PHYSIOLOGICAL STUDIES ON POTATO TUBERIZATION UNDER ENVIRONMENTAL STRESS

By

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B.Sc. In Horticulture, Cairo University, 1985
M.Sc. In Horticulture, Ain Shams University, 1994

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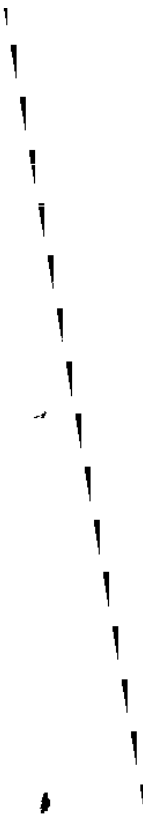

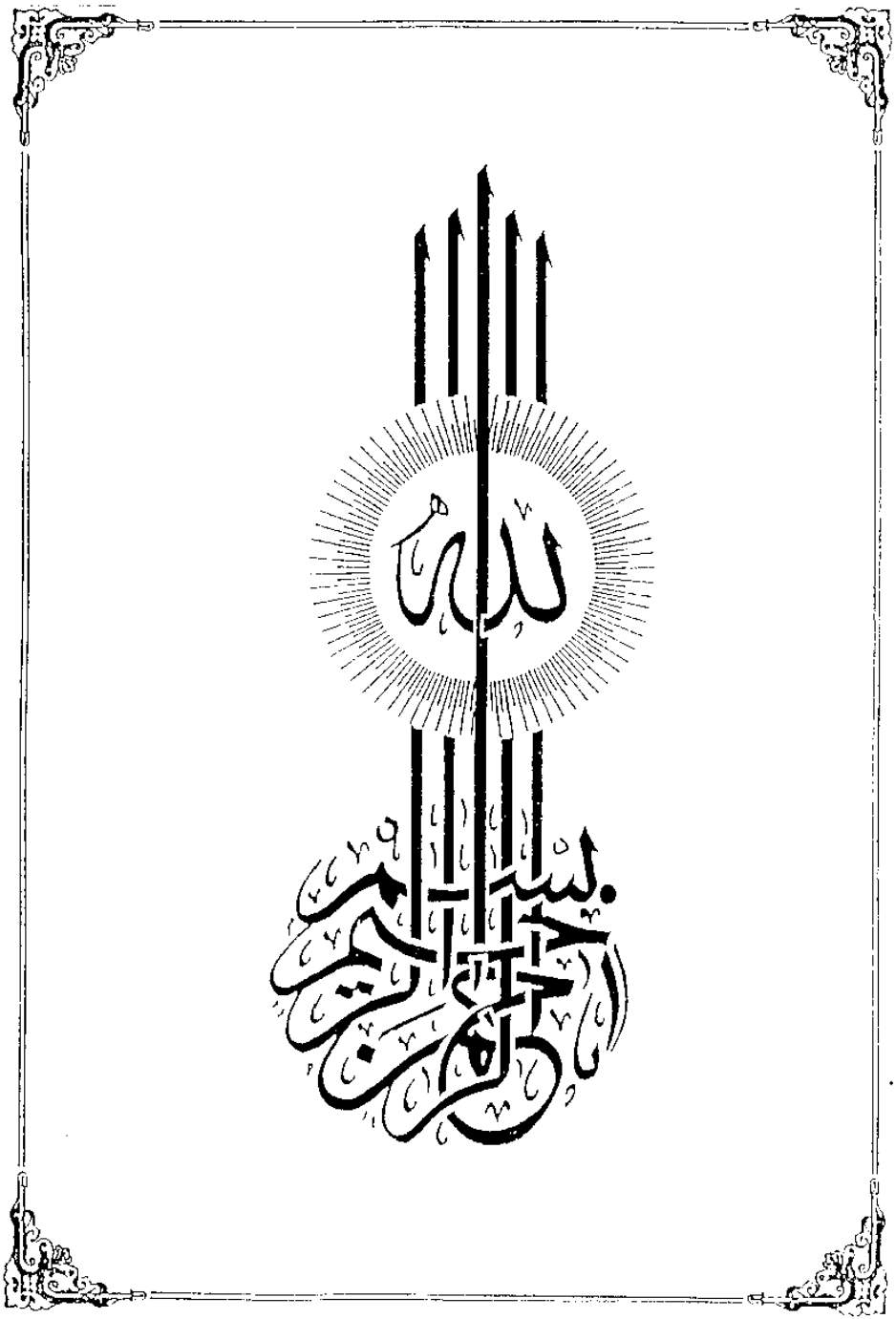

APPROVAL SHEET

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ABSTRACT:

Ahmed Abdel-Naby Ahmed , Physiological Studies on Potato Tuberization under Environmental Stress ,Unpublished Doctor of Philosophy , Ain Shams University , Faculty of Agriculture , Department of Horticulture , 1999 .

Growth and productivity of potato plants were reduced significantly with increasing salt concentrations used from 2000 to 6000 ppm. Application of calcium reduced the harmful effects of salinity on the growth and yield of potato plants but highest level of calcium (2 gm Ca^{2+}/plant) under saline conditions reduced the productivity of potato plants. High temperatures significantly reduced the yield of potato plants. Using calcium under unfavorable conditions for potato yield was mitigated the harmful effects of high temperatures on the productivity of potato plants. High two levels of calcium concentrations (28.2 and 34.8 gm Ca^{2+}/plant) were contributed to the stress on the potato plants under unfavorable conditions. Using intercropping maize or sunflower plants with potato plants during the early stages of potato growth in the early fall season increased the yield of potato plants. In addition, there was an increment of the productivity of potato plants intercropped with different planting densities of maize or sunflower plants (75 and 100 cm) . This increment was significant compared to the potato plants without intercropping in the early fall season. Moreover, it can overcome marketing fluctuation of potato yield in the off season.

Key Words : Potato (*Solanum tuberosum L.*).Cultivars (Cara , Salany , Diamant , Nicola , Berber , Alpha , Cludia and Spunta).Hybrid (Serrana x, LT-7).Stress (Salinity and Heat).Salt concentrations (2000 , 4000 and 6000 ppm).Calcium levels (0.25 , 0.5 , 1.0 , 2.0 , 6.6 , 15 , 21.6 , 28.2 and 34.8 gm Ca^{2+} / plant).Intercropping (potato with maize or sunflower).Different planting densities of maize and sunflower plants (50 , 75 , 100 and 125 cm).Seed tubers. Potato yield.

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Contents