

EFFECT OF POLYETHYLENE LINED-FURROWS ON GROWTH AND YIELD  
OF CHILLIES WHILE REGULATING WATER RETENTION/RELEASE  
CHARACTERISTICS OF SANDY REGOSOLS

BY

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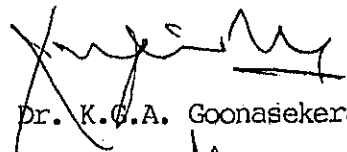


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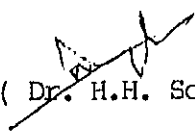
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## ABSTRACT

A field experiment was conducted on sandy regosols of the eastern region of Sri Lanka during the dry season of 1989 with a local variety of chillies (MI-1). The main objective of the study was to improve the physical properties of sandy regosols and to establish a suitable irrigation method for sandy regosols which is less productive due to its low agricultural potential. Irrigation in furrows with polyethylene lining having plants either on ridges or in furrows were compared with basin irrigation under two different soil conditions. Sandy soil alone was used as the control treatment. Sandy soil treated with non calcic brown soil at the rate of 72 t/ha and tank silt at the rate of 24 t/ha to a depth of 30cm was the second treatment.

The results indicate that addition of non calcic brown soil and tank silt to regosols could affect physical properties such as texture, bulk density, infiltration rate, soil moisture characteristics, water movement and distribution and chemical properties, especially exchangeable K, available P and CEC. However, larger quantities of amendments may be necessary for any significant improvement of physical and chemical properties of regosols.

Growth of plants as indicated by the dry matter production was higher in treated soil. Furrow irrigation with furrow planting method showed better performances among the irrigation treatments. Yield parameters also produced similar results. Weed growth was highly restricted by the polyethylene lining, especially in furrow planting

due to the effect of mulching and high temperatures under the polyethylene cover during the day time.

Water use efficiency of chillies was the highest for furrow planting with treated soil and lowest for ridge planting in control treatment. The beneficial aspects with respect to the yield and thereby total income and saving of water indicates, addition of non calcic brown soil and tank silt to regosols and adopting polyethylene lined furrow irrigation with plants in furrows is a feasible solution for cultivation of sandy regosols.

However, the furrow irrigation with furrow planting method require more skill on installation of polyethylene, application of fertilizer, inter cultivation practices etc., than in the traditional basin method. Further more, the damages due to large and sharp edged weeds, animal pedestals and extreme weather conditions limit the repeated use of polyethylene. A study which include the remedial measures to the above problems and a complete cost-benefit analysis would give a better knowledge on the adaptability considerations of the polyethylene lined furrow irrigation with furrow planting method for sandy regosols.