

What is mepiquat chloride?



Mepiquat chloride is a **plant growth regulator (PGR)** used extensively in cotton to manage canopy development and improve yield efficiency. Its action is biochemical and hormonal in nature — here's how it works inside the cotton plant:

Mode of action

Mepiquat chloride inhibits gibberellic acid (GA) biosynthesis, a natural plant hormone responsible for stimulating cell elongation. By reducing GA levels, mepiquat limits internode elongation and leaf expansion, resulting in shorter, more compact plants.

Physiological effects within the plant

- **Reduces internode length and leaf size:** Less GA means shorter cells and thus shorter stems, leading to a more compact canopy.
- **Improves light distribution:** Reduced upper canopy expansion and 'self-shading' allows better light penetration to lower fruiting branches, supporting improved boll retention and fruit growth.
- **Increases partitioning to fruit:** Improved light interception in the lower canopy and improved retention means more carbohydrates and nutrients are directed to reproductive structures (squares and bolls). This further reduces excessive upper/outer canopy growth.
- **Advances cutout timing:** Improved retention can hasten the transition from vegetative to reproductive growth. This is both an opportunity (for managing harvest timing) and risk (if continued growth is required for fruit shedding compensation).

Practical agronomic outcomes

- **Reduces excessive canopy expansion** under high fertility or high soil moisture conditions.
- **Improves boll retention** through more efficient within canopy light interception over time (it does not magically make fruit stick).
- **Facilitates mechanical picking** by creating a more uniform, manageable plant structure.
- **Potentially improves lint quality** by stabilising boll load and maturation.

Key considerations

- **Timing and rate are critical** — usage needs to account for plant and environmental factors.
- **Environmental conditions** (temperature, soil moisture, radiation) strongly influence plant response.
- **Works most effectively on actively growing plants**, as uptake occurs primarily through leaves and young stems.
- **Uptake is rapid** and occurs within 2-4 hours.
- **Product impact** generally lasts 10-14 days after application.

For best results, use mepiquat chloride as part of an integrated canopy management strategy. Effective canopy management in tropical cotton should also consider sowing time and density, nitrogen and soil moisture levels, fruit retention and seasonal conditions. Because mepiquat's effects are irreversible, apply lower rates more frequently if crop response is uncertain. Before cutout, aim to gradually regulate growth through repeated, well-timed applications.

For more information see the Northern Australia Cotton Production webpage at CottonInfo www.cottoninfo.com.au/information-growers.