

PROJECT: DPE-5544-G-SS-8022-00

PERIOD COVERED: January 1991 - June 1991

IN VITRO GERMPLASM CONSERVATION OF MUSA SP.

WORKPLAN:

Objectives

1. To establish a medium-term conservation methodology for Musaceas in in vitro conditions.
2. To carry out research about the possible origin of somaclonal variation.

Materials and methods

Vegetative material: apexs and vitroplants of cultivars Great Dwarf AAA and False Horn AAB.

Methodology for objective 1:

Plants will be kept for 8 months without chopping them. Growth rate will be evaluated monthly and a final balance will be done at the end of this period. After the 8 months of conservation, plants will be placed in a typical growth medium to evaluate their recovery capacity for a period of one month under typical environmental conditions (T^oC: 25^oC; photoperiod 12/12).

Parameters evaluated for monthly growth evaluation:

- Number of developed leaves
- Plant's height (see diagram)
- Roots' volume
- Color and plant's appearance

*** Effect of different sucrose dosis**

The basic medium is composed by MS salts (1962) with Macro/2 + 2 g/l Gelrite + sucrose: 5; 10; 15; 20; 30 g/l; that is, 5 treatments, 20 plants will be used per treatment, meaning a total of 100 plants per cultivar (for both cultivars).

*** Effect of an osmoregulator**

The basic medium is composed by MS salts with Macro 1/2 + 2 g/l gelrite.

10 sucrose	+	0.2 M Manitol
15 "	+	0.2 M "
20 "	+	0.2 M "
30 "	+	0.2 M "
30 sucrose	+	0 Manitol

This is, 6 treatments x 20 plants = 120 plants/cultivar

*** Effect of growth inhibitors**

The basic medium is MS with macro 1/2 + 2 g/l gelrite + 30 g/l sucrose:

a) effect of TIBA (Triiodo Benzoic Acid 3,4,5)

a1: witness (basic Medium)

a2: TIBA 5 mg/l

a3: TIBA 10 mg/l

a4: TIBA 20 mg/l

a5: TIBA 40 mg/l

Meaning 5 treatments x 20 plants = 100 plants/cultivar

b) effect of 2-2 DH (2-2, Dimethyl hydrazida)

b1: 2-2 DH 1 mg/l

b2: 2-2 DH 10 mg/l

b3: 2-2 DH 50 mg/l

b4: 2-2 DH 100 mg/l

This is, 4 treatments x 20 plants = 80 plants/cultivar

c) effect of ABA (Abscisic acid)

c1: ABA 5 mg/l

c2: ABA 10 mg/l

c3: ABA 15 mg/l

c4: ABA 20 mg/l

This is, 4 treatments x 20 plants = 80 plants/cultivar

Method for objective 2:

The hypothesis is that in vitro somaclonal variation found during multiplication stage depends on the hormonal content of field material introduced in vitro.

For that reason, two experiments will be carried out:

Experiment 1: To plant apexes from field material (suckers) collected from the base of a principal plant (mother) at different development stages:

Mother with 4 months development

Mother just shooted

Mother 45 days after shooting

Harvested mother

50 suckers were collected of each kind and cultured in vitro for multiplication. Each apex was cut in 4 parts, having a total of 200 in vitro explants. Eight plants were obtained from each apex, meaning a total of 400 plants per treatment.

After the stage of greenhouse acclimatization, plants will be transfered to the field (La Lola) for prior

estimation of variation. Plants will be planted in blocks according to each treatment.

Experiment 2: To plant field apexes of different sizes

Big sucker

Small sucker

Big little sucker

Small little sucker

Water sucker

50 suckers were collected of each kind and cultured in vitro for multiplication. Each apex was cut in 4 parts having a total of 200 in vitro explants. Eight plants were obtained from each apex, meaning a total of 400 plants per treatment.

After the stage of greenhouse acclimatization plants will be transferred to the field (La Bola) for prior estimation of variation. Plants will be planted in blocks according to each treatment.

A total of 9 treatments x 400 plants = 3600 plants and a land surface of 3 hectares.

ADVANCES

Objective 1: Plants (480) per cultivar needed for objective 1 experiments were multiplied using in vitro techniques.

Objective 2: Suckers necessary for experiment 2 were cultured in vitro and their multiplication began in order to obtain 400 plants per treatment.

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