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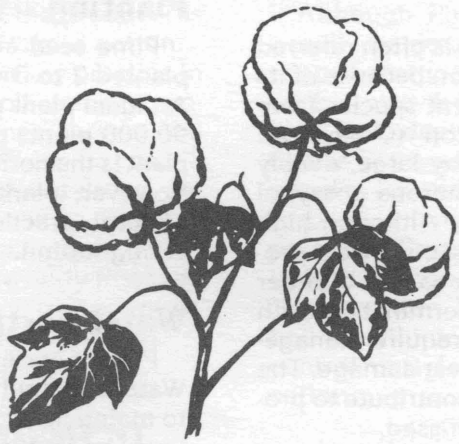

Pima Cotton Production Guide

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PIMA COTTON PRODUCTION GUIDE

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Introduction

Pima (*Gossypium barbadence*) is often referred to as extra long staple (ELS) cotton because of its long, fine fiber. Pima is a different species from commonly grown Upland cotton (*Gossypium hirsutum*), and is characterized by large, deeply lobed five-point leaves with numerous gossypol glands located on all plant parts. Although high gossypol content repels some insects, insect problems on Pima cotton are similar to that of other glanded Upland cottons. An indeterminate growth habit and a long fruiting period require management techniques that minimize pest damage. The key management practices that contribute to profitable Pima production are discussed.

AGRONOMIC CONSIDERATIONS

Varieties

The development of Pima varieties is the result of breeding programs in Arizona by the USDA Agricultural Research Service. Pima acreage constitutes a large percentage of the total cotton planted in Arizona and the El Paso Valley. Improvement in Pima varieties has resulted in production of superior varieties such as S-5 and S-6 and a decline in the use of the earlier released S-1 variety. S-5 is a slightly longer season cotton and requires more accumulated heat units to reach full maturity, while the S-6 is faster maturing and is similar to long season Upland varieties in their heat unit requirements.

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Planting

Pima seed are more cold tolerant and can be planted 2 to 3 weeks earlier than Upland cotton. An ideal plant population ranges from 40,000 to 50,000 plants per acre. A round or globose-type plant is the normal configuration for Pima cottons. However, plant population, insect damage and cultural practices can alter this normal plant configuration.

Water-Fertility Management

Pima is more prolific than most Upland varieties. Water and fertility management are very important to maintain a constant rate of growth and fruit set. Lush, vegetative growth is minimized under conditions that promote uniform fruiting. A heavy boll load is an important factor in controlling plant height. Setting as many of the first fruiting forms as possible avoids a "top crop." Bolls in the upper portion of the plant are difficult to maintain and mature, and should not be counted on to produce the majority of the lint yield.

Since Pima tends to have a high fruit set, good nitrogen management is essential. In areas that receive sufficient rainfall, or where irrigation is available, apply half of the needed nitrogen preplant and sidedress the remainder after square initiation. Historically, in fields where excess vegetative growth is seldom a problem, all of the nitrogen can be applied preplant.

Pima also tolerates greater water stress than Upland cotton without heavy fruit shed. If Pima becomes vegetative, increase the intervals between irrigations to maintain fruiting-vegetative balance. If Pima is not moisture-stressed and nitrogen levels in the soil are not depleted, the plant will continue to bloom until terminated by frost.

Plant Growth and Development

Recent research work in the El Paso Valley shows that long season Upland cotton requires a range of 2,600 to 2,750 heat units to mature a crop; Pima, with a longer fruiting period, requires 2,700 to 2,900 heat units. In South Texas, the accumulated heat units are not a yield-limiting factor because of the long growing season. Since Pima cotton requires a slightly higher accumulation of heat units, major production acreage is confined to the El Paso Valley and South Texas regions.

Harvesting-Ginning

Harvest Pima only with a spindle picker. Stripper harvest contributes to high trash content and lower lint quality. In addition, roller gins are essential for processing Pima cotton. A saw-type gin shortens the fiber length, resulting in reduced quality and fiber value. The high quality advantage of Pima fiber is lost, especially if the producer is required to market the fiber as Upland cotton.

A good harvest-aid program is a key practice in harvesting high quality lint. Use boll opening compounds, such-as Prep®, to advance harvest and promote once-over picking. Prep® can be used in addition to defoliants such as def and dropp. An effective harvest-aid program becomes essential when Pima is produced in areas of higher humidity and rainfall. Field weathering (quality loss) and physical loss from Pima's open boll trait are more apt to occur under these climatic conditions.

INSECT PEST MANAGEMENT

Overview

The insect pest complex which attacks Pima cotton is identical to those on Upland cotton. However, Pima's response to the intensity of attack by the various pests varies slightly when compared to Upland cotton. Several features of Pima cotton affect its susceptibility to insect attack. First, Pima cotton fruiting forms are densely covered with glands containing a sticky, black, alkaloid-laden resin. Second, mature Pima bolls are not as firm as Upland cotton bolls; therefore, Pima bolls are more susceptible to insect attack for a much longer period. Third, Pima is a long season crop that matures slowly. These fruiting traits require a longer period of pest control management compared with Upland cotton varieties.

Early Season Pests

Pima is similar to Upland cotton with respect to early season damage from such pests as thrips, grasshoppers and cotton fleahoppers. Controlling these pests is essential in maintaining a desirable fruiting-vegetative balance during the effective fruiting period.

Bollworms and Tobacco Budworms

Because of the abundance of glands containing gossypol and other alkaloids on Pima cotton fruit, Pima is less susceptible to bollworm and budworm damage than Upland varieties. Pima cotton may encounter more early season damage from bollworms and budworms, but once mid-season is reached, fewer eggs are deposited and lower survival of small worms is observed in Pima. In West Texas, insecticide treatments are rarely needed to control bollworms after mid-July.

Boll Weevil

Although Pima cotton is currently grown in weevil-free areas, producers can expect a higher control cost for this pest in regions infested with the boll weevil. Since Pima bolls do not harden until 30 to 45 days after bloom, they are more susceptible to boll weevil damage over a long period compared to Upland cotton. Additionally, Pima cotton requires a longer season to reach its full yield potential. Currently, Pima is planted earlier than Upland cotton and is usually harvested after Upland cotton. Pima cotton production budgets in boll weevil-infested areas must include a higher control cost for this pest compared to Upland cotton.

Pink Bollworm

The pink bollworm is also a more troublesome pest because of the long season fruiting trait of Pima cotton. Compared to Upland cotton, an extended period of soft bolls causes Pima cotton to be more susceptible to pink bollworm. Efficient harvest, complete stalk destruction and early plowdown programs are highly important in reducing pink bollworm flare-ups. These post-harvest operations also aid in suppressing boll weevils.

MARKETING AND POLICY

The American Pima market has improved from a combined takeoff of domestic use and exports of 61,000 bales in 1982 to around 165,000 in 1986. However, 1986 production totaled a record 205,900 bales, a 33 percent increase from the previous year. Stocks, therefore, increased to 83,000 bales by the end of 1986/87 season. Domestic use was about 60,000 bales during the

1985 and 1986 market years. Exports have increased from 12,500 in 1982 to 100,000 bales in 1986.

Extra long staple cotton is grown in certain designated counties in western Texas, New Mexico and Arizona. An acreage reduction program (ARP) of 10 percent under established acreage base was in effect for the 1986 extra long staple cotton crop. Participation was voluntary, but only producers reducing acreage were eligible for the target price protection of 102.48 cents per pound and a loan rate of 85.4 cents. For 1987, the acreage reduction program was increased to 15 percent because of stock buildup. The loan rate was reduced to 81.4 cents and the target price to 97.7 cents per pound. Other 1987 provisions include no limited cross compliance, no offsetting compliance, no paid land diversion program and no advance deficiency payments.

Current market information on extra long staple cotton can be obtained from the "Long Staple Cotton Review," USDA, Agricultural Marketing Service, Cotton Division, Market News Branch, 4841 Summer Avenue, Memphis, Tennessee, 38122.

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