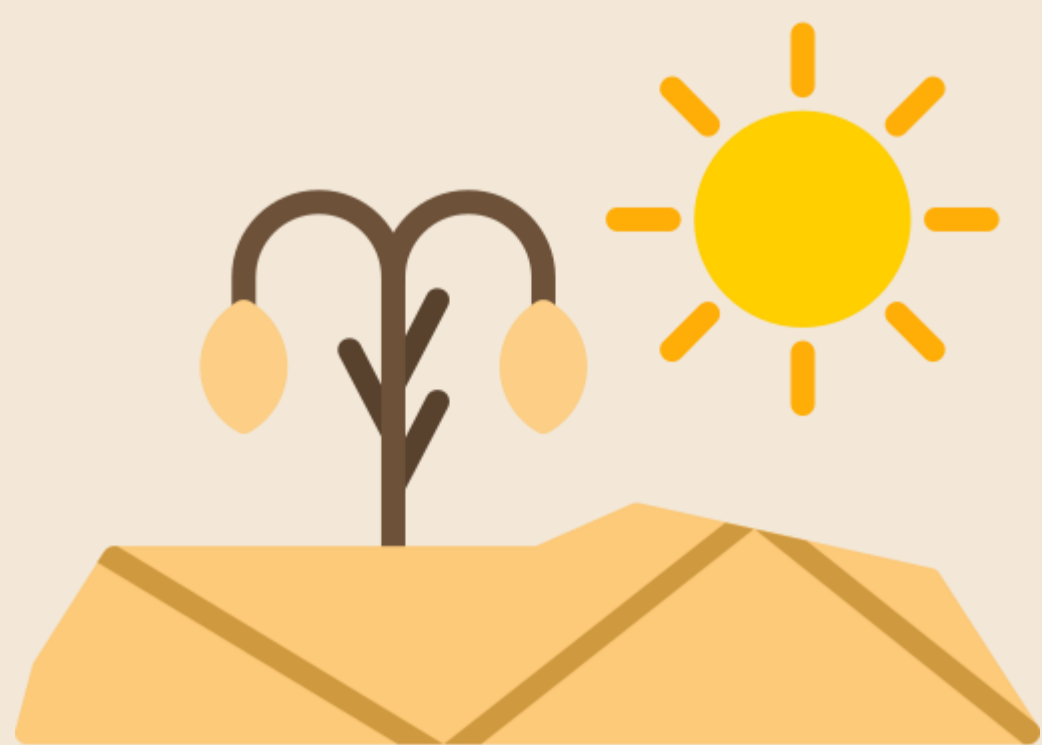




Breeding Rapeseed for Future Climates



Rapeseed production faces significant challenges from drought stress, particularly in regions with irregular rainfalls. As a result of global warming, occurrence of more often and longer heat waves together with extreme temperatures and prolonged periods of drought will negatively impact crop yields and productivity.

Under severe water stress, stomatal conductance, leaf water potential, and relative water content decrease, while leaf temperature and specific leaf weight (dry matter per unit leaf area) increase.

Breeding for Drought Tolerance

Root plays a vital role in plant survival by absorbing water and nutrients. As the first organ to perceive drought stress, root initiates signal transduction that results in defense responses.

Key Traits: Deeper root systems, efficient water use, heat tolerance.

Breeding Techniques:

- Molecular markers and genomic selection accelerate drought-tolerant hybrid development.
- Genome editing (pending EU approval) shows promise for improving drought resilience.

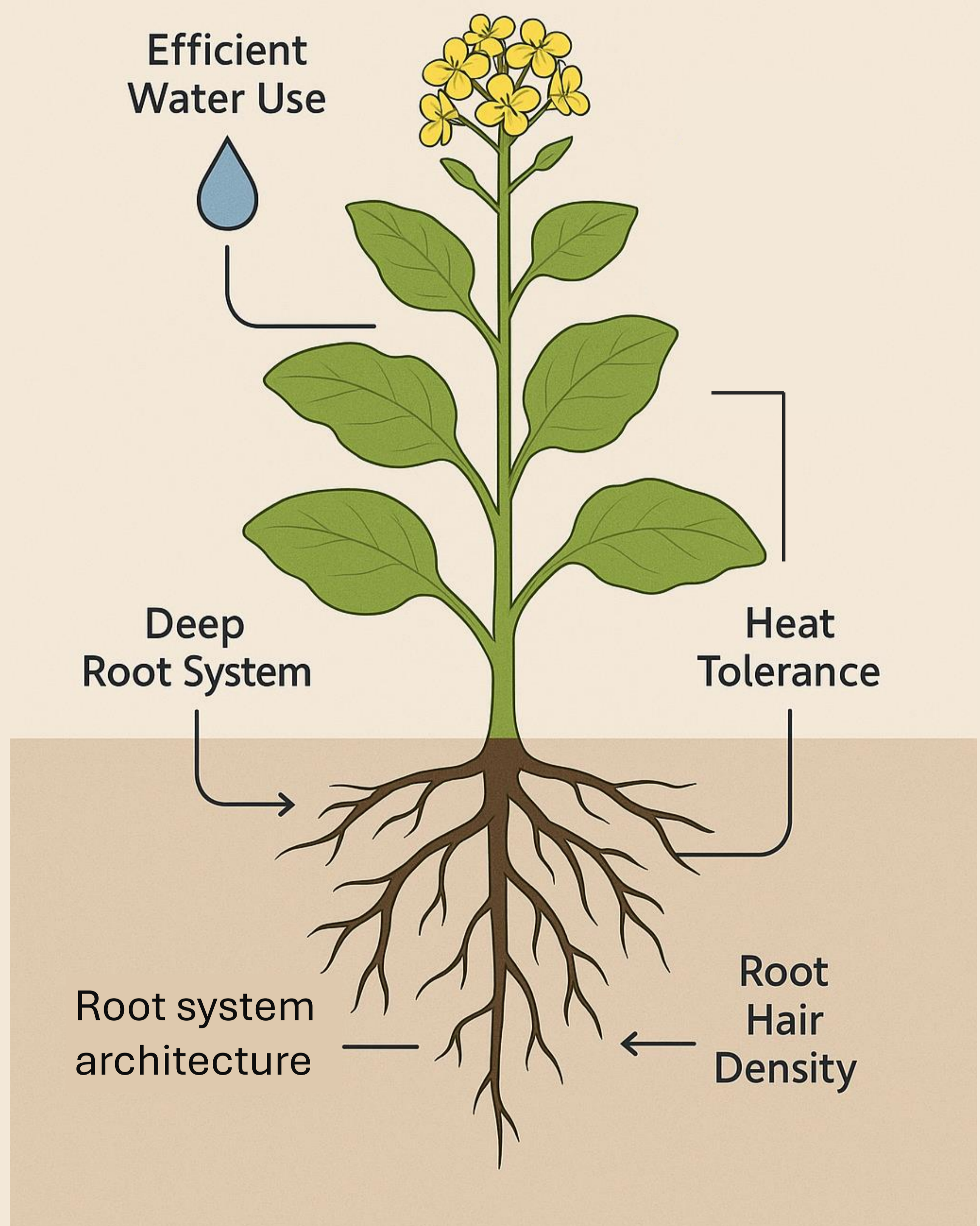
Agronomic Management Strategies

- **Optimized Sowing Dates:** Aligning planting with rainfall patterns.
- **Soil Moisture Conservation:**
 - Reduced tillage and cover cropping to enhance water retention.
 - Mulching to reduce evaporation losses.
- **Smart Irrigation:**
 - Remote sensing and precision irrigation improve water use efficiency.

Conclusion & Future Directions

Combining advanced breeding and agronomic strategies is key to mitigate drought effects in rapeseed. Further genomic research on drought-adaptive traits. Potential policy changes for genome editing adoption in the EU.

Drought-Resistant Traits in Rapeseed



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