

POLYTHENE MULCHING IN RUBBER SEEDLING NURSERY

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The feasibility of using polythene films as mulch in rubber seedling nursery was investigated. Field studies were conducted with three types of clear polythene films, conventional plant mulch and an unmulched control. The polythene mulches were topped with a thin layer of soil of over 5 cm thickness. Mulching significantly enhanced seedling growth. Polythene-mulched plots recorded 15.5 to 28.9 per cent increase in plant diameter over the unmulched plots and compared favourably with plant mulch. The soil moisture content in the surface 0-15 cm soil layer with polythene mulching was 87-113 per cent more than that in the unmulched plots during extreme dry weather conditions, while the increase with plant mulching was only 50 per cent. The extent of weed control achieved with polythene mulching was 84 to 90 per cent and that with plant mulching 56.9 per cent, over the unmulched plots. Mulching with polythene sheets did not increase absolute soil temperature over the conventional plant mulches. Soil temperature fluctuations were also minimised due to mulching.

Key words : Rubber nursery, Mulching, Polythene film, Plant mulch, Soil temperature, Weed control.

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INTRODUCTION

Surface mulching influences soil temperature and minimises evaporative losses thereby modifying soil microclimatic conditions for plant growth. Modification of soil thermal regime in turn influences root development, soil microbial activity and nutrient bioavailability (Aino, 1981; Duncan *et al.*, 1992). Mulching also helps to control weeds and aids in soil and water conservation.

Recent concern about availability of conventional materials for mulching has necessitated search for alternative materials. The possibility of using plastic films for mulching has been reported by several workers (Waggoner *et al.*, 1960; Maurya and

Lal, 1981 and Duncan *et al.*, 1992). Hanada (1991) studied the effect of using black, green and transparent plastic films as mulch in temperate subtropical and tropical regions and concluded that plastic mulching in hot climates caused marked increase in soil temperature thereby adversely affecting plant growth.

Coloured polythene mulch films were reported to increase soil temperature by 5-7°C facilitating faster germination and better root proliferation whilst checking weed growth, preserving soil structure, retaining soil moisture and increasing the carbon-dioxide content around the plant (Gutal *et al.*, 1992). Stapleton *et al.* (1989) observed around 82 per cent reduction in