Growth of *Passiflora alata* Seedlings for Transplant Production Treated with Selected Stimulators

J. Pablo Morales-Payan

Departamento de Horticultura

Universidad de Puerto Rico, Mayaguez

William M. Stall

Horticultural Sciences Department

University of Florida, Gainesville

Sweet Passion fruit

- *Passiflora alata*
- Sweet passion fruit
- Tropical fruit, Passifloraceae

- Same genus as ornamental passionflowers

- **Ornamental and edible value**

Distribution & Potential

- Grown and wild in many countries in the tropical regions of the Americas
- Not as widely known as *Passiflora edulis* and *Passiflora quadrangularis*
- Fresh fruit or juice

- The plant is a perennial vine
- First harvest ~1 year
- Practices to accelerate crop are welcome
- Reproduced by seed or by cuttings
- Nursery → transplanting to field

“Ideal” transplants for most Passifloraceae

- At least four true exapanded leaves
- At least one tendril
- Height 25-50 cm
- Nursery usually takes 60-80 days after emergence

Objective

- To determine the effect of selected stimulators on the growth of sweet passion fruit seedlings for transplants

Materials and Methods

- Sweet passion fruit grown from seed

- Styrofoam cups 12.5 cm in height, 8.75 cm upper diameter (180 cm^3)

Materials and Methods

- Sphagnum-based growth medium
- Fertilization 10-10-10 + micronutrients twice a week
- Watered daily (100 ml per plant)

Treatments

- Benzyl adenine (BA): 0, 10, 20, 30, 40 mg/L
- Gibberellic acid 3 (GA): 10, 20, 30, 40 mg/L
- A glycine-rich mix of amino acids and short-chain peptides (ACP): 1, 2, 3, 4 g/L
- Acetylthioproline (AP): 0, 100, 200, 300, 400 mg/L
- Triterpenic acid-rich extract (TTA): 0, 100, 200, 300, 400 mg/L

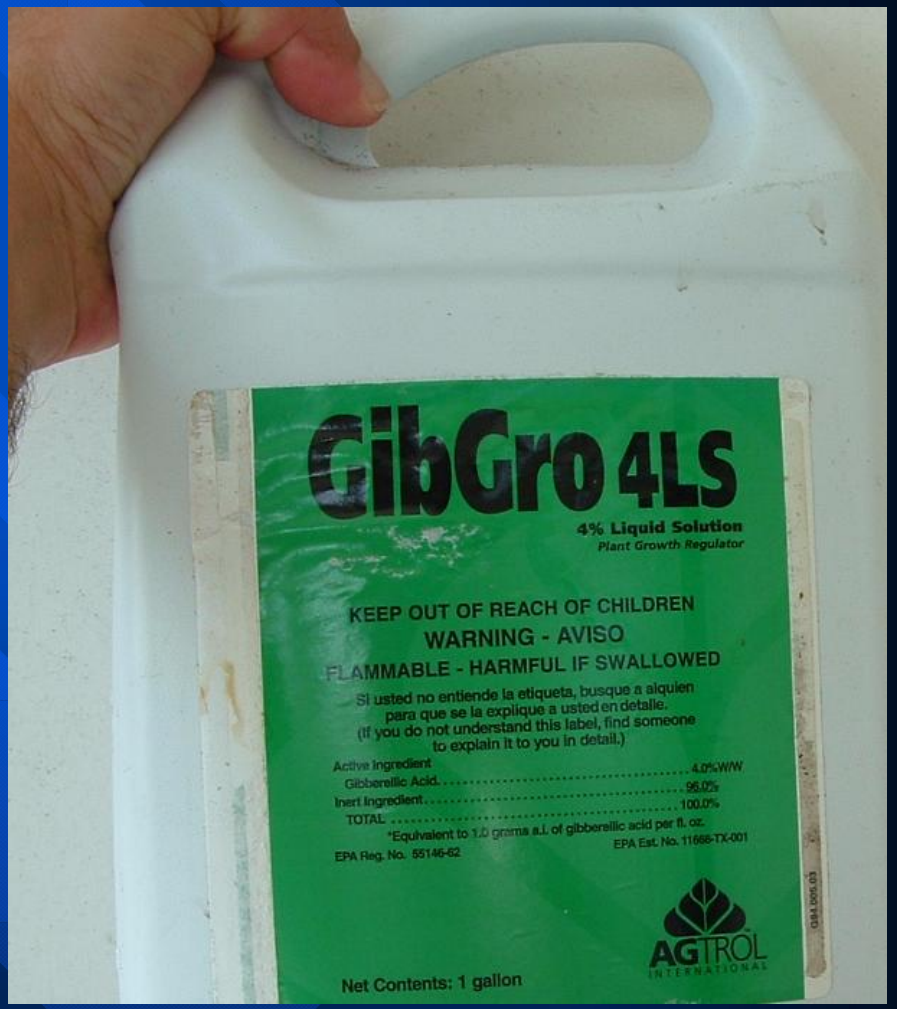
Sprayed to the canopy 15 days after emergence

Treatments

- Acetylthioproline

Treatments

- Gibberellic acid 3



Treatments

- A glycine-rich mix of amino acids and short-chain peptides

Evaluation

- Time to five expanded leaves & stem 25 cm
- Time to five expanded leaves & stem 50 cm

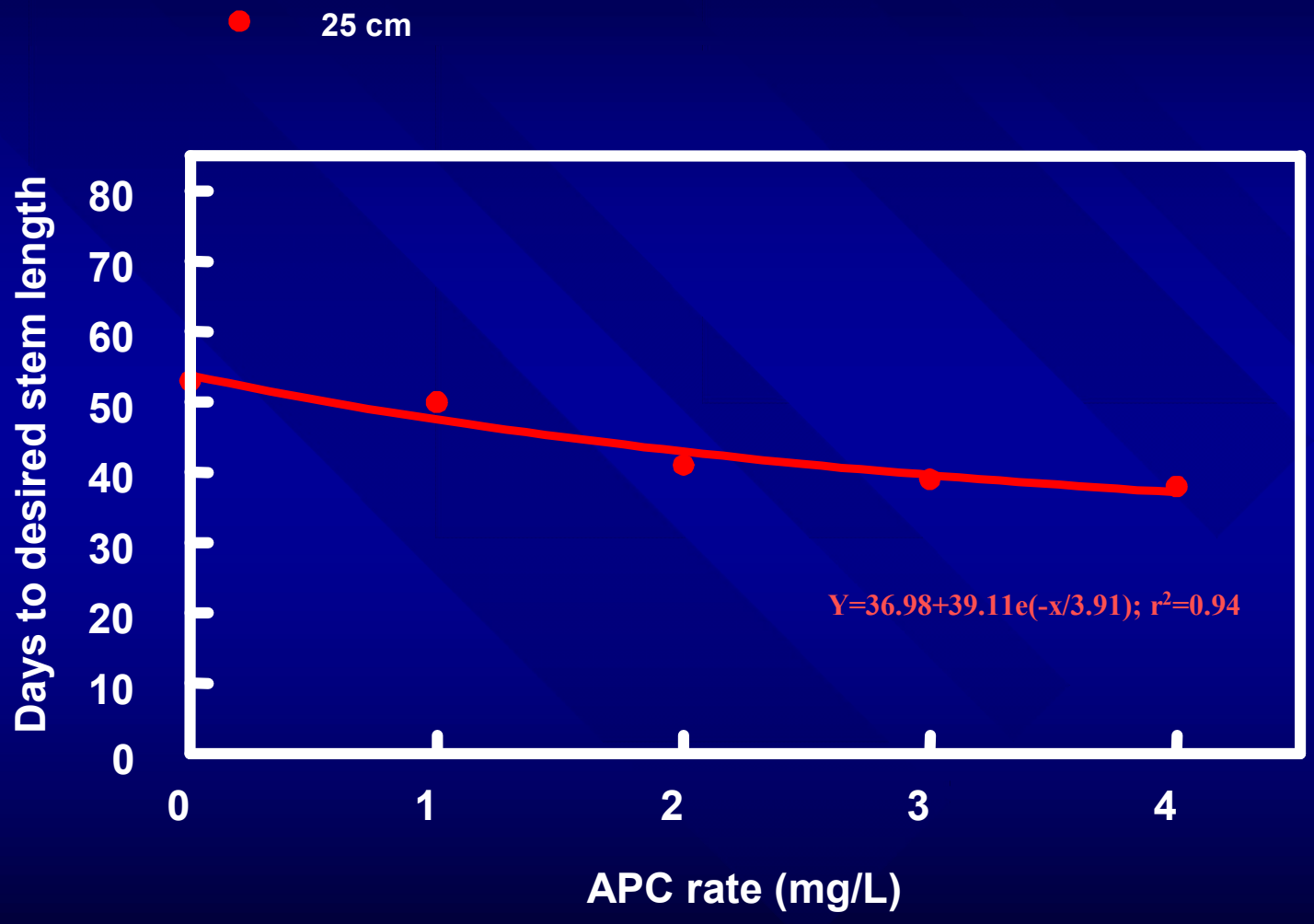
Results

Benzyl adenine and Triterpenic Acid

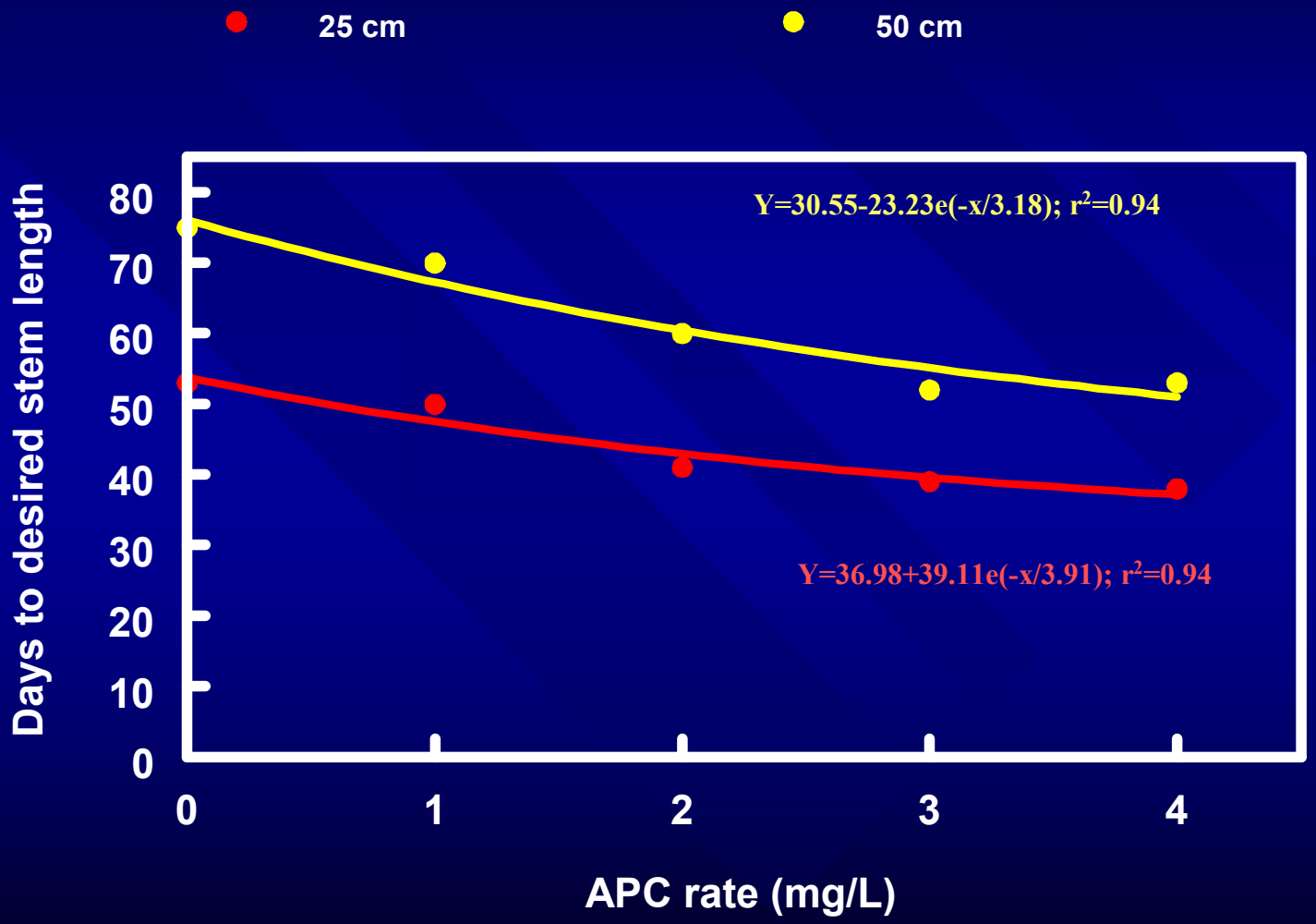
- No significant effect on sweet passion fruit transplant production.

- Time to 25 cm-stems was ~52 d
- Time to 50 cm-stems was ~76 d

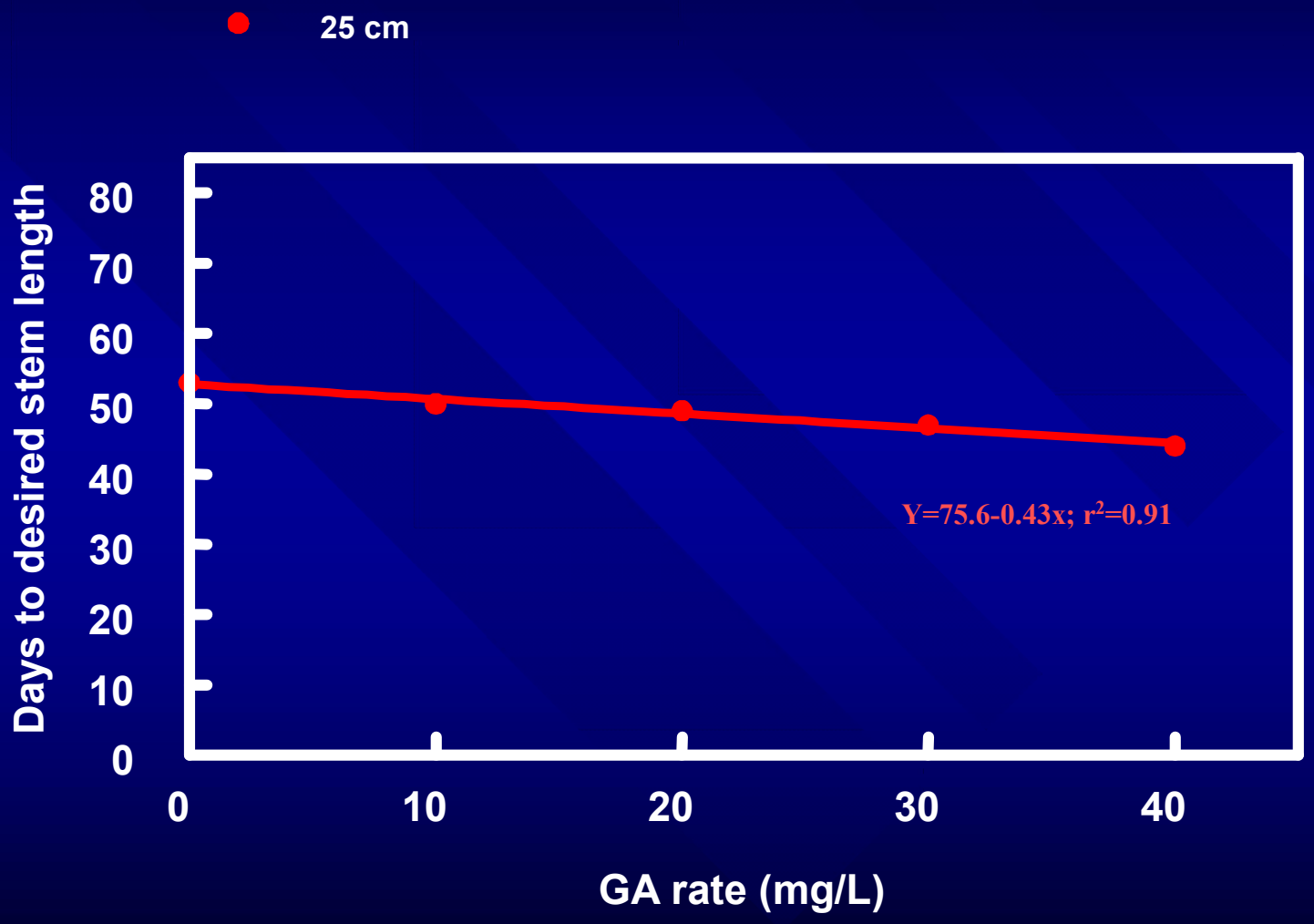
Effect of APC on the time to produce sweet passion fruit transplants



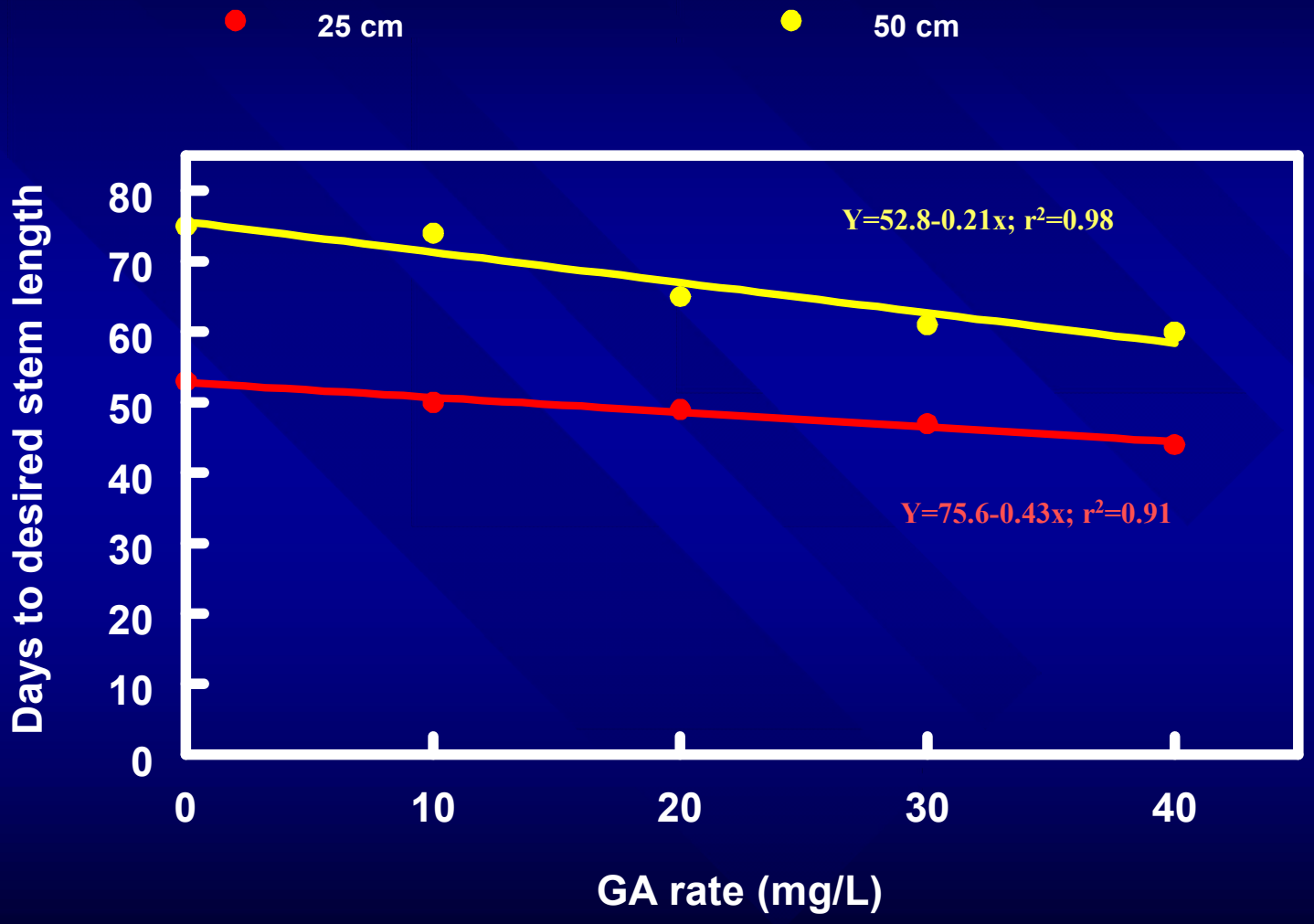
Effect of APC on the time to produce passion fruit transplants



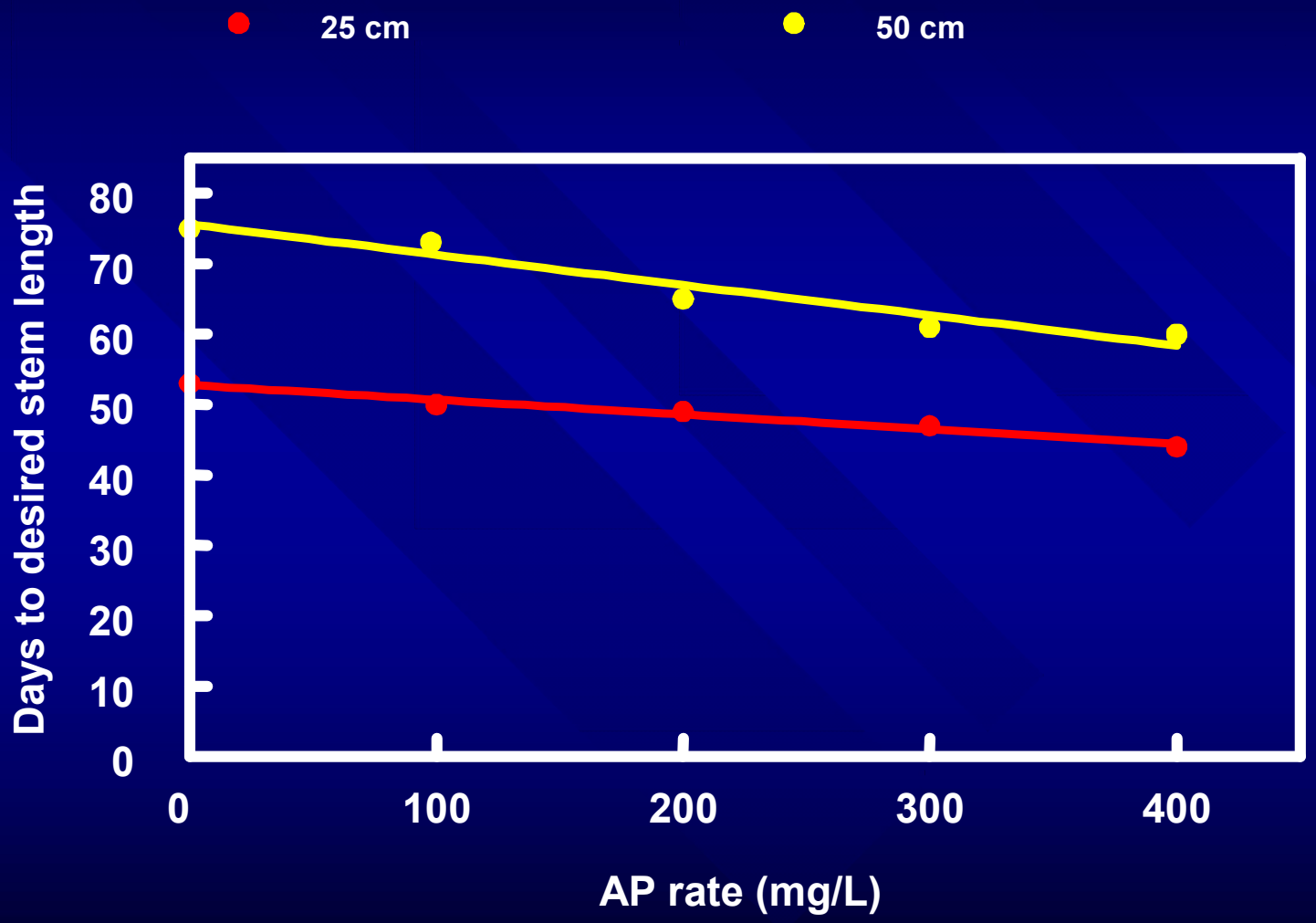
Effect of GA on the time to produce sweet passion fruit transplants



Effect of GA on the time to produce passion fruit transplants



Effect of AP on the time to produce passion fruit transplants



40 d

APC 4 g/L AP 200 mg/L BA

Acetylthioproline vs GA

- AP and GA shortened the time to produce 25 cm-stems to 44 d, and the time to produce 50 cm-stems to ~60 d
- GA treatment resulted in desired stem length more rapidly than AP treatment
- Plants with AP treatment reached the 5-leaf stage more rapidly than those with GA treatment
- Meeting the leaf number and stem length requirements took the same time with AP and GA

Summary

- Control plants reached “ideal” by 53 d (25-cm) to 75 d (50-cm)
- BA and TTA did not affect time to “ideal” transplants
- APC 3-4 g/L shortened time by 15-22 d
- GA (30-40 mg/L) and AP (300-400 mg/L) shortened time by 9–15 d

Questions?