

RAMA UNIVERSITY

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FACULTY OF ENGINEERING &
TECHNOLOGY

The background of the slide is a photograph of a tea plantation. In the foreground, there are several tea bushes with bright green, pointed leaves. The background is a soft-focus view of a tea field stretching into the distance under a bright, hazy sky. A solid dark blue horizontal bar is at the top of the slide.

Course: B. Tech Biotechnology
Sub Code: BBT-515

Semester: 5th
Sub Name: Plant Biotechnology

LECTURE 7

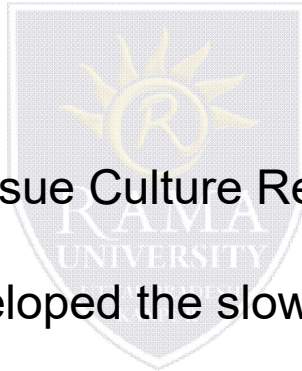
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SLOW GROWTH CULTURES

- Slow-growth of plantlets in-vitro provides an attractive alternative to freeze preservation of germplasm as it is simpler, cheaper and very effective. **Slow growth may be achieved by maintaining the plantlets either at a low temperature (4-9°C or Ca. 15°C) or on a medium having high osmotic concentration (e.g., 20% sorbitol or sucrose) or both.**
- **In addition, the nutritional status of the medium may be lowered to restrict the growth of plantlets.** Under the conditions of slow-growth, cultures may be attended to only once in several months. Its subculture may, be necessary only after long periods, once every 236 months.

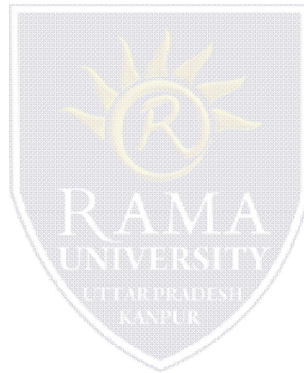
- The slow-growth approach is being utilized for germplasm conservation of specified root, tuber and tree species by the NBPGR, New Delhi.

- A National Facility for Plant Tissue Culture Repository has been created for this purpose. It has so far developed the slow-growth protocols for ginger, garlic, banana, sweet potato, etc.



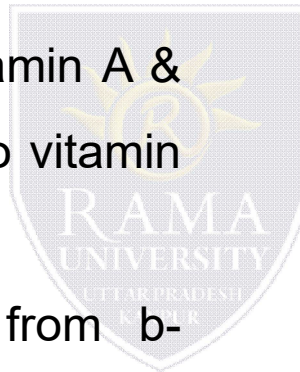
APPLICATION OF PLANT TISSUE CULTURE IN TRNSGENIC PLANTS

- ✓ Improved Nutritional Quality
- ✓ Insect resistance
- ✓ Disease resistance
- ✓ Herbicide resistance
- ✓ Salt tolerance
- ✓ Delayed Fruit Ripening
- ✓ Biopharmaceuticals and Vaccines



Golden Rice

- ✓ 124 million children worldwide are deficient in vitamin A, which leads to death and blindness
- ✓ b-carotene is precursor to vitamin A & consuming milled rice leads to vitamin A deficiency
- ✓ Mammals make vitamin A from b-carotene, a common carotenoid pigment normally found in plant photosynthetic membranes



Rainbow cauliflower

- ✓ Produced by traditional breeding –Non Transgenic
- ✓ The Orange cauliflower has higher than normal levels of b-carotene that encourages healthy skin
- ✓ Purple colour comes from Anthocyanin which may prevent Heart disease by slowing blood clotting
- ✓ Tests of the orange cauliflowers in America found that they contained 25 times the concentrations of beta carotene in normal cauliflowers



QUIZ

