

An Evaluation of Different Weed Management Techniques in Organic Arable Systems

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Abstract : A range of field experiments have been conducted since 1991 to 2017 on organic land at the Royal Agricultural University's Harnhill Manor Farm near Cirencester, UK to explore the impact of different management practices on weed infestation in organic winter and spring wheat. The experiments were designed using randomised complete block and some with split plot arrangements. Sowing date, variety choice, crop height and crop establishment technique have all shown a significant impact on weed infestations. Other techniques have also been investigated but with less clear, but, still often significant effects on weed control including grazing with sheep, undersowing with different legumes and mechanical weeding techniques. Tillage treatments included traditional plough based systems, minimum tillage and direct drilling. Direct drilling had significantly higher weed dry matter than the other two techniques. Taller wheat varieties which do not contain Rht1 or Rht2 had higher weed populations than the wheat without dwarfing genes. Early sown winter wheat had greater weed dry matter than later sown wheat. Grazing with sheep interacted strongly with sowing date, with shorter varieties and also late sowing dates providing much less forage but, grazing did reduce weed biomass in June. Undersowing had mixed impacts which were related to the success of establishment of the undersown legume crop. Weeds are most successfully controlled when a range of techniques are implemented to give the wheat crop the greatest chance of competing with weeds.

Keywords : crop establishment, drilling date, grazing, undersowing, varieties, weeds

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