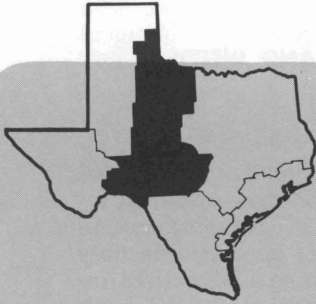


# FACT SHEET

Rec'D - 30,000  
175 TCGA 2-5-70  
New

L-885



## KEYS TO PROFITABLE COTTON PRODUCTION IN THE ROLLING PLAINS AND CENTRAL BASIN

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. Thorough shredding of high-residue crops will help the effectiveness of succeeding cultural jobs. Shred and 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 and boll weevils. Chisel, plow or disk early to take advantage of fall rains. Floating or leveling aids water distribution on irrigated land.

Early fall listing or bedding for final seedbed preparation allows time for moisture storage from rainfall or preplant irrigation and for the soil to become firm before planting. Some areas may require relisting. Relisting usually is recommended only before February or March. Before last bedding apply commercial fertilizer based on a reliable soil test and past experience with fertilizer results.

**FERTILIZATION.** Soils in this area are very deficient in nitrogen and phosphorus with some of the sandier soils somewhat low in potassium. For soils quite low in nitrogen and phosphorus, applications of 30-30-0 to 60-60-0 are suggested, with the higher rates to be used for irrigated cotton.

From 30 to 60 pounds of potassium ( $K_2O$ ) per acre should be included in fertilizers used on sandy soils low in this nutrient.

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

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

Root rot infested areas and possible chemical residues will 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.** Maximum cotton yields may require 21 to 25 inches of water available for plant use. However, good yields are possible with less water if irrigation is timed carefully to adequately supply the crop during critical water demand periods. Efficient and profitable irrigation depends upon when water is available, as well as the amount available.

Daily water use generally is less than 0.1 inch per day until squares form and increases rapidly when blooming starts. It remains at 0.25 to 0.40 inch per day through the blooming-boll development period, and decreases as the first open bolls appear.

Adequate moisture at planting time helps assure uniform stands, provides water for early season growth and encourages deep root development. A preplanting irrigation can supply this water when rainfall has not replenished the root zone. Apply enough preplanting irrigation water to fill the potential root zone to field capacity.

Cotton roots may grow to a depth of 5 or 6 feet in deep loam or sandy loam soil. But heavy clay subsoils, compacted zones, clay layers and other soil conditions often restrict root development to shallow depths. Even in deep, medium soils, most of the water for the crop is in the top 3 to 4 feet. In heavy clays, most of the crop's water is in the top 2 to 3 feet of soil.

Variations in rainfall prevent the establishment of specific irrigation schedules during the growing season, but irrigation generally is not required before the bloom

stage, if the root zone is saturated when the crop is planted. Adequate moisture is especially important from early bloom stage through boll development. For high yields, cotton requires 3 to 4 inches of water every 12 to 15 days during this time. If rainfall does not supply this water, irrigation should provide an equivalent amount. Some very coarse sands or shallow soils may require smaller amounts of water more frequently.

Moist soil conditions may slow maturity. To encourage earlier maturity, the interval between irrigations may be increased after peak bloom stage, about 30 to 35 days after first bloom. Irrigation past mid-August increases the risk of poor harvest conditions caused by late crop maturity.

### VARIETIES AND PLANTING SEED

Consult the County Result Demonstration Handbook and Experiment Station test results. For spindle picking, plant high-yielding, open-boll types, such as Stoneville, Deltapine, Coker, TSPA 109. For stripping, plant storm resistant boll types. Varieties such as Lankart, Lockett 4789, Tamcot, TSPA 110 or 22, Dunn 56C and Stripper Calas are widely grown.

Consider fiber properties as well as agronomic characteristics. Producer groups may wish to consider a one-variety community or a one-variety area.

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.** The highest percentage emergence usually occurs between May 10 and 25. Planting after June 1 shortens an already short growing season and lowers yields. June 15 to 20 is the last practical date for planting. Bed and plant on 40-inch rows. Where possible, plant on shaped beds with precision depth control planting equipment rather than in-the-furrow planting. Advantages of bed planting are: fewer power requirements; the soil temperature 3 to 4 degrees higher on the beds compared to the furrow; more precise control over depth of seed placement with less scatter pattern in the drill; significant increase in speed and capacity, more uniformity in the rate of emergence; quicker seed germination and quicker stand; increased rate and uniformity of growth and maturity; average yield increase 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 RATE.** Plant six to eight seed per foot of row to provide a final stand of three to four plants per foot, 20 to 24 pounds of seed per acre,

depending on the germination. Aim for 40,000 to 50,000 plants per acre.

### CONTROL INSECTS, DISEASES AND WEEDS

**INSECT CONTROL.** Insects often are major limiting factors in profitable cotton production. Most insects can be effectively controlled through recommended control programs. Use insecticides only when field inspections reveal economic levels of damaging insects. Indiscriminate and prolonged use of insecticides is costly and results in unnecessary 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, aphids and fleahoppers are commonly the major pests during early season. Control of these pests helps insure early fruiting and maturity. Insecticide control decisions are influenced by population level, damage 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. Maintain application schedules after a late season control program is begun.

For specific insecticide recommendations, see L-508, *Texas Guide for Controlling Cotton Insects in the High Plains, Rolling Plains and Trans-Pecos Areas of Texas*. This leaflet also describes methods for determining the infestation levels and the need for insecticide applications. Also see L-219, *Ways to Fight the Pink Bollworm*.

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

Table 1. Protective 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 consistently serious problem, use an in-furrow fungicide at planting time, such as PCNB + Captan, Terraclor Super X, Panterra, Difolatum or Demosan.

**Bacterial blight:** Use a resistant variety. Use acid-delinted, treated seed and rotate with other crops. Avoid excessive rates of nitrogen.

**Root-knot nematodes and fusarium wilt:** This disease complex occurs in isolated areas. It may be controlled by chemical soil fumigation and use of tolerant varieties, such as Lankburn, Westburn and Paymaster 909. Use these practices only when there is a demonstrated need.

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

**Boll rots:** Regulate cultural practices to avoid excessive stalk growth. Bottom defoliation is helpful. Botran, a fungicide, is labeled for use and is effective.

**Verticillium wilt:** Symptoms first appear on isolated plants. Yellow sectors appear on leaves of one or more branches with plants wilting. Brown streaks appear in the woody tissue. Plant uniform thick stands. Water wisely and avoid excess nitrogen fertilization. Rotate with grass-type crops and use resistant varieties, such as Acala 1517V or Paymaster 909 where adapted.

**WEED CONTROL.** Use of chemical control methods should supplement rather than replace cultivation. Free beds of weeds before planting. Disturb the seedbed as little as possible to conserve moisture. Cultivate or rerun middles to clean beds as needed before planting. Use the rolling cultivator, go-devil or row disks on beds before planting if a winter seed 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 help reduce stand losses. Use of good seed will produce healthier seedlings which will aid post-emergence weed control.

Eight preemergence 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 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 can also be sprayed on the beds and incorporated with a Roll-N-Cultivator, row disk, Do-All 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 incorporation. See B-1029, *Suggestions for Weed Control with Chemicals*. Read and study herbicide labels.

#### Chemical weed control practices:

- Preplant spray for Johnsongrass (Dalapon + surfactant or crop oil)
- Preplant soil incorporated—fall or early spring
  1. Broadcast disking
  2. Banding—power-driven rotary tiller
- Premerge—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 combinations with Herban, Karmex, Cotoran or Caparol + surfactant
  4. Over-the-top Cotoran
  5. Eptam-soil injection of sub-surface
  6. Spot spraying
  7. Layby

In years of good moisture, chemicals to control weeds and grass offer a means of doing away with hand hoeing. A number of herbicides are available. All have some limitation. Study each of these materials to 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:

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

Mechanical weed control and careful cultivation are 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. September cultivation may be necessary to control weeds following heavy rains.

#### HARVEST, HANDLE AND GIN FOR HIGH GRADE

About 98 percent of the Texas crop is machine harvested. Growers are generally machine harvesting efficiently. Close cooperation of growers with the ginner is important. Moisture guidelines should be followed 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.

Cotton should be defoliated with a true defoliant for machine picking. Use the phosphorus-type defoliants, DEF or Folex, if second growth conditions prevail. The chlorate defoliants work well in mature leaf cotton. If harvest is before frost, use desiccants to prepare cotton for machine stripping. The chlorate defoliants work well in mature leaf cotton. The operator should follow strictly the operator's manual. If a conventional stripper is used, equip the trailer with a "wagon top." This saves labor and avoids placing a man in the trailer while stripping. Strippers equipped with green boll separators and baskets will cut the labor of machine stripping about 50 percent.

Cotton gins best at about 6½ to 8 percent moisture content. Avoid the use of excessive water on the spindles of pickers. Usually 2 gallons of plain water per bale is the recommended amount. Use of textile oils as spindle moistening agents is not recommended.

Bark is a problem in the stripper areas if cotton is stripped too quickly after frost. Bark is difficult to remove at the gin, and samples containing bark will be down graded. Wait until the stalk is dry before stripping, perhaps about a week or longer after applying desiccants.

## 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. Grow the highest quality possible without sacrificing yield per acre. Participate in cotton promotion programs and other events.

Complete information and forms on the CCC Form A (producer) and Form G (cooperative marketing associations) loans on cotton are available from the county ASCS offices.

## ECONOMICS OF PRODUCTION

Increased efficiency, which means lower cost of production, is possible as improved practices are developed by research and result demonstrations. Decisions to adopt new practices will be influenced by studying available records. The following budget can be used to help analyze added costs versus added returns resulting from a change in practices.

Table 2. Estimated income and expense per acre of cropland for irrigated and dryland cotton

Item	Price	Irrigated	5 dryland planting patterns				
			Solid	2x1	2x2	2x4	4x4
Yield per acre of cropland (pound)		600	250	238	225	167	175
Income:							
Lint (pound)	\$ .18 <sup>1</sup>	\$108.00	\$45.00	\$42.84	\$40.50	\$30.06	\$31.50
Seed (ton)	50.00	25.50	10.50	10.00	9.50	7.00	7.50
Total		\$133.50	\$55.50	\$52.84	\$50.00	\$37.06	\$39.00
Specified expenses:							
Seed (pound)	\$ .16	\$ 3.20	\$ 2.40	\$ 2.40	\$ 2.40	\$ 1.92	\$ 2.40
Fertilizer 80-60-0 (A.)		13.20					
Power (hour)	1.27	4.89	3.61	3.48	3.43	3.72	3.43
Other machinery (hr.)	.45	1.69	1.16	1.12	1.11	1.20	1.11
Irrigation (12 acre in.)		12.00					
Insecticides (A.)	3.00	9.00	3.00	2.01	1.50	1.00	1.50
Herbicides (A.)	6.00	6.00					
Hoing (A.)	1.00		2.00	2.00	2.00	2.00	2.00
Total preharvest expenses		\$ 49.98	\$12.17	\$11.01	\$10.44	\$ 9.84	\$10.44
Custom stripping (lb. lint)	.03	\$ 18.00	\$ 7.50	\$ 7.14	\$ 6.75	\$ 5.01	\$ 5.25
Ginning, B/T (lb. lint)	.045	27.00	11.25	10.71	10.12	7.51	7.87
Interest @ 7 %	.07	3.50	1.46	1.32	1.25	1.18	1.25
Total specified expenses		\$ 98.48	\$32.38	\$30.18	\$28.56	\$23.54	\$24.81
Returns to land, labor and management		\$ 35.02	\$23.12	\$22.66	\$21.44	\$13.52	\$14.19
Labor (hr.)	1.00	6.00	3.14	3.04	3.00	3.23	3.00
Returns to land and management		\$ 29.02	\$19.98	\$19.62	\$18.44	\$10.29	\$11.19
Price support payment @ 16.8¢ on the domestic allotment		\$ 65.52	\$27.30	\$25.99	\$24.57	\$18.23	\$19.11

<sup>1</sup>Does not include government payment which may vary from year to year.