Allow the bud to show through between the wraps.

Aonla patch budding shows successful union and active sprout growth two months after the operation:

- **Union Healing:** The patch bud and rootstock bark should be fully fused with a tight, callused green or brown margin.
- **Sprouting:** The inserted bud should have actively broken dormancy, producing a healthy green shoot with multiple new leaves.
- **Tape Removal:** The grafting or tying tape should be gently cut and removed if not already shed, ensuring it does not constrict the growing stem.



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Advantages of patch-budded aonla trees:

- Trees propagated through patch budding offer numerous benefits over seed-grown alternatives. They begin bearing fruit earlier, typically starting three to four years after planting compared to six to eight years for seedlings.
- Vegetatively propagated aonla plants attain full bearing within ten to twelve years and may continue producing for sixty to seventy-five years under well-managed conditions.
- For commercial orchards, uniformity is invaluable. Patch-budded trees produce predictable fruit size, quality, and harvest timing, simplifying orchard management and marketing.

References

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