



# The effect of Murashige and Skoog (MS) and Growmore fertilizer media composition on growth of Ambon Banana plants in vitro

Aulia Rahmawati Utomo, Ahmad Yunus\*, Nandariyah

## INTRODUCTION

Banana is a commodity with high economic value in Indonesia. The demand is always increasing every year.

Increasing banana production can be done using in vitro techniques which generally use Murashige and Skoog media

Dependence on the use of MS media is very high, while the price is quite high and difficult to obtain.

Thus it is necessary to try a new media formula that can reduce dependence on MS media. One way to do this is by making a combination of MS media with Growmore fertilizer.

## PURPOSE OF RESEARCH

1. To study the effect of the combination of MS medium and Growmore fertilizer on the growth of Ambon banana shoots in vitro.
2. Getting the most effective combination of MS media and growmore fertilizer for the growth of Ambon banana shoots in vitro.

## METHODS OF RESEARCH



June – December 2019



Plant Physiology and Biotechnology Laboratory, Faculty of Agriculture, Sebelas Maret University, Surakarta



This research uses a completely randomized and to analyze use analysis of variance and analysis of covariance

## RESULTS AND DISCUSSION

Nutrient Content in each Treatment Media

Element (ppm)	Media Composition				
	M1	M2	M3	M4	M5
N-total	868.2	741.4	614.6	487.8	361
P	38.8	39.85	40.9	41.95	43
K	782.2	638.65	495.1	351.55	208
Ca	119.8	96.1	72.4	48.7	25
Mg	3.6	4.95	6.3	7.65	9

## RESULTS AND DISCUSSION

MS Media Composition and Growmore	Number of leaves
M1 (100% MS)	3.84bc
M2 (75% MS + 25% Growmore)	3.43ab
M3 (50% MS + 50% Growmore)	4.19c
M4 (25% MS + 75% Growmore)	2.39a
M5 (100% Growmore)	2.61ab

Note: The numbers followed by the same letter in the same column show no significant difference in the DMRT level of 5%

The composition of the media has a significant effect on the number of leaves. The Mg content in M3 treatment media was higher than M1 treatment media. Magnesium plays an important role in the formation of green leaf matter. The more the number of leaves formed, the more light is absorbed for the photosynthesis process so that more carbohydrates for growth

MS Media Composition and Growmore	Number of root
M1 (100% MS)	6.10b
M2 (75% MS + 25% Growmore)	6.12b
M3 (50% MS + 50% Growmore)	6.83b
M4 (25% MS + 75% Growmore)	3.26a
M5 (100% Growmore)	3.96a

Note: The numbers followed by the same letter in the same column show no significant difference in the DMRT level of 5%

The number of roots showed significant differences between treatments due to the composition of the MS medium and Growmore fertilizer applied. The highest result on the number of roots variable was found in M3 treatment with an average of 6.83 and not significantly different from treatment M1 and M2. One of the elements that plays an important role for root growth is phosphorus (P). The M3 treatment media contained P elements as much as 40.9 ppm. This concentration can give the highest results on the number of roots.



M1



M3

## CONCLUSION

The combination of 25% MS + 75% Growmore (M4) media can be used as an alternative medium to reduce dependence on the use of MS media because it can provide a significant effect to produce the highest number of shoots compared to other treatments.