

TECHNIQUES IN CROP IMPROVEMENT

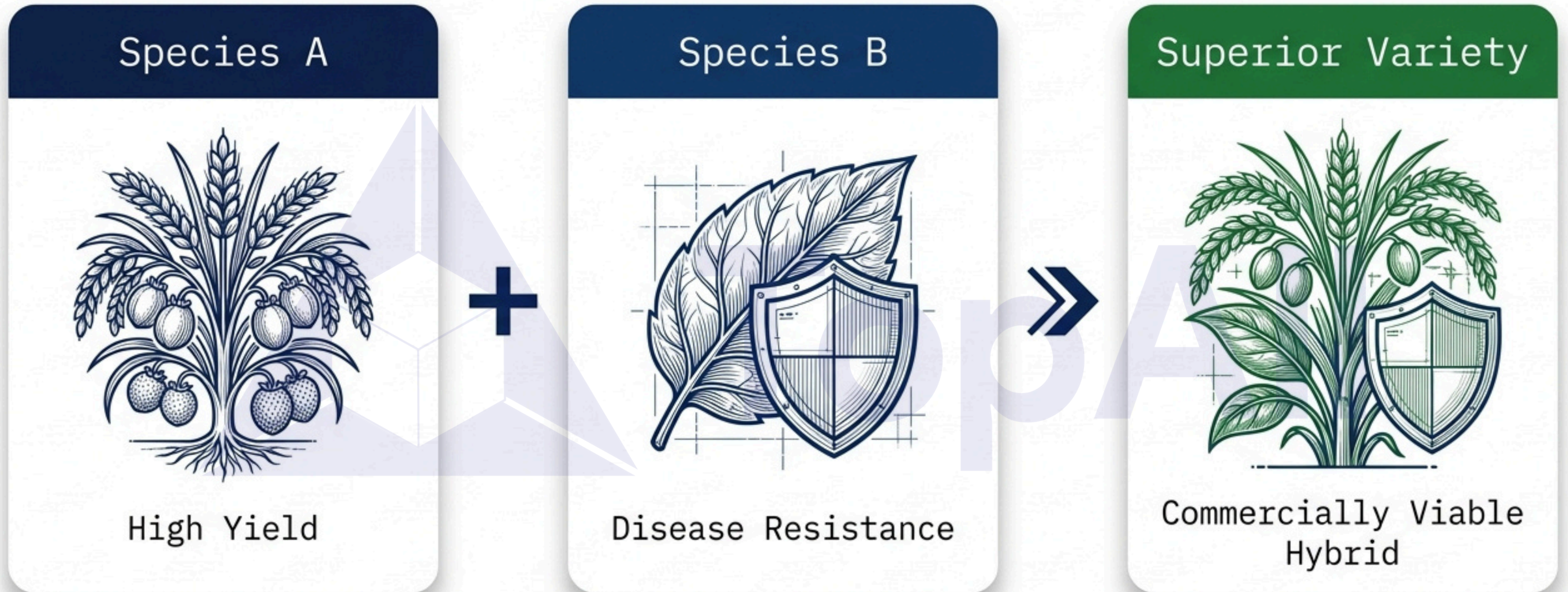


How Breeders Control Pollination

A procedural guide to Artificial Hybridisation in commercially superior crop varieties.



Visual Equation

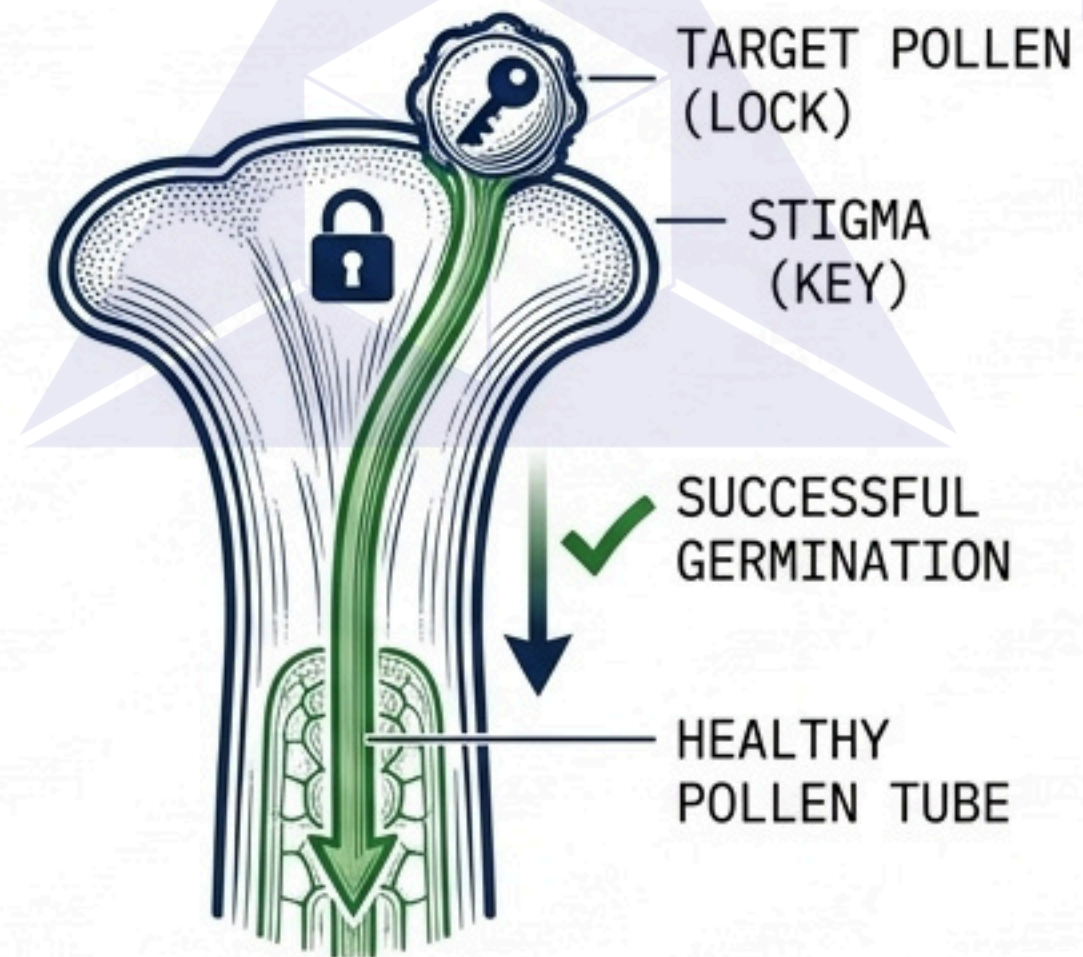


Artificial hybridisation allows breeders to combine desirable characters across different species and even genera, circumventing natural inbreeding depression.

Botanical Blueprint: Biological Stakes

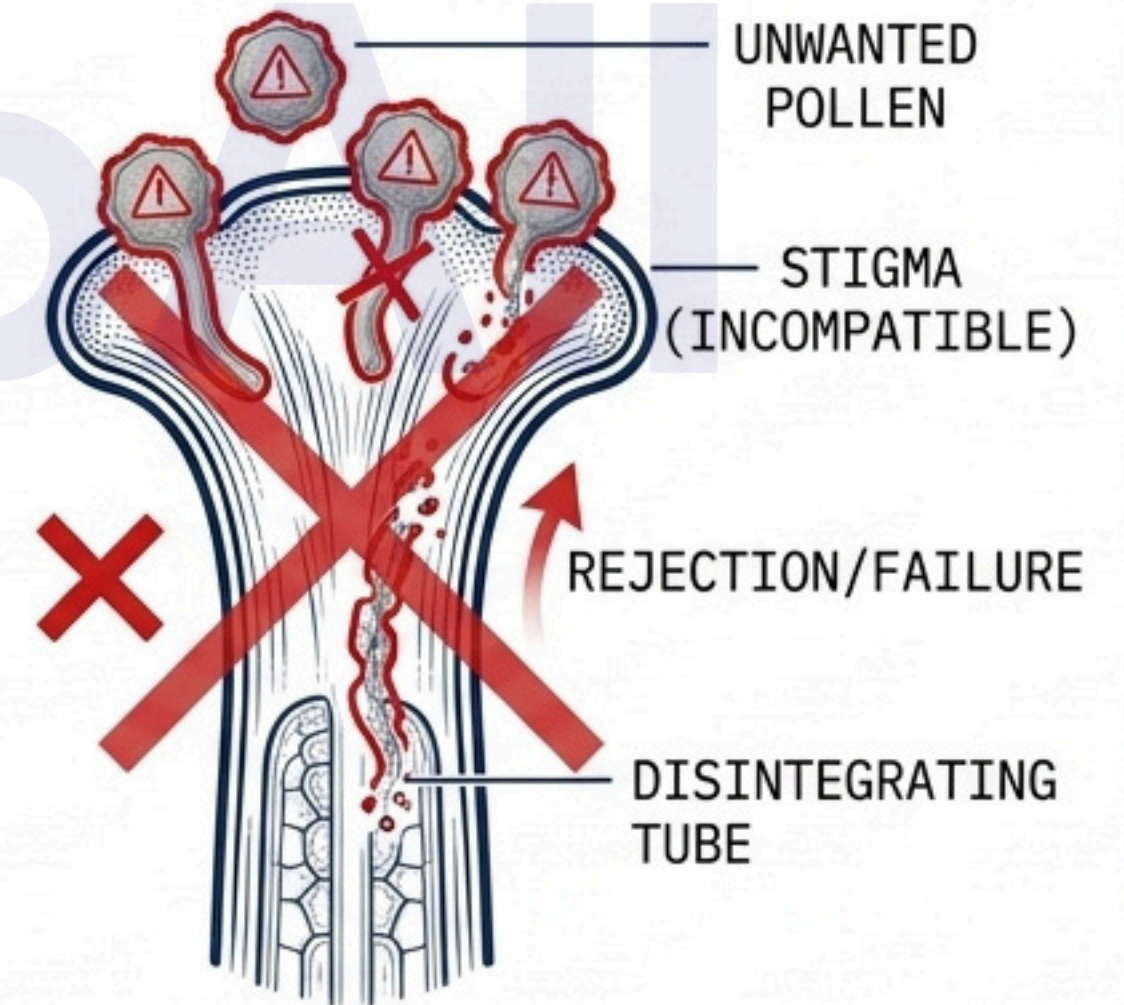
Ensure Target Delivery

Breeders must manipulate the dynamic process of pollen-pistil interaction to guarantee that only the desired pollen grains reach the stigma.



Prevent Contamination

The stigma must be fiercely protected from unwanted, wild, or self-pollen.





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Let's Test Them Now.**

$$E=mc^2$$



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Key Highlights

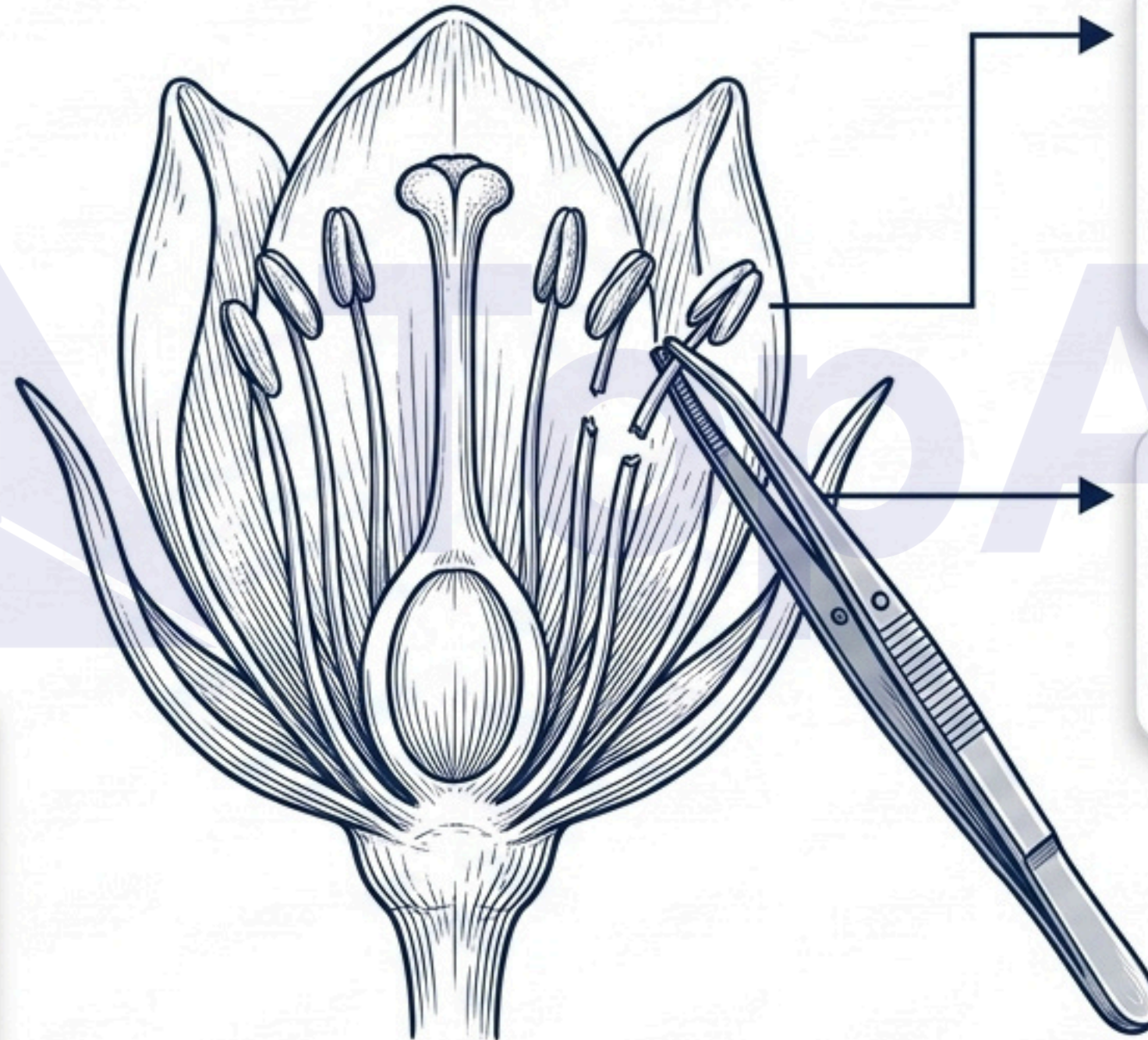
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STEP 1: EMASCULATION

Botanical Blueprint: Emasculation

Only necessary if the female parent bears **bisexual flowers**. If the plant produces unisexual female flowers, breeders skip directly to Step 2.



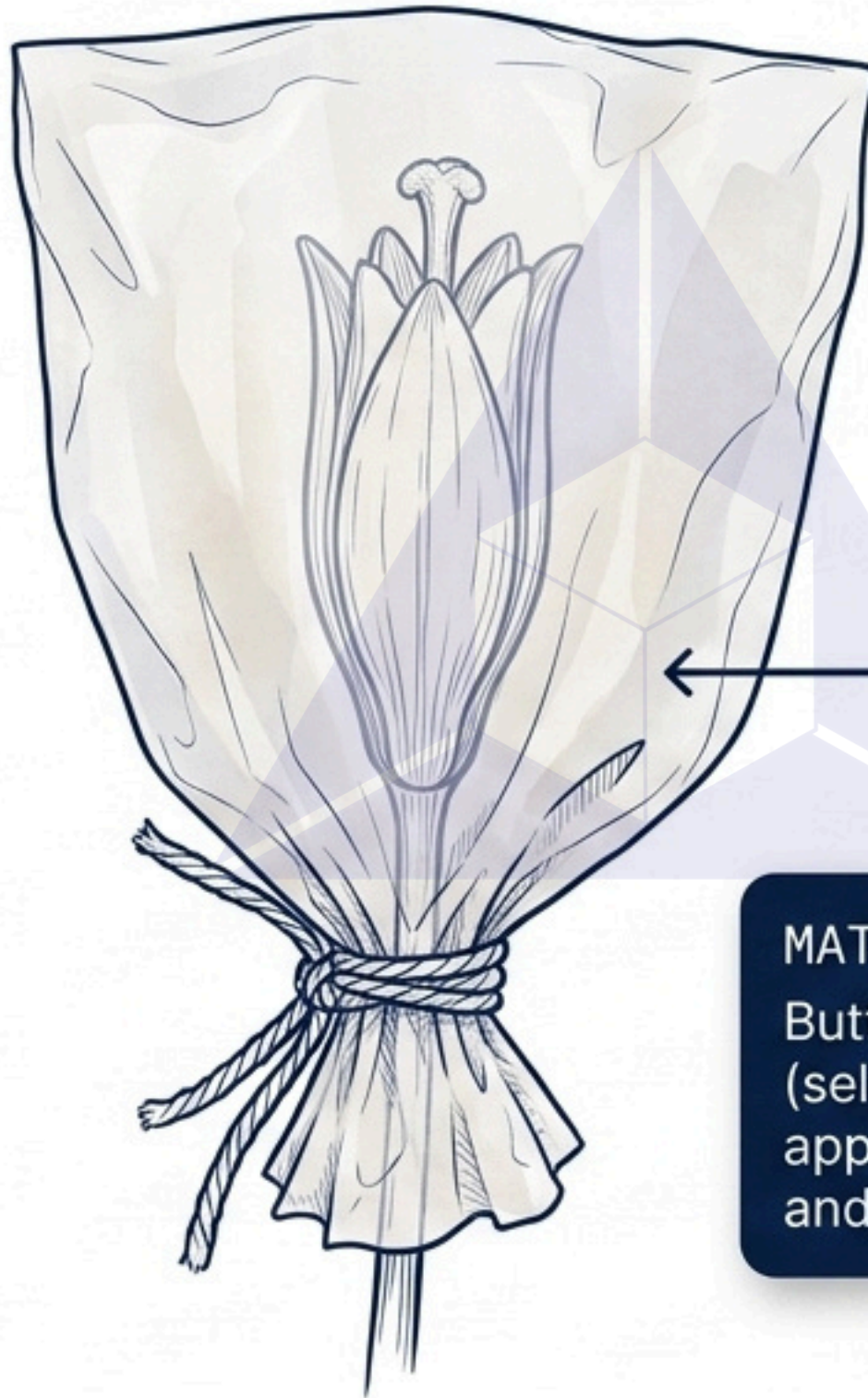
TIMING:

Must be executed before the anther **dehiscence** (bursts and releases pollen).

TOOL:

Fine-tipped forceps are used for precise excision.

STEP 2: BAGGING



MATERIAL:
Butter paper
(selected for
appropriate size
and breathability).

Securing the Stigma

The bag prevents contamination from rogue airborne or insect-borne pollen while the flower safely matures toward stigma receptivity.

The Application



Wait for peak **stigma receptivity**.
Apply mature pollen
collected exclusively
from the desired male parent.

The Final Seal



Rebagged immediately.
This allows **true fruits** to develop safely
from the ovary without subsequent,
late-stage contamination.

Precision Drives Production.

Emasculation and bagging give breeders total control over pollen-pistil interactions. This targeted, artificial hybridisation is the foundation of modern, high-yield agricultural programs.

By circumventing natural limitations, breeders continuously engineer the robust, commercially superior crops that sustain global populations.



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