

# THE COCONUT PALM, A PLANT RECALCITRANT TO SOMATIC EMBRYOGENESIS: STRATEGIES AND PRINCIPAL RESULTS

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Vegetative multiplication of the *in vitro* recalcitrant coconut palm is a promising approach to propagation of locally adapted palms and production of high-quality populations for renewal of ageing plantations in many countries. It also opens the way to the use of genetic transformation in the aim of producing plants resistant to various diseases.

## THE MAIN DIFFICULTIES ENCOUNTERED IN COCONUT MULTIPLICATION:

- Intense browning of tissues due to their high sensitivity to synthetic auxins like 2,4-D.
- Heterogeneous tissular reaction and highly determined tissue component.
- Low embryogenic potential.
- Embryogenesis often incompletely expressed (without caulinar apex).
- Slow morphogenic events and consecutive difficulties in *in vitro* experimentation.

## THE STRATEGIES USED TO GET ROUND SOME OF THESE DIFFICULTIES:

- Use of activated charcoal which improves control of tissue browning.
- Creation of homogeneous calli strains by multiplication of primary calli. Their screening on the basis of their embryogenic competence circumvent the difficulties linked to tissular heterogeneity.
- Quantification of 2,4-D not adsorbed by charcoal allowed us to increase the reproducibility of embryogenesis.
- Histological checks in order to detect the first signs of somatic embryogenesis and monitor tissue development.

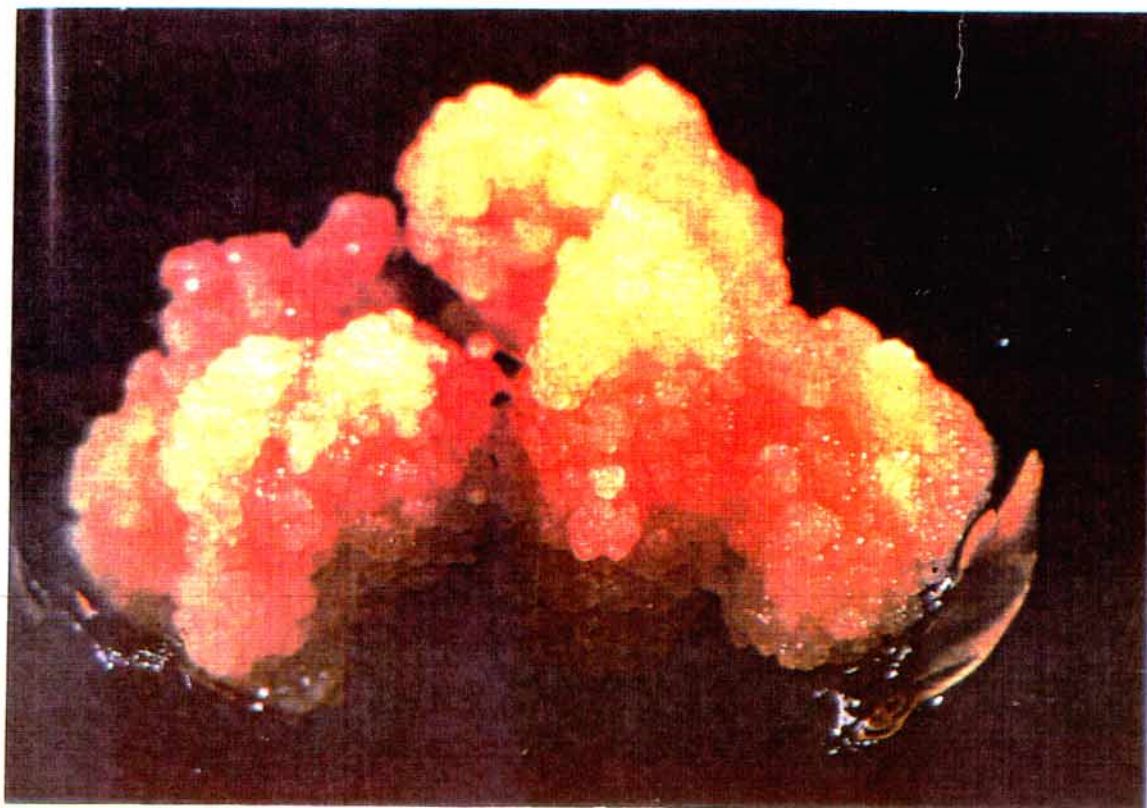
Our approach led to improve our basic knowledge on somatic embryogenesis and yielded complete embryos and plantlets from several genotypes.

The main thrust of future work will be to determine the conditions required for achieving adventive embryogenesis in order to satisfy mass ramet production.

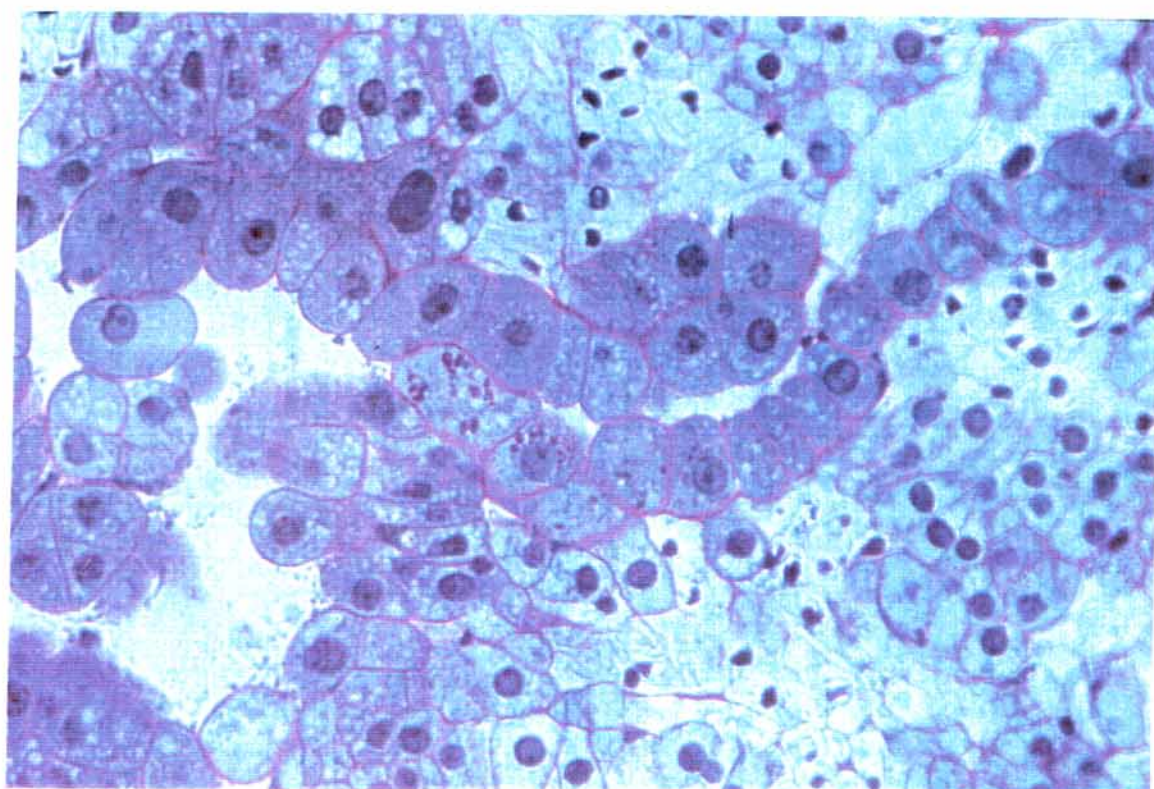
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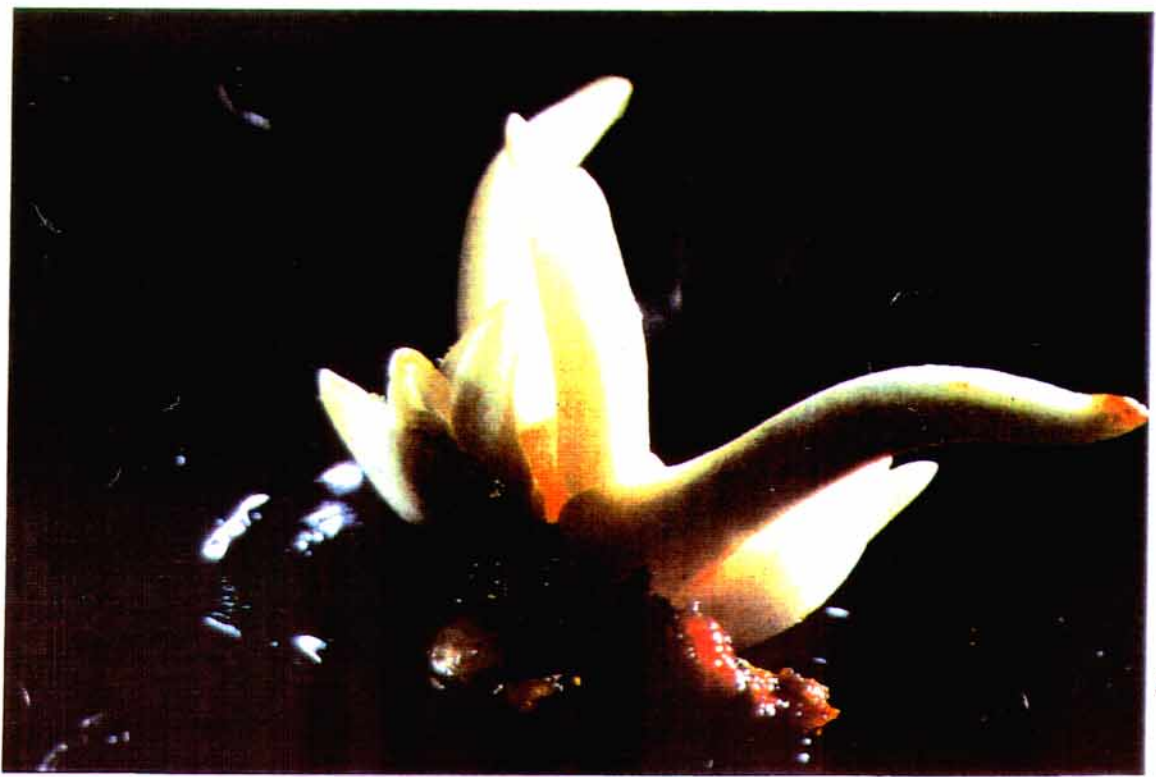
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1- Homogeneous granular callus

2- Somatic embryogenesis of unicellular origin with embryogenic cells



3



4



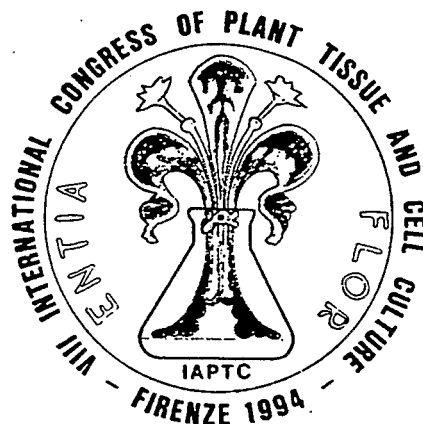
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3- Cluster of embryos with shoot emission

4- Shootlet before rooting

5- The first vitroplant in the field (Ivory Coast)

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