Studies on the morphogenic ability of clover (*Trifolium Alexandrinum* L.) and alfalfa (*Medicago sativa* L.) through tissue culture .

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B.Sc. Agriculture (Agronomy)

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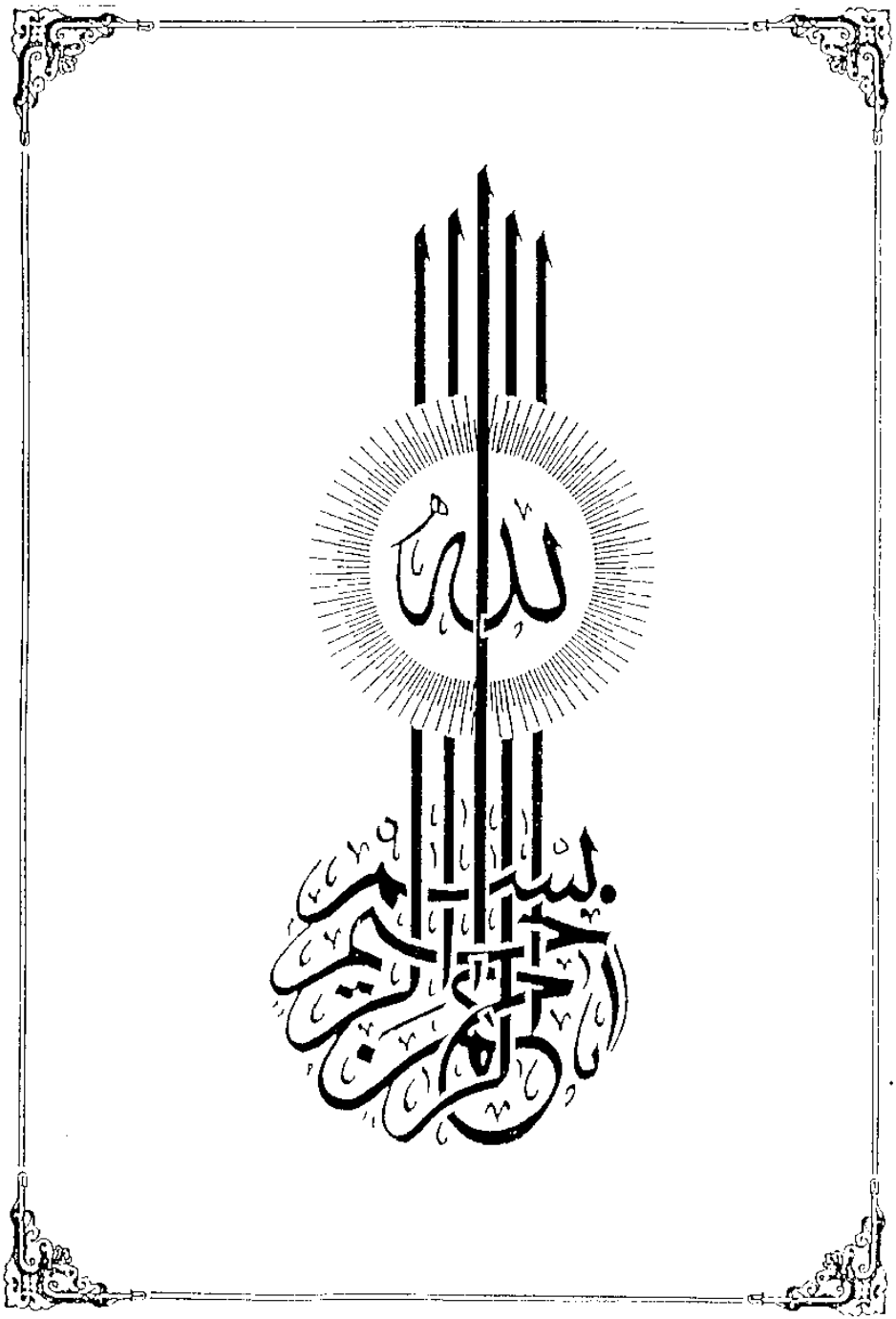

APPROVAL SHEET

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ABSTRACT

Fadia Mohamed Mohamed Sultan ; **Studies on the morphogenic ability of clover (*Trifolium alexandrinum L.*) and alfalfa (*Medicago sativa L.*) through tissue culture .** Unpublished Master of science thesis, Ain Shams University . Faculty of Agriculture , Agronomy Dept , 1997 .

. Preliminary trails were conducted to detect the most responding Egyptian clover (*Trifolium alexandrinum L.*) and alfalfa (*Medicago sativa L.*) cultivars in tissue culture . Three cultivars of clover (Sakha 3, Sakha 4 and Sero 1) and three cultivars of alfalfa (Sewyi 1, Sewyi 2 and takyeen 1000) were chosen to be investigated in precision trail under 2,4-D concentration of 1.0, 1.5, 2.0 and 2.5 mg/l by using different types of explants (leaf, stem and petiole) . separate experiments were carried out to study the morphogenic ability of Egyptian clover and alfalfa .

Egyptian clover results showed significant effects of cultivars variation on callus characteristics i.e. (number of explant formed callus, callus induction percentage . callus size and callus weight). These characters recorded an increasing values as period of incubation increased from one month to two months . Sakha 4 showed the most responding cultivar with promising callus characters . i.e. (callus size) . The optimal 2, 4-D concentration cause unique formation of callus was 1.0 mg/l . Interestingly as 2, 4-D increased gradually up to 2.5 mg/l, the callus size declined gradually . Explant taken from leaf highly responded to form uniformally callus compared to other types of explant, while petiole explant responded poorly for callus formation. On the other hand,

alfa cultivars also highly responded to cultivars variation, whereas, Sewyi 1 and Takyeen 1000 gave the maximum number of allus formed compared to Sewyi 2 cultivar Reversal effects of ncreasing culturing period was found upon number of explant ormed callus, whereas, reduction occurred in values obtained of haracters recordered when incubation period increased from 1 month to two months . Cultivars variation significantly affect callus size, whereas, Sewyi 2 cultivar formed the largest size of callus compared to the other cultivars, this callus did not weight as much as callus obtained from other cultivars, therefore, these findings revealed that Sewyi 2 cultivar formed big friable callus.

Also alfalfa cultivars responding well in tissue culture as in Egyptian clover case at media contained 1.0 mg/l 2, 4-D. High dose of 2, 4-D caused callus to respond poorly. While the small dose of 1.0 mg/l probably initiate good callus. Leaf explants produced high Number of explant formed callus, callus induction %, callus size and callus weight and therefore, it is consider a suitable explant to be used in alfalfa cultivars under investigation. Alfalfa petiole explant respond poorly to form callus. Plant regeneration experiments for both Egyptian clover and alfalfa pointed that low dose of benzyladinine (BA) (0.5 mg/l) formed the maximum plantlet obtained, while media free of growth regulators initiate root formation probably .

Comparison between response of Alfalfa and Egyptian clover to the experimental factors studied. The previous results suggested that alfalfa genotype was more successfully in forming big callus compared to Egyptian clover, although both genotype respond equally in callus inducation behaviour. These findings suggested that a negative response easily detected when incubation period increased from one month to two months for both

genotype used in the investigation in callus induction %. Low dose of 2,4-D (1.0 mg/l) supplemented to the media initiate callus formation more effectively than the higher doses used, and that was true for both genotypes of Egyptian clover and alfalfa.

Key words :

Egyptian clover (*Trifolium alexandrinum L.*), alfalfa (*Medicago sativa L.*), growth-regulators, explant, plant-regeneration , genotype, tissue-culture .

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