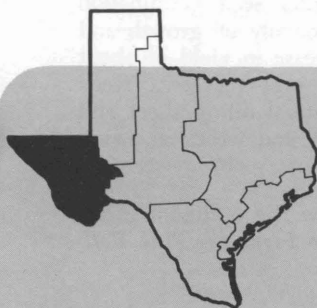


# FACT SHEET

Reel 5000-2-5-70  
55 TCGA  
new

L-886



## KEYS TO PROFITABLE COTTON PRODUCTION IN THE TRANS-PECOS AND EL PASO AREAS

Fred C. Elliott\*

### FIT COTTON INTO BALANCED FARMING

Efficient cotton production demands that the crop be grown on the best adapted soils on the farm. Make it a specification of an overall balanced farm program of operation. Complete, current farm records are a good tool in modern farm management.

### TAKE CARE OF YOUR SOIL AND WATER

**SOIL AND WATER CONSERVATION.** Sloping land should be terraced using applicable graded, bench or parallel types. Graded furrows are suited to some areas. Technical assistance is available through your local Soil and Water Conservation District.

**LAND PREPARATION.** Harvest the current year's crop as soon as possible and shred stalks immediately after harvest. Meet or, if possible, exceed the cotton plow-up deadline set by the State Pink Bollworm Control Program. Thorough shredding of high-residue crops will make all the succeeding jobs of plowing under residue, precision planting, weed control, fertilizer application, bed shaping and higher speed sled cultivation more efficient. Shred with fail-type shredder at a ground speed of 1.5 mph and shaft speed of about 1600 rpm. Plow under cotton stalks, boll residues and volunteer cotton to a minimum depth of 6 inches. This practice hastens residue decomposition and reduces or prevents winter carryover of pink bollworm. Chisel, plow or disk early to take advantage of fall rains. Floating or leveling aids water distribution on irrigated land.

Fall listing for final seedbed preparation allows time for storage of moisture from rainfall or preplant irrigation and for the soil to become firm before planting. Before last listing make application of commercial fertilizer based on a reliable soil test and past experience with fertilizer results.

**FERTILIZATION.** Soils of this area are generally well supplied with phosphorus and potassium but are rather low in organic matter and nitrogen. Rates of 60 to 120 pounds of N per acre are suggested on very slowly permeable soils of the Rio Grande and Pecos flood plains, Lobo Flats and Madera Valley areas. Up

\*Extension cotton specialist and coordinator of this leaflet, which contains contributions by numerous staff members in the College of Agriculture, Texas A&M University.

to 160 pounds per acre can be used on more permeable soils.

Rates of 30 to 60 pounds of  $P_2O_5$  per acre are suggested where soil tests indicate medium or low levels. Generally, soil supplies of potassium are sufficient but can be used up to 40 to 60 pounds of  $K_2O$  per acre on sands where soil levels are expected to be low.

**ROTATIONS.** Follow a 3-year rotation where possible: cotton, grain sorghum and small grains or other crops depending on local conditions. Other crops would include: fallow, pasture grasses, alfalfa, cover crops, diverted acres, oats-clover, certain vegetables, hay crops and high-residue forage crops. Diverted acres in the rotation could also be planted to clovers, grasses or other soil-building crops.

Small grains often are a break-even crop used as a nurse crop, a development crop, a salt-tolerant reclamation crop or one grown with flood irrigation so that leaching can be accomplished. These factors are primary, although producers have to make a profit with small grains or cash crops.

Known root rot areas and possible chemical residues affect rotations. Record these on a map. Livestock on the farm and availability of stock water may influence rotations.

Turn under as much organic matter as possible before seedbed preparation to increase water infiltration and reduce cotton root rot. Make maximum use of soil residues. Apply cotton burs at 2 to 6 tons per acre. Use farm and commercial feedlot manure where available.

**IRRIGATION.** High cotton yields may require 24 to 30 inches of water. In addition, there may be losses in the irrigation system or water used for leaching excess salts from the root zone.

Daily water use increases after squares form and climbs rapidly as the plants begin to bloom. Water use remains high during the critical blooming-boll development period.

The preplanting irrigation should refill the potential root zone to field capacity. Cotton roots may extend to 5 or 6 feet in deep loam or sandy loam soil, but most of the plant's water will be used from the top 3 or 4 feet of soil. Some soil conditions, such as

## RATE OF WATER USE IN RELATION TO PLANT DEVELOPMENT

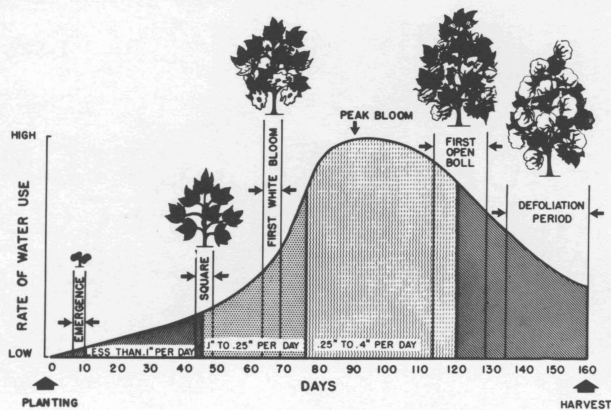


Fig. 1. Daily water use by cotton throughout the growing season.

compacted zones and clay layers, may restrict root development to the extent that most of the water will be obtained from the top 2 or 3 feet of soil.

Time growing season irrigations to keep the plant growing steadily. Irrigation may be required about the square stage and every 12 to 15 days afterward, assuming  $3\frac{1}{2}$  to 4 inches of water are stored in the root zone for plant use at each irrigation. The blooming-boll development period is critical. The crop must have adequate moisture during the first half of the period, from first bloom to peak bloom. After peak bloom, about 30 days after the first bloom, irrigation intervals may be increased to 15 to 20 days to encourage earlier maturity and an earlier harvest of higher quality cotton. Apply last irrigation generally no later than August 15 to 25.

### VARIETIES AND PLANTING SEED

Consult the Result Demonstration Handbook and Experiment Station test data. For spindle picking, plant Acala 1517 strains or Pima S-3.

Plant high-quality, high-vigor, high-gravity seed that have been properly processed and stored. Avoid use of low-germinating, high-free fatty acid seed that have been cracked or mechanically damaged or stored under high moisture conditions. Save planting seed from afternoon harvested cotton.

### FOLLOW PRACTICAL MECHANIZATION

**PLANTING.** Recommended dates for planting cotton are April 15 to May 1. Soil temperatures normally are above 61 degrees F. and can be expected to increase during and after this time. Bed and plant on 38 to 40-inch row width. Consider planting on shaped beds with precision depth control planting equipment rather than in-the-furrow planting. Advantages of bed planting are: less power requirement; soil temperature 3 to 4 degrees higher upon the beds than in the furrows; more precise control over depth of seed placement

with less scatter pattern in the drill; a significant increase in speed and capacity; more uniformity in the rate of seedling emergence; quicker seed germination and stand; increase rate and uniformity of growth and maturity; and average overall increase in yield of about 28 percent. Bed planting helps post-emergence weed control practices such as use of lateral oiling shoes and the application of DSMA to grass and weeds in young cotton.

**PLANTING DATES.** Follow the optimum planting dates given in L-219, *Ways to Fight the Pink Bollworm in Texas*.

**PLANTING RATE.** Plant six to eight seed per foot of row to provide a final stand of three to four plants per foot, 18 to 20 pounds of seed per acre, depending on the germination. Aim for 40,000 to 50,000 plants per acre.

**CULTIVATION.** Cultivate only when necessary to control weeds or prepare for irrigation. The rotary hoe allows high speed cultivation and covering of maximum acreages.

### CONTROL INSECTS, DISEASES AND WEEDS

**INSECT CONTROL.** Insects frequently are major limiting factors in profitable cotton production in El Paso and Pecos Valleys of the Trans-Pecos area. Most insects can be controlled effectively by following a recommended control program. Apply insecticides only when field inspections reveal economic levels of damaging insects. Indiscriminate and prolonged use of insecticides is costly and results in destruction of beneficial insect parasites and predators and contributes to the development of insecticide resistance in damaging pests. A sound insect control program makes maximum use of natural control agents and cultural control measures as well as judicious insecticide use.

To develop and maintain the most efficient insect control program, every grower should learn how to determine insect infestation levels, recognize damage caused by various insects and base insecticide application decisions upon current field situations.

Thrips and fleahoppers are the major early season pests. Control of these pests helps insure early fruiting and maturity. Insecticide control decisions are influenced by population level and the possible impact on beneficial insects.

Bollworms, tobacco budworms, pink bollworms and boll weevils are the principal insects involved in late season control. Control programs are designed to insure continued fruiting and protect maturing fruit. Apply insecticide treatments when infestation counts indicate the need. Base insecticide selection upon the pests present, and maintain necessary application schedules after initiating a late season control program.

For specific insecticide recommendations, See Extension L-508, *Guide for Controlling Cotton Insects in the High Plains, Rolling Plains and Trans-Pecos Areas of Texas* and L-219, *Ways to Fight the Pink Bollworm*.

**DISEASE CONTROL.** Treat seed with one of the following protectant fungicides:

Table 1. Protectant fungicides for cottonseed

Chemical	Oz. per 100 lb. of seed	
	Machine delinted	Acid delinted
Captan (75%)	2	2
Ceresan L	3	2
Ceresan M	3	2
De Pester MMH	3	2
Ortho LM	3	2
Panogen 15	3	2
PCNB (75%)		
+ Ceresan L		4 + 2
+ Ceresan M		4 + 2
+ Panogen 15		4 + 2
Terracoat L21		12

**Seedling disease:** Use high-vigor seed. Keep crop residue out of the seedling zone. If seedling disease is a serious problem use an in-furrow fungicide at planting time, such as PCNB + Captan, Terraclor Super X, Panterra, Difolatan or Demosan.

**Bacterial blight:** Use a resistant variety such as Acala BR-2. Use acid delinted treated seed and rotate with other crops. Avoid excessive rates of nitrogen fertilizer.

**Root-knot nematodes and fusarium wilt:** This disease complex occurs in isolated areas. Use chemical soil fumigation and tolerant varieties, but only when there is a demonstrated need.

**Cotton root rot:** Follow a 3-year rotation program with cotton, sorghum and small grains. Turn under deeply the residue or small grains with a moldboard plow.

**Boll rots:** Avoid excessive stalk growth. Bottom defoliation is helpful. Botran, a fungicide, is labeled for use and is effective.

**Verticillium wilt:** Plant uniform thick stands. Water wisely and avoid excess nitrogen. Rotate with grass-type crops and use resistant varieties, such as Acala 1517V.

**WEED CONTROL.** Chemical control methods should supplement rather than replace careful attention to cultivation. Free beds of weeds before planting. Disturb the seed bed as little as possible to conserve moisture. Use the rolling cultivator and roto-tiller before planting if a winter weed problem exists. Consider the use of pre-plant and pre-emergence herbicides on a band basis for economy reasons.

Proper treatment of planting seed with an approved fungicide can aid in reducing stand losses and the use of good seed will produce healthier seedlings which will aid post-emergence weed control.

Eight premergence chemicals are recommended for use in cotton: CIPC, Cotoran, Caparol, Dacthal, Herban, Karmex, Planivan and Treflan. All can be applied as a band at the time of planting with equipment mounted on the tractor just back of the planter. Or they can be banded or broadcast as a separate operation immediately after planting. Planivan and Treflan must be incorporated in the soil. They can be applied, broadcast in the fall or spring, before planting. They also

can be sprayed on the beds and incorporated with a Roll-N-Cultivator, row disk, or power-driven roto-tiller.

Planivan or Treflan also can be band incorporated with a roto-tiller at the time of bed shaping before planting. Incorporation should be shallow. The operator must know where the zone of incorporated herbicide is and place the seed at the bottom edge of the zone. See B-1029, *Suggestions for Weed Control with Chemicals*.

Read and study the herbicide labels.

**Chemical weed control practices:**

Chemical weed control practices:

- Pre-plant spray for Johnsongrass (Dalapon + crop oil)
- Pre-plant soil incorporated—fall or early spring
  1. Broadcast disking
  2. Banding—power-driven rotary tiller
- Premergence—banding usually or broadcast
  1. Planter mounted
  2. Separate operation
  3. Overlay or double treating
- Post-emergence (Don't wait too long to begin)
  1. Lateral oiling—herbicidal oils
  2. Emulsifiable oils—before and after barking
  3. Directed spray—
    - a. DSMA or MSMA + surfactant—(3 inches tall to first bloom)
    - b. DSMA or MSMA combination with Karmex Herban, Cotoran or Caparol + surfactant
  4. Over-the-top-Cotoran
  5. Eptam-soil injection of sub-surface
  6. Spot spraying
  7. Layby

A number of herbicides are available. All have some limitation. Study all the materials and learn as much as possible about their use. Each grower can work out a system suited to his land and equipment.

**Mechanical weed control practices:**

Mechanical weed control practices:

- | Before planting                      | At or after planting          |
|--------------------------------------|-------------------------------|
| 1. Summer fallow                     | 1. Capping or hilling up      |
| 2. Disking                           | 2. Rotary hoe-broadcast       |
| 3. Harrowing                         | 3. Rotary hoe-row mounted     |
| 4. Chisel plowing                    | 4. Sweep cultivation          |
| 5. Bedding or listing                | 5. Rod weeder                 |
| 6. Rebedding or relisting            | 6. Harrowing                  |
| 7. Row disking                       | 7. Sand fighter               |
| 8. Roll-N-Cultivator (rotary hoeing) | 8. Power-driven rotary tiller |
| 9. Knifing or go-devil               | 9. Baring off                 |
| 10. Bed cultivation                  | 10. Flaming                   |
| 11. Bed shaping                      |                               |

Mechanical weed control and careful attention to cultivation is cheaper and safer than all-out use of chemicals. In low rainfall years, mechanical practices may be sufficient. Or perhaps post-emergence chemical practices plus mechanical methods may be sufficient.

## HARVEST, HANDLE AND GIN FOR HIGH GRADE

About 98 percent of the Texas crop is machine harvested. Growers generally are doing an efficient job of machine harvesting. Close cooperation of growers with the ginner is important. Follow moisture guidelines at the time of harvest to take dry, clean cotton to the gin. See MP-297, *Keep Cotton Dry, Loose and Clean*. Harvest cotton when the relative humidity is 60 percent or less. This is associated with 8 to 10 percent seed cotton moisture. Early morning harvesting of wet cotton is the most common error. If cotton stands in the trailer on the gin yard during crowded

seasons and has been harvested damp, it will begin to "sweat" and injure grades and germination of the seed.

In the West Texas area, the value of chemical defoliation or desiccation of cotton may be questionable. Many growers prefer to wait for frost to desiccate the crop. Many who use spindle pickers, green pick the first time over and wait for frost for the second picking.

When the crop is late, there is a temptation to use as much of the growing season as possible. However, if some fields show a heavy infestation of boll weevils and pink bollworms, there may be no advantage in delaying since it is unlikely that more cotton will be made. The advantage may be in early termination of the crop as an insect control measure for the next year.

The addition of 1/2 pint per acre of Paraquat has been used to improve the performance of the phosphate defoliant. This may be particularly helpful at low temperatures. If fields are badly infested with boll weevils, the addition of 1/4 pound per acre of Guthion will help reduce the overwintering boll weevil population. This should be done on a community-wide basis to be most effective.

Producers should be aware of the necessity of doing a thorough job of field cleanup. L-145, *Cotton Defoliation Guide*, is available from your local county agent.

Skill of the operator is important. He should follow the operator's manual. Operators should make use of the "Cotton Harvest Loss Estimator" to determine machine harvesting efficiency.

Cotton gins best at about 6 1/2 to 8 percent moisture. Avoid use of excessive water on the spindles. Usually 2 gallons of plain water per bale is the recommended amount. Use of textile oils as spindle moistening agents is not recommended.

### MARKET HIGH-QUALITY COTTON

Know the value of your cotton, obtain grade, staple and fiber instrument values available such as micronaire. Obtain information on sale of specific varieties and qualities for certain areas. Participate in cotton promotion programs and other events.

### ECONOMICS OF PRODUCTION

Increased efficiency and lowered cost of production are possible as improved practices are developed by research and result demonstrations. Decisions to adopt new practices will be influenced by studying available records. These budgets can help in analyzing added costs versus added returns resulting from a change in practices.

Table 2. Estimated cost and return of Acala cotton production Trans-Pecos and El Paso Area

	Estimated Cost per Acre		your farm
	875 lb. lint yield	1250 lb. lint yield	
1. Stalk cutting	\$ 2.59	\$ 2.59	_____
2. Breaking Land—3 B Plow	3.98	3.98	_____
3. Disk land	2.24	2.24	_____
4. Smoothing—land plane	1.91	1.91	_____
5. Bedding—3 B lister	2.05	2.05	_____
6. Pre-plant irrigation—12"	13.00	13.00	_____
7. Pre-plant fertilizer	4.14	4.14	_____
8. Pre-plant herbicide	2.00	2.00	_____
9. Planting—3 B Planter	3.00	3.00	_____
10. 4 summer irrigations—24"	26.00	26.00	_____
11. 4 cultivations	6.96	6.96	_____
12. Layby herbicide	2.00	2.00	_____
13. 160# nitrogen @ 10¢	16.00	16.00	_____
14. 10 app. of insecticide	20.00	20.00	_____
15. Herbicide—layby and pre-plant	4.00	4.00	_____
16. Interest on operating capital	10.00	10.00	_____
17. Telephone & electricity—farm share	5.00	5.00	_____
18. Seed	4.00	4.00	_____
19. Hail insurance	14.00	14.00	_____
20. Misc.—pickup truck, etc.	15.00	15.00	_____
	<hr/>	<hr/>	
Total cast cost	\$157.87	\$157.87	_____
21. Harvesting 875# @ 5¢	43.75	62.50	_____
22. Ginning & bagging & ties	29.25	42.00	_____
	<hr/>	<hr/>	
Total cost	\$230.77	\$262.37	_____
Estimated income:			
875# lint @ 25¢	\$227.50	\$324.00	_____
1600# seed @ \$43.00 Ton	33.60	45.48	_____
	<hr/>	<hr/>	
Total income	261.10	370.48	_____
Less costs	230.77	262.37	_____
	<hr/>	<hr/>	
Net return not including government payments	\$ 30.33	\$108.11	_____
Approximate government assistance @ 16.8¢ per pound on the domestic allotment	95.55	136.50	_____
	<hr/>	<hr/>	
Including government payments	\$125.88	\$244.61	_____