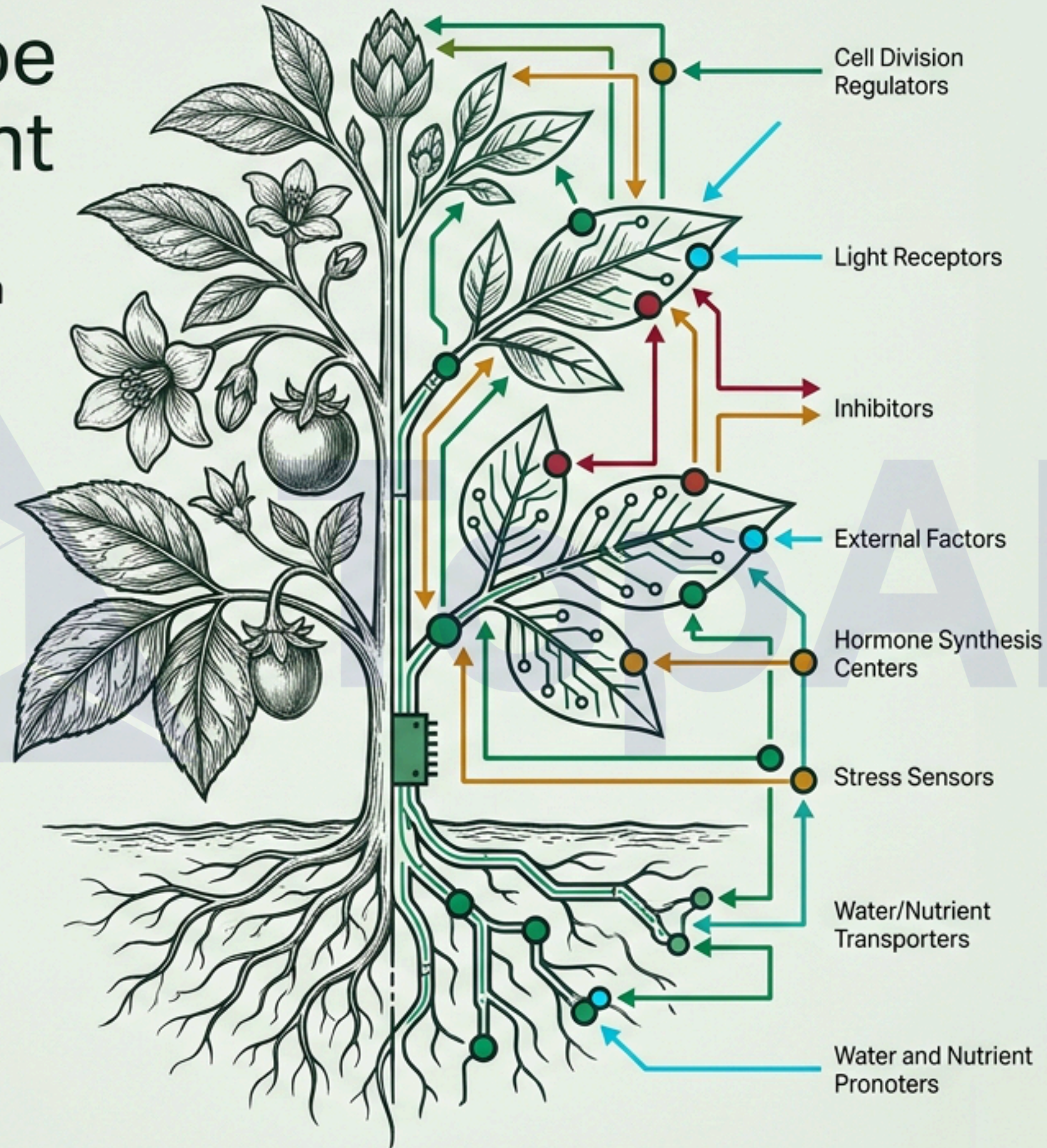
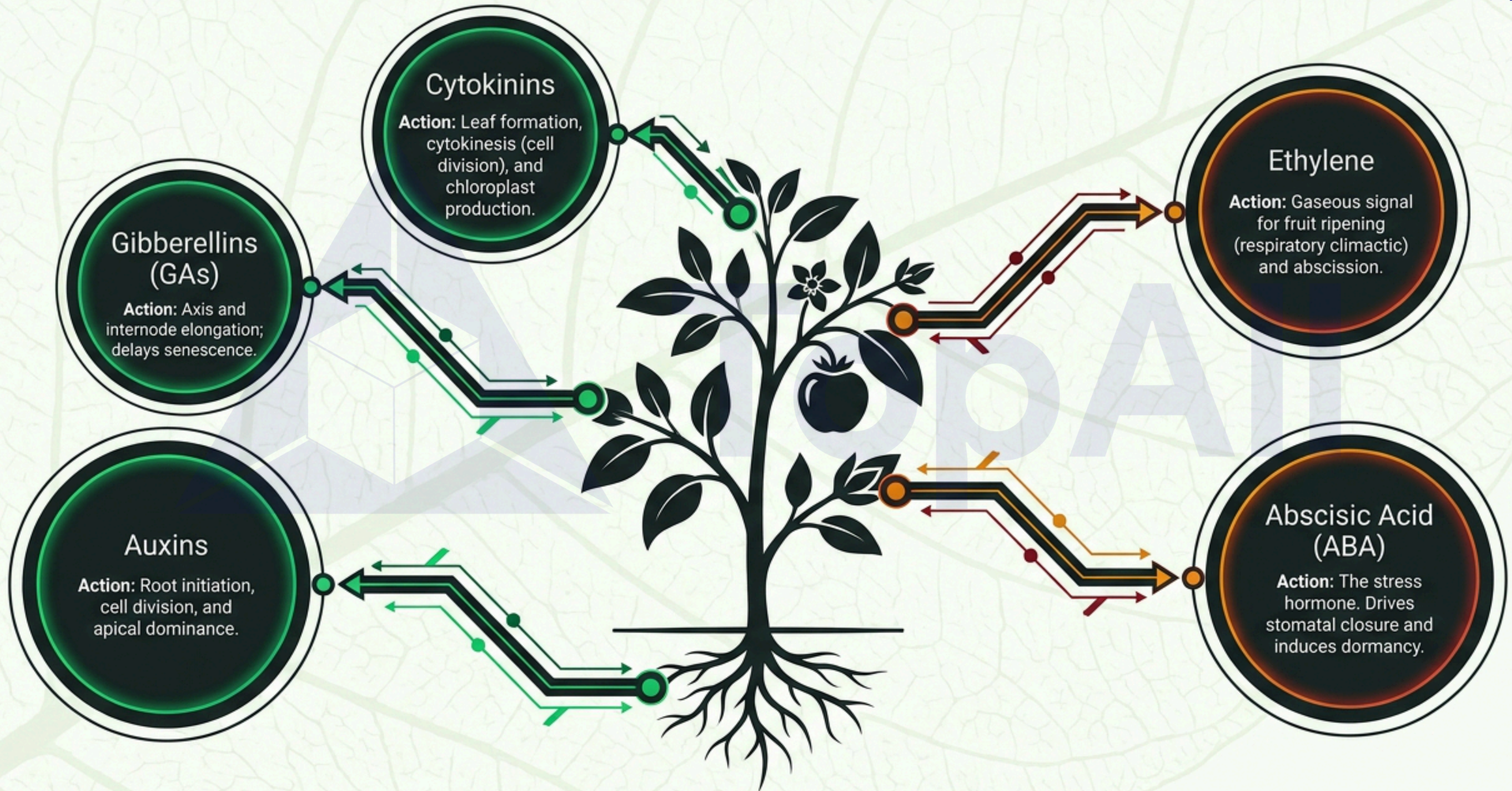


How Signals Shape Plant Development

The internal and external control systems that drive botanical growth



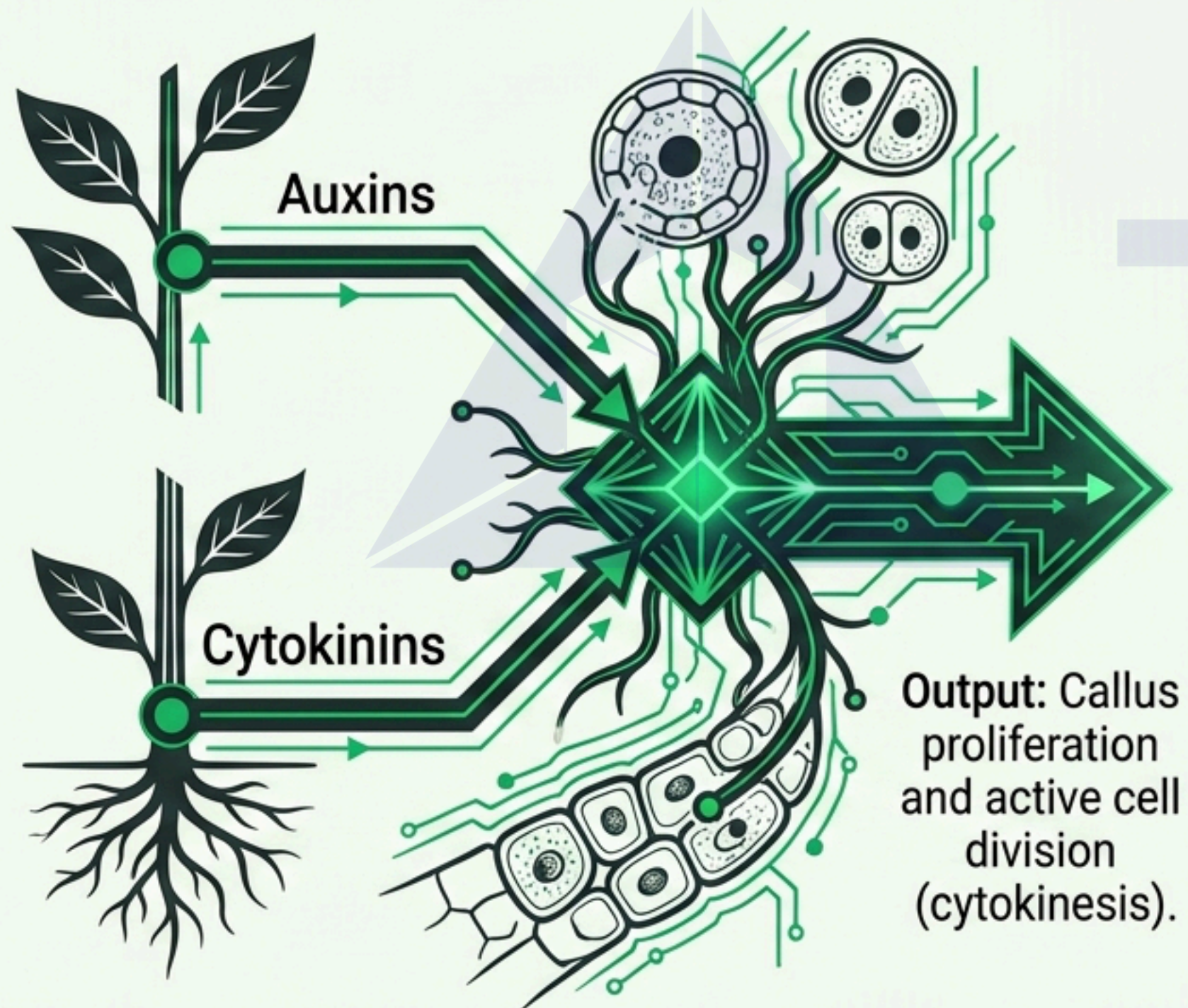
The Core Chemical Circuitry: PGRs Act Individually



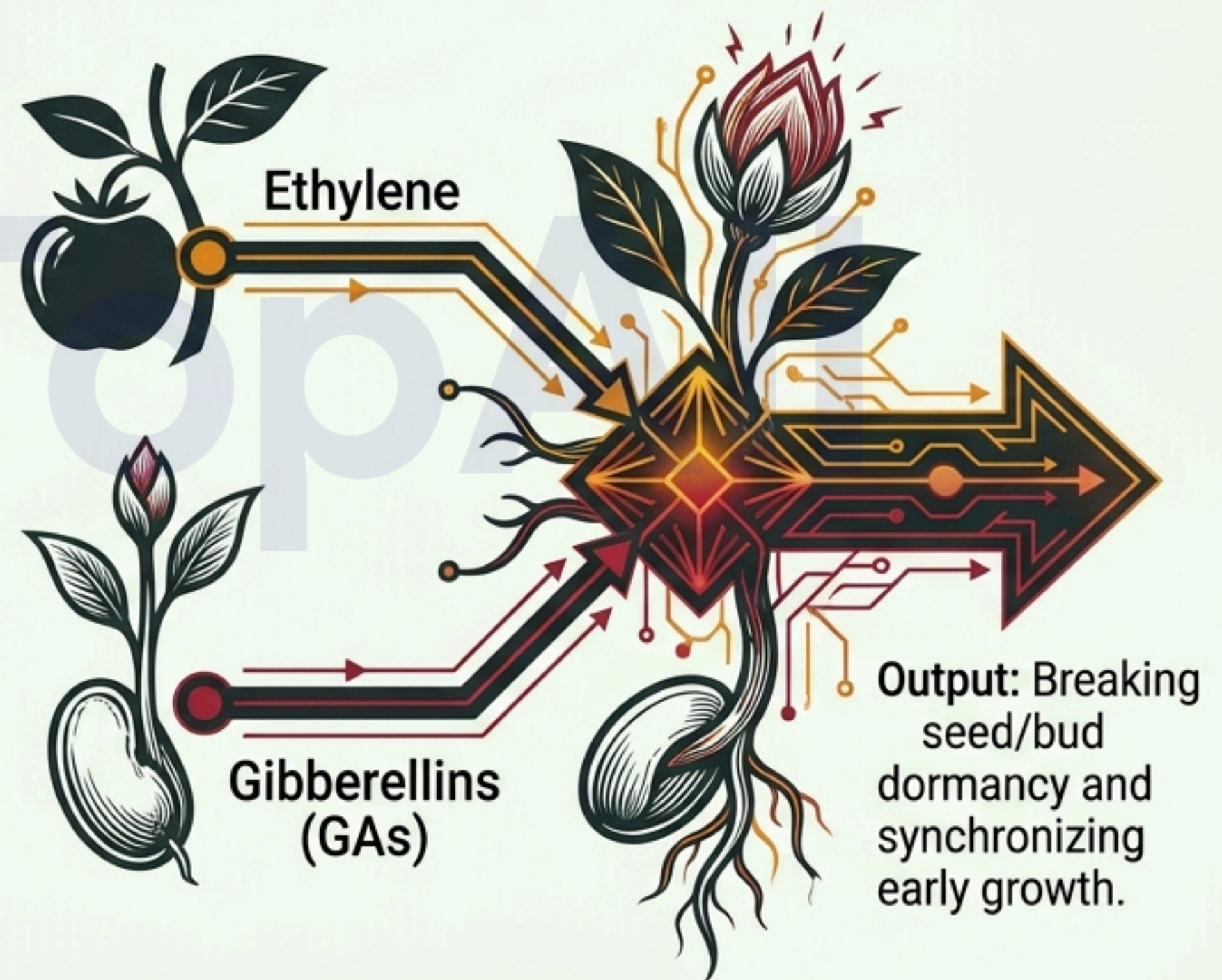
Synergistic Effects: Amplification Through Combination

Development often requires multiple PGRs cooperating to drive major lifecycle phases.

System 1: Tissue Differentiation



System 2: Overcoming Dormancy





You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter

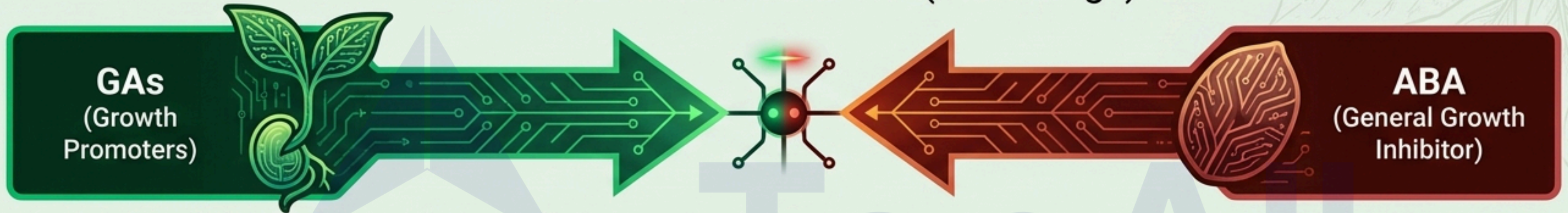


Antagonistic Effects: The Biological Brakes & Accelerators

Plant morphology is dictated by a constant chemical tug-of-war.

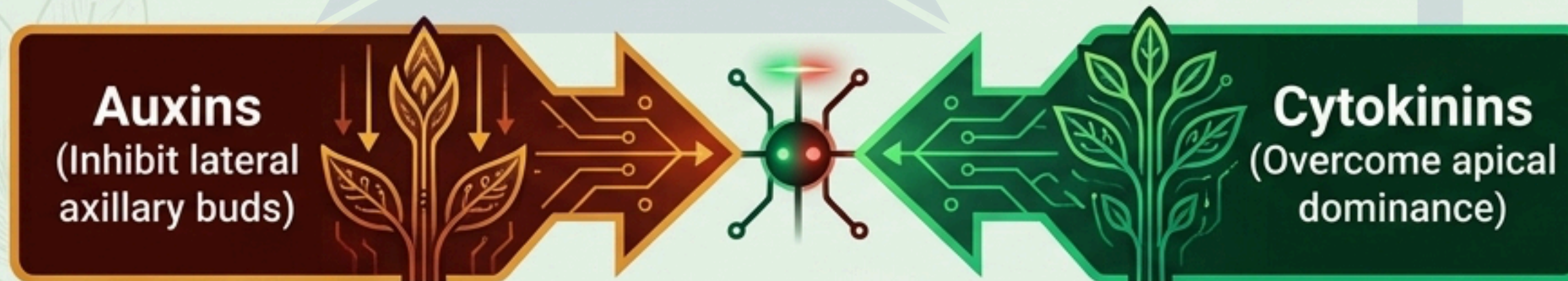


Conflict 1: Growth vs. Stress (Seed Stage)

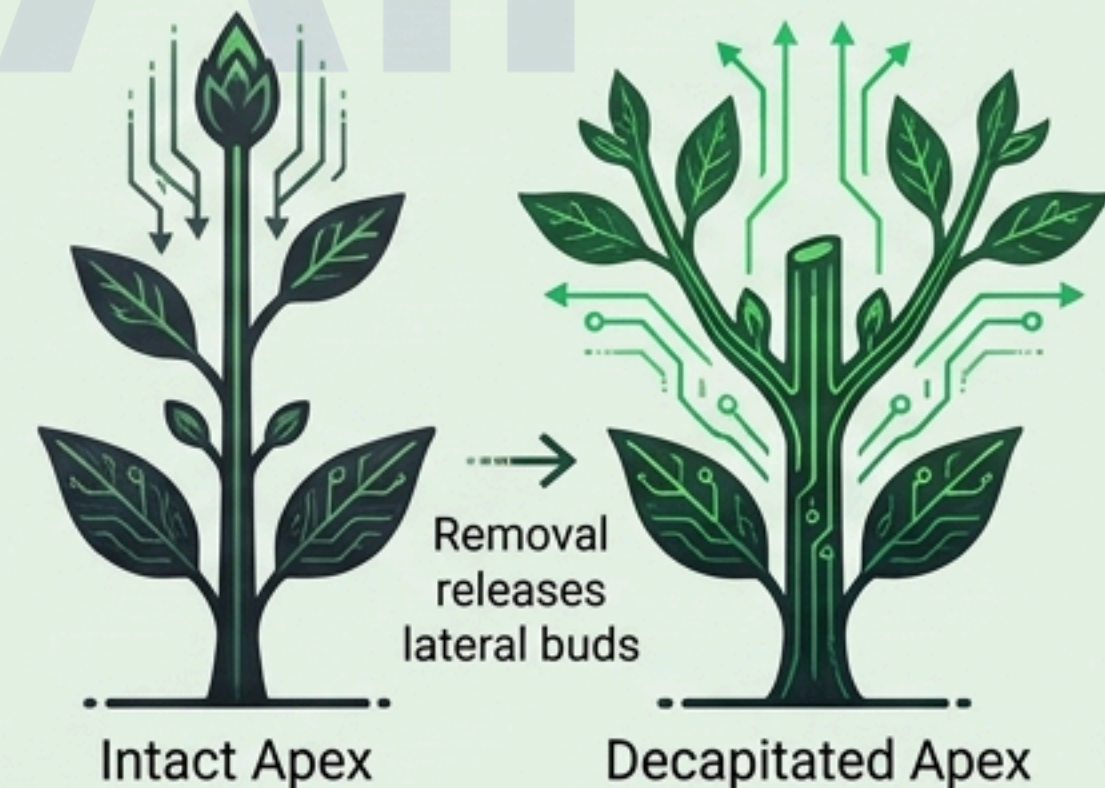


Result: ABA acts as a direct antagonist to GAs to induce dormancy during unfavorable conditions.

Conflict 2: Apical Dominance (Shoot Stage)



Result: The ratio of these two determines if a plant **grows tall and straight** or **wide and bushy**.



System Diagnostics: Controlling Critical Lifecycle Events

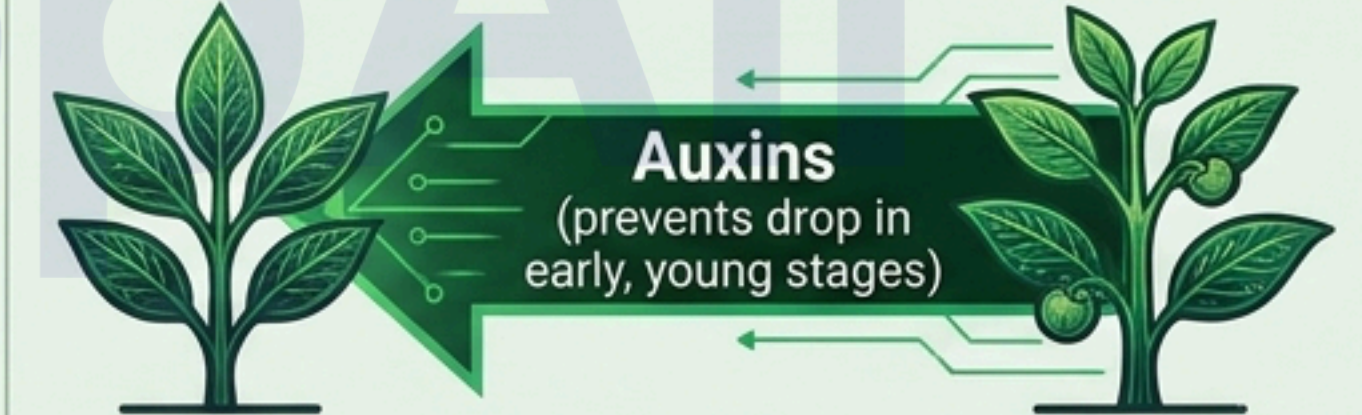
Promoters (Accelerators) 

Inhibitors/Delayers (Brakes) 

Dormancy
(Seed/Bud Rest)



Abscission
(Organ Drop/Shedding)



Senescence
(Biological Aging)



The Environmental Inputs: External Factors

Step 1: Extrinsic Inputs (The Cues)



Light



Temperature



Water



Nutrition



Oxygen,
releases
metabolic energy



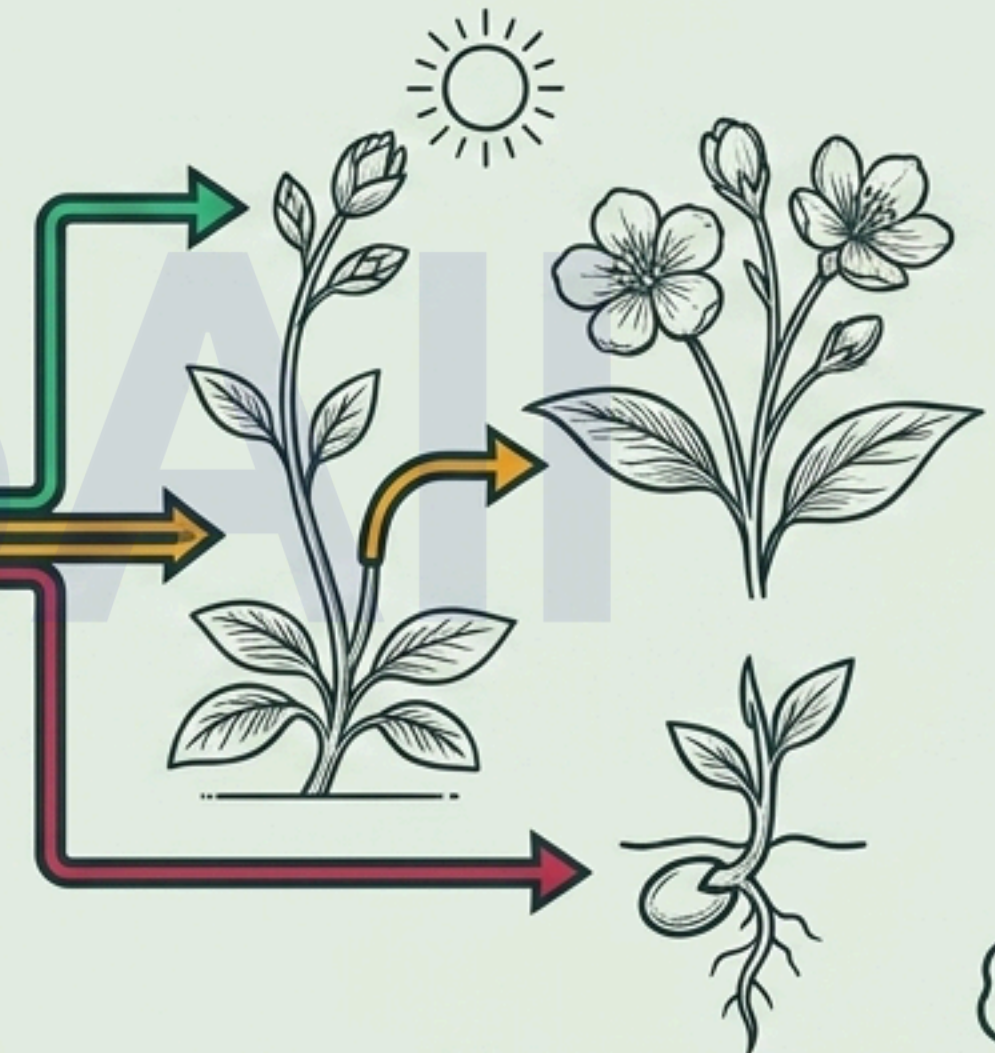
Gravity

Step 2: Intrinsic Routing (The Mechanism)



Key Insight: Extrinsic factors do not act directly on tissue. They control growth via the targeted release of PGRs.

Step 3: Developmental Output (The Response)



Vernalization, phototropism, flowering, and seed germination.

The Grand Synthesis: Plasticity in Design

**[Extrinsic Factors
(Environment)]**



**[Extrinsic Factors
(Environment)]**

**Intrinsic Factors
(Genetics + PGRs)]**



**[Intrinsic Factors
(Genetics + PGRs)]**



**Development
(Growth + Differentiation)**



**Development
(Growth + Differentiation)**

Plant development is not a rigid program. It is a highly flexible, open system (plasticity) continuously adjusting its internal chemical balance in response to external environmental signals.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis