

labor requirements during the harvest season. This applies particularly to cotton and corn.

4. Farm operators should continually explore price and cost relationships with the purpose of substituting more profitable crops for less profitable ones.
5. Add a productive livestock enterprise to the farm business when mules are displaced. This should afford utilization of farm by-products and increase the farm income.
6. Increase the use of farm machinery by using it to do more jobs. Labor requirements will be reduced but the productivity of labor will be increased. Surplus farm labor must find employment in industry, therefore, it is necessary for society to maintain a high level of industrial activity.

#### SUMMARY

1. The number of tractors on farms in North Carolina remained about the same from 1930 to 1940, but almost doubled from 1940 to 1944.
2. The average cost of operating the 125 tractors studied was 54 cents an hour.
3. The cost of operating tractors varies with the amount of use, ranging from \$5.00 a day when used 121 days a year to \$9.51 when used only 20 days.
4. The average annual cost of operating 49 six-foot combines was \$178.06. The average six-foot combine harvested 144 acres of grain, soybeans, and lespedeza at a cost of \$1.24 an acre.
5. The average annual cost of operating 56 peanut pickers was \$115.60. The average machine was used to pick 124 acres of peanuts at a cost of 93 cents an acre.
6. The average annual gross cost of keeping workstock, excluding the cost of shelter and taxes, was \$197.87 per head; the average annual net cost was \$185.87 per head.

7. On the basis of the average work performed, one medium-size tractor replaces approximately six mules.
8. Mechanized methods of farming required fewer hours of man labor to produce the principal field crops in 1943. The largest relative reduction in labor requirements was obtained for soybeans, small grains, corn, peanuts, and cotton in the order enumerated.
9. Crops were produced at lower cost where tractor power was used. The relative reduction in per acre operating expenses in 1943 was largest for soybeans, followed by small grains, corn, peanuts, and cotton.
10. The substitution of tractors for mules on large farms usually means (1) a reduction in the cost of power, (2) a reduction in the amount and consequently the cost of labor, and (3) increase in output per worker.
11. Where 3 tractors were assumed to replace 17 of 19 mules on the average mechanized farm with 515 acres in crops, the operating expense was reduced from \$14,473 to \$11,010.
12. A reduction in the number of workstock makes it possible to increase productive livestock enterprises.
13. The distribution of labor throughout the year is materially changed with mechanization. All important labor peaks are reduced; however, the harvesting operations for cotton, peanuts, and corn have not, as yet, been mechanized, and represent a serious labor problem where tractor power is used. Adjustments in the cropping system and the development of new harvesting equipment for the important cash crops will help to eliminate this problem.
14. Lowest per acre costs for power and labor are obtained when maximum use is made of the tractor and equipment.
15. Based on a typical cropping system for mechanized farms, 170 acres of crops

- represent the maximum acreage which can be handled with one medium-size tractor and one mule.
16. The maximum acreage which can be handled with a given power unit depends upon the distribution of tractor work throughout the year, which in turn depends upon the cropping system.
  17. If mule power can be dispensed with completely, the minimum requirements for successful tractor operation will be considerably lower.
  18. Power and labor costs were slightly less where one medium-size tractor was used to replace two or three mules on a typical small farm with 60 acres in crops.
  19. Fluctuating price relationships have a pronounced effect upon the relative cost of animal and tractor power.
  20. Changes in the general price level are usually accompanied by changes in the relative prices of various commodities. Feed prices normally fluctuate more violently than do prices for machinery, equipment, and supplies.
  21. The cost of mule power varies more with the general price level than does the cost of tractor power.
  22. During periods with a low general price level, the cost of man labor and mule power are relatively lower than the cost of man labor and tractor power for an individual cropping system. For example, the cost per acre in crops for man labor and power on a typical 60 acre farm in 1943 was \$20.23 where tractor power was used as compared with \$23.72 where mules were used. Comparable figures for 1933 are \$11.68 and \$11.34 respectively.
  23. Mechanization of farm operations affects the economic organization of farms, widens the choice of enterprises and affects the combination of enterprises, reduces the amount of farm labor required, and displaces workstock.

24. The development of new and improved mechanical equipment will very likely increase the advantages of mechanized farming.
25. Partial mechanization of production operations for important crops, such as cotton, peanuts, and corn make adjustments in the farm labor organization more difficult. Improved harvesting machinery, the use of seasonal labor, and adjustments in the cropping system will help to alleviate this difficulty.
26. The following suggestions are offered as a means of improving efficiency in the use of resources on mechanized farms:
  - (a) When tractors are purchased, reduce the number of mules.
  - (b) Train farm laborers in the use and care of modern farm machinery.
  - (c) Mechanize harvest operation as soon as practical in order to reduce peak labor requirements during the harvest season.
  - (d) Study price and cost relationships and consider the advisability of adding new crops or increasing the acreage of those crops which are more profitable.
  - (e) Increase productive livestock when mules are displaced. This should afford better utilization of farm by-products and increase the farm income.
  - (f) Increase the use of farm machinery by using it to do more jobs, thus reducing labor and mule power requirements.