

Growing Oats in Arizona

The University of Arizona · College of Agriculture · Tucson, Arizona 85721

12/89

MIKE OTTMAN
Extension Agronomist

Introduction

The United States has traditionally led the world in oat production until the mid-1950s, when the U. S. produced 35 percent of the world's oat grain. U. S. oat production has decreased by approximately two-thirds since the mid-1950s, and Russia currently leads the world in oat production. The decline in U. S. oat production can be explained by the decline in profitability of oats in relation to other crops, the decrease in the use of oats as a feed ingredient, the decrease in the use of oats as a rotational crop, the replacement of horses by mechanical power, and the increase in farm specialization. Oats is a relatively minor crop in Arizona with a range of 500 to 1000 acres harvested for grain from 1984 to 1988. Reliable estimates of oat acreage devoted to forage production are not available.

Oats have traditionally been a multipurpose crop planted for many reasons other than the cash value of the grain. Non-grain uses include straw, pasture, forage, silage, haylage, hay, soil conservation, or as a companion crop with the establishment of a legume such as alfalfa. Oats harvested for grain account for only 60 percent of the crop value and the straw, pasture, and forage account for the remaining 40 percent of the total crop value.

Varieties

Oats are native to certain parts of Asia and Europe. Oats were introduced to the Western Hemisphere by Spain and England in the 17th and 18th centuries. Many of the current varieties grown in Arizona can be traced to a selection introduced from Mexico during the mid-1800s.

Oats can be classified into three botanical groups: (1) wild oats (*Avena fatua* L.), (2) the arid region red oats (*Avena byzantina* L.), and (3) the cool or humid region white oats (*Avena sativa* L.). Some current varieties such as Mesa and Montezuma were developed from crosses of cultivated and wild oats. The red oat varieties are best adapted to the low desert valleys of Arizona since they endure more winter frost, mature earlier, and suffer less damage from heat and drought than white oats. The white oat varieties are best adapted to grain production in Arizona in the cooler, higher elevation areas (above 4,000 feet). Nevertheless, white oats are grown successfully for grain in the low elevation deserts. The white oat varieties are sensitive to photoperiod and may not head until April. This delay in heading can be an advantage for forage production in lower elevation areas. The characteristics of common oat varieties grown in Arizona are listed in the table that follows. Check your local seed dealer for availability of these varieties.

Variety	Seed Color	Maturity	Plant Height	Lodging Resistance	Shatter Resistance	Yellow Dwarf
California Red	Red	Late	Tall	S	S	VS
Cayuse	Light Yellow	Late	Tall	R	R	MR
Kanota	Red-Yellow	Medium	Med-Tall	S	S	HR
Mesa	Yellow-Red	Early-Medium	Med-Tall	R	R	R
Montezuma	Red	Early	Medium	R	R	R
Mora	Red	Early-Medium	Medium	--	--	--
Swan	Red	Medium	Medium	HR	MR	R

S = susceptible
VS = very susceptible
-- = no data available

R = resistant
MR = moderately resistant
HR = highly resistant

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, James A. Christenson, Director, Cooperative Extension, College of Agriculture, The University of Arizona.

The University of Arizona College of Agriculture is an Equal Opportunity employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to sex, race, religion, color, national origin, age, Vietnam Era Veteran's status, or handicapping condition.

Cultural Practices

An oat grain crop is grown somewhat similar to wheat and barley. The optimum planting dates are December 15 to January 15 for Southwestern Arizona, November 15 to December 15 for the central irrigated portion of the state, December for Southeastern Arizona, and early spring at elevations above 5,000 ft. A seeding rate of 80 pounds of seed per acre planted with a grain drill is generally adequate with a well-prepared seedbed. Oats tiller more and have more seed per pound than wheat or barley, so seeding rates are lower. Increase the seeding rate 15 to 20 percent if the seed is broadcast or if planting is delayed past the optimum date. Planting depth for oats is 1/2 to 2 inches deep depending on soil type and moisture conditions. Planting into coarser-textured soils or moist soil requires deeper planting than planting into finer-textured soils or dry soil followed by an irrigation. Oats can emerge from greater depths than wheat or barley. Nitrogen fertilizer rates for oats are generally less than wheat or barley. Phosphorus fertilizer rates vary from 0 to 100 pounds of P₂O₅ per acre preplant, depending on soil test results. Water requirements for oats are slightly different from wheat and barley. Oats do not grow as well as wheat or barley in cold weather, so water requirements for oats are lower in the winter. However, oats are particularly susceptible to heat and drought. Hot, dry, windy weather before heading causes blast of the head and poor kernel set. Thus, water requirements are greater than wheat or barley during warmer periods. Oats are attacked by the same insects as other small grain crops. Few insects are specific to oats. Oats suffer from several diseases but the yellow dwarf virus is the most significant disease in Arizona. Planting resistant varieties at the optimum dates will curtail losses due to yellow dwarf. Oats are more vulnerable than other small grains to frost injury and shattering by wind due to the nature of the oat head. Frost injury is avoided by planting

near the optimum seeding date. Shattering is minimized by planting shatter-resistant varieties, but cannot be totally eliminated. Volunteer oats can be a problem in the next crop.

An oat hay crop is grown differently from an oat grain crop. An oat hay crop should be planted earlier than an oat grain crop to enhance the potential for forage growth. Also, an oat hay crop is more responsive to water and nitrogen compared to an oat grain crop. Oat hay is most nutritious if cut when most of the plants have headed and 20 percent are shedding pollen. However, hay yields are highest at the soft dough stage.

Oat pasture is managed similarly to other small grain pasture crops. The optimum planting date is September to October. A planting rate of 120 pounds of seed per acre is usually adequate with a well-prepared seedbed. Nitrogen fertilizer is normally required and may be applied in split applications preplant and after each grazing in 25 to 50 pounds of nitrogen per acre increments. Phosphorus fertilizer rates vary from 0 to 100 pounds of P₂O₅ per acre preplant depending on soil test values. Oats may be first grazed at the start of the jointing stage of growth when the plants are approximately 15 inches tall. The animals should be removed from the field when the oats are grazed to a 3- to 4-inch stubble. Irrigation and fertilization are usually required after each grazing cycle. Weeds are best controlled by a thick, healthy stand of oats and by grazing. Rotate the animals among several fields to allow the oats to recover from a grazing cycle. Oats can produce more forage than wheat or barley. Oats intended for grain production can be grazed moderately without a serious reduction in yield if grazing is terminated early in the growing season (December to January) and adequate soil moisture and fertility are provided to stimulate new growth after the field has been grazed.