V. SUMMARY AND CONCLUSION

This study was conducted during two experimental seasons of 1988 and 1989 years, in the Experimentall Station of Groppi Farm, belonging to Ministry of Agriculture which located at Giza Governorate. The in-vitro "tissue cultured" banana plantlets of both Williams and Grand-Nain cultivars were the plant material used in this investigation. This work aimed to examine and evaluate banana plantlets ofthe above mentioned cultivars in response to type of growing media "7 substrate mixtures" and two levels of U.C. nutrient mixture "Universal California nutrient mixture", both investigated factors were studied in combination. However, two factorial experiments were conducted, both included the same fourteen treatments (combinations between 7 substrate mixtures x 2 levels ofthe polyfeed U.C. nutrient mixture, since adapted plantlets of Williams and Grand Nain banana CVs were devoted for the first and second experiments, respectively. Thus, the following combinations were used to be examined with a hope for achieving the most suitable one/ones of them by which the optimum growth with a balanced nutritional status could be realized for both banana cultivars.

Treatments "combinations".

1- Sand.
2- Sand + peatmoss.
3- Sand + clay.
4- Sand + aquastores.
5- Sand + peatmoss + clay.
6- Sand + peatmoss + vermiculite.
7- Peatmoss + clay.

The polyfeed Universal California nutrient mixture "U.C. nut.mix." was applied at the rate "A", that recommended by California University.

1- Sand.
2- Sand + peatmoss.
3- Sand + clay.
4- Sand + aquastores.
5- Sand + peatmoss + clay.
6- Sand + peatmoss + vermiculite.
7- Peatmoss + clay.

The U.C. nutrient mixture was added to the substrate mixture at the rate "B", i.e. at $^1/_2$ strength of the level "A".

In each experiment "Williams/Grand Nain", the above mentioned treatments were arrranged in a complete randomized design. Every treatment was replicated four times with three adapted plants grown individually in a polyethylene bag per each replicate. Meanwhile, the in-vitro banana plantlets were adapted by remaining to grow under controlled condition "in an incubator" for 6, 7 weeks during the first and second experimantal season, respectively.

The obtained results could be summarized as follows :

V.1. Vegetative growth :

V.1.1. Periodical growth measurements :

Pseudostem height, pseudostem diameter, number of green developed leaves and leaf dimensions "length and width" were periodically measured three times, i.e. 3 months after transplanting in pots of the differential combinations thereafter at 2 months interval for the 1st, 2nd and 3rd measuring, respectively.

V.1.1.a) Pseudostem height "length" :

Data obtained revealed that pseudostem height was greatly influenced by the differential combinations (interaction between 7 types of media x 2 levels of nutrient mixture). The longest pseudostem of Williams cv. was gained when plantlets were grown either in (sand + peatmoss + vermiculite) or (sand + peatmoss + clay) and providing with "B" or "A" rates of U.C. nutrient mixture, respectively. As for Grand-Nain (Sand + peatmoss + clay) as combined either with "B" or "A" levels of U.C. nut. mix. were the superior treatments during the 1st and 2nd experimental seasons, respectively. The reverse was true with sand and (sand + aquastores) when combined with the lower rate of the polyfeed nut. mix., where the shortest pseudostem was induced. Meanwhile the other combinations were in between.

Regarding the specific effect of growing media it is quite evident that the response was greatly pronounced, where the (sand + peatmoss + clay) substrate mixture ranked first followed by the (sand + peatmoss + vermiculite) except in the second season with Williams where the later was the superior. Moreover, sand or (sand + aquastores) came latest while the other growing media fell in between.

With regard to specific effect of level of U.C. nutrient mixture on pseudostem height, however the higher rate was more effective, but the response was less pronounced than that of type of media.

V.1.1.b) Pseudostem diameter :

Concerning the interaction effect "type of planting media x level of U.C. mix.), data obtained revealed obviously that both combinations "treatments" of (sand + peatmoss + clay) provided with the higher rate of U.C. mix. and (sand + peatmoss + vermiculite) supplied also with "A" rate were the superior for both cultivars, however the former one tended to be more effective with Grand-Nain cv., especially during second season. On the other hand, sand or (sand + aquastores) combined with the U.C. mixture especially at the lower "B" rate were the inferior, while other combinations were in between. As for specific effect of the planting media, data obtained showed that both (sand + peatmoss + clay) and (sand + peatmoss + vermiculite) were