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USE OF WICK-WATERING FOR GLASSHOUSE POTS IN THE TROPICS

K. D. Ritchey and R. H. Fox

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*Use of wick-watering for glasshouse pots in the tropics**

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INTRODUCTION

IN TROPICAL and subtropical countries the high evapotranspiration rates that occur during periods of intense solar radiation make it difficult to maintain a supply of water sufficient for plants growing in pots in the glasshouse. It is sometimes necessary to water pots three or more times per day. A simplified modification of the method of watering with a fibreglass wick described by DOLAR and KEENEY (1971) offers a means of reducing some of these problems. To test this, two watering régimes were applied to otherwise identical groups of pots receiving various fertilizer treatments in a series of experiments studying productivity of ten ultisol and oxisol surface and subsoils (RITCHEY and FOX, 1974).

MATERIALS AND METHODS

Rigid white plastic pots of 2000 and 3000ml capacity, 15 or 20cm in diameter at the top and with four small holes in the bottom, were used for this work. An additional hole was melted through the centre of the bottom of the wick-watered pots with a red-hot, 14mm iron pipe. Fibreglass wicks (Wick Type 4608, Atlas Asbestos Co., North Wales, Pa.)‡ 13mm in diameter and 27 or 33cm long for the two pot sizes were inserted through X-shaped cuts in fibreglass insulation discs placed in the bottom of the pots. Preweighed soil was poured into the pots so that the top of the wick was about 5cm beneath the surface of the soil. The pots were then placed on large containers of distilled water in which the exposed lower ends of the wicks were immersed.

The conventionally watered pots were the same as the wick-watered pots, and were surface-watered to field capacity one to three times daily as necessary.

Maize and sorghum were the test crops and were grown for 19 to 26 days.

RESULTS AND DISCUSSION

Comparison of dry matter production in pots using the two watering régimes in a series of seven different experiments showed that wick-watering was statistically superior at the five per cent probability level by the method

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‡ Company names are included for the benefit of the reader and do not imply any endorsement or preference for the product.

of paired observations of sample means (STEEL and TORRIE, 1960). The labour requirement was about one-third that of conventional watering.

The improved growth observed in the wick-watered pots almost certainly resulted from increased availability of water. Water content measurements made on soil samples removed from these pots immediately after harvesting in the late morning showed that water content ranged from 70 per cent of field capacity in the top of the pot to 141 per cent in the centre of the lower portion of the pot. Oxygen diffusion rate current measurements indicated little danger of insufficient aeration.

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A rapid non-destructive means of calculating leaf area in cocoa

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IT IS the practice at this station to estimate the area of a cocoa leaf by measuring its length and converting this to the area by means of conversion tables compiled earlier by LOCKARD and ASOMANING (1961) or by means of a planimeter. When many leaves are involved, as is usually the case with nursery experiments involving up to 25 seedlings per replicate and 5 to 25 leaves per seedling, these methods become relatively laborious and time