

Turkish Journal of Agriculture and Forestry

Turkish Journal

of

Agriculture and Forestry

**Effects of Barley as a Companion Crop on the Hay Yield and Plant Density of
Red Clover and the Botanical Composition of Hay**

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Abstract: Forage legumes are frequently established with a companion crop such as a cereal crop for controlling weed invasion and high hay production. This study was conducted under irrigated conditions in order to determine the effects of the seeding rate and harvest stage of barley as a companion crop on the hay yield and plant density of red clover and the botanical composition of hay. Red clover was established with barley sown at 0, 60, 120 and 180 kg ha⁻¹ and cut at the milk-dough and hard-dough stages. The highest total hay yield (6000 kg ha⁻¹) was measured at a 180 kg ha⁻¹ sowing rate and at the cutting milk-dough stage of barley in the establishment year. Weed invasion and red clover seedling losses were greatly reduced when a companion crop was used. Although the companion crop suppressed the growth of red clover, red clover density was not reduced. Companion crop treatments did not affect the total hay yield in the subsequent year. Therefore, red clover should be seeded with barley as a companion crop under irrigated conditions. In contrast to general recommendations, it is not necessary to reduce the sowing rate of the barley companion crop or to cut it early under Erzurum's climatic conditions.

Key Words: Red clover, companion crop, hay yield, weed content, plant density

Turk. J. Agric. For., **28**, (2004), 35-41.

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