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The evaluation of two cultivation methods to over-sow perennial clovers into kikuyu .

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Key words : white clover ,red clover ,over-sow ,mulcher methods ,rotavator methods

Introduction The aim of the study was to evaluate two over-sowing practises in terms of seasonal dry matter yield ,when kikuyu is over-sown with a mixture of perennial white (*Trifolium repens*) and red (*T.pratense*) clovers .Perennial white clover (*T. repens* cv s Haifa or Dusi) or red clovers (*T.pratense* cv's Cherokee or Kenland) were over-sown at 5 kg ha⁻¹ and 6 kg ha⁻¹ ,respectively ,into existing irrigated kikuyu pasture using two methods .Each of the methods consisted of different combinations of three implements .They were a mulcher (1.6 meter Nobili with 32 blades) a rotavator (1.55 meter Celli with 36 blades) and Cambridge land roller used during May to prepare seedbeds .Fertiliser was applied to raise the phosphorus level to 35 mg kg⁻¹ ,potash level to 80 mg kg⁻¹ and the pH (KCL) to 5.5 .No nitrogen was applied .Dry matter (DM) production , growth rate and the botanical composition were determined .The clover content of the pasture ranged from 5.2% to 20.7% with the mulcher method compared to 15% to 60% with the rotavator method .

Table 1 The influence of the mulcher and rotavator methods on the total seasonal dry matter production (kg DM ha⁻¹) of kikuyu over-sown with perennial white and red clover .

Year	Season	Mulcher	Rotavator	* LSD ¹	** LSD ²
Year 1	Spring	3189 ^{cde}	4835 ^a	423.6	459.1
	Summer	2824 ^{ef}	3527 ^{bcd}		
	Autumn	5031 ^a	3567 ^b		
	Winter	1349 ^j	1325 ^j		
Year 2	Spring	2299 ^{gh}	2249 ^{gh}	379.0	
	Summer	2865 ^{ef}	2523 ^{fg}		
	Autumn	3731 ^b	3126 ^{cd}		
	Winter	1971 ^{hi}	1740 ^{ji}		

^{abcde} Means with no common superscript differ significantly (P<0.05)

* LSD¹ : compare over years

** LSD² : compare within years

Results and discussion The influence of the mulcher and rotavator methods on the total seasonal DM production (kg DM ha⁻¹) of kikuyu over-sown with perennial white and red clover is shown in Table 1 .The DM production of the clover over-sown with the rotavator method was the highest during spring and summer of year 1 .This is an indication that clovers established well during the winter and increased the DM production during spring and summer . The lower grass content of the rotavator method during the autumn of year 1 resulted in a lower DM production .During summer and autumn of year 1 and 2 ,the DM production of the mulcher method was typical of kikuyu as indicated by the high autumn production . The rotavator method is a better method to establish perennial white and red clover into kikuyu than the mulcher method .By using the rotavator method the clover content of kikuyu-clover pasture can be higher for two years than those established by the mulcher method .The results indicated that in spite of the high clover content of the rotavator method ,the DM production of the rotavator method is comparable to the DM production of the mainly grass pasture of the mulcher method .