MANAGING ALFALFA PRODUCTION WITH ZERO IRRIGATION WATER

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ABSTRACT

To investigate the effects of applying no water management whatsoever on alfalfa productivity, a large-scale field trial was conducted on a Hanford sandy loam at the Kearney Agricultural Center in Fresno County, California. Treatments included 1) absence of two irrigations between cuttings, 2) the absence of three irrigations between cuttings, 3) lack of a single irrigation between cuttings, or 4) failing to irrigate from April through September, followed by no water through December. Hay yields were greatly reduced to nearly zero by all irrigation treatments, but these three treatments were not significantly different. After two years of zero irrigation, economic analysis was applied. All irrigation treatments resulted in negative returns, although there were cost savings on equipment repair since little harvesting was required. We conclude that alfalfa is impacted by water deficits, and the economic consequences of these irrigation strategies may be important for alfalfa growers.

Key Words: alfalfa, irrigation, management, drought, hay quality, water-use

INTRODUCTION

In the central and southern San Joaquin Valley, the water requirement for alfalfa can range between 40 to 50 inches per year. Unlike some crops, which can be stressed for water at particular growth stages with no decrease in yield, alfalfa forage yields are directly related to available soil moisture for vegetative growth. Although yields are decreased by moisture stress, alfalfa plants survive and recover once water is again supplied.

Economics. From an economic viewpoint, water can be the largest single cost in alfalfa production, and the profitability of an alfalfa operation can depend on the price of water. Based on experience with seed alfalfa, it is known that the plant can survive very dry, abusive conditions. In this paper, we report a trial that was initiated to evaluate severe alfalfa hay management options to be faced if the cost of water was high or if, in the case of drought, the water supply was limited. The trial was conducted during 2007-2008.

PROCEDURES

Experimental. A field trial was conducted at the Kearney Agricultural Center in Fresno County on a Hanford sandy loam soil with scattered hardpan. Each plot consisted of a check 24 ft. x 857 ft. and treatments, listed below, were replicated four times. The experimental design was a randomized complete block design. ‘CUF 101’ alfalfa was planted September 18, 1992, at a

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