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Estimated Costs and Returns of Strawberries in South Mississippi, 1997

Bulletin 1081 -- February 1999

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Forward

This publication is designed to provide planning data to farmers, research and Extension staffs, lending agencies, and others interested in the commercial production of strawberries in Mississippi. Specifically, this report is intended to provide information on the costs and returns of the commercial production of strawberries in South Mississippi. Although cost and return estimates vary greatly from farm to farm, this report should provide sufficiently accurate information to serve as a planning guide. However, it should not be viewed as a list of recommended practices and/or products. Trade names cited in this publication are for the purpose of providing information and do not constitute an endorsement of the cited products, nor do they imply superiority to products not named. Readers are also cautioned that the estimated costs for land, management, and general farm overhead are not included in this report.

Introduction

The 1995 U.S. strawberry crop was 9% below the record crop of 1994 ([Table 1](#)). The 1996 U.S. strawberry production increased by more than 8% relative to 1995.

Typically, California accounts for more than 80% of the total U.S. crop and ships throughout the year, but the largest shipments occur from April to July. Florida, the second most important producing state, generally accounts for approximately 10% of national production. Florida produces in the winter season and ships most of its production from December through May (4,5). Mississippi's strawberry marketing or harvesting period appears to be March through May with most of the harvest during mid-March to mid-May.

Mississippi is not a major strawberry-producing state. In addition to California and Florida, Arkansas, Louisiana, Michigan, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Washington, and Wisconsin have strawberry production reported by USDA on an annual basis. Table 2 lists the number of strawberry producers in Mississippi, California, Florida, Louisiana, and North Carolina for 1982 and 1992. From 1982 to 1992 the number of strawberry producers in the U.S. declined by 27%.

Data and Procedures

The information presented in this report was developed from a study of farm practices conducted during 1996 and 1997. Two growers participated, both of whom were known to be successful strawberry producers. Both of the budgets presented in the report utilized a plastic mulch production system and destroyed the crop after a single season (transplant in October and crop destruction in May). Readers interested in a straw mulch system (1 year for crop development, followed by 3 years of harvest, with crop destruction after the fourth year), are referred to an earlier University of Tennessee publication (7).

Prices used in the budgets were developed from several sources. Tractor and selected equipment prices were available from the Department of Agricultural Economics annual updates of such information (3,8). Prices of equipment items unique to strawberry or similar crop production were obtained from dealers, suppliers, or manufacturers. Tractor and equipment prices and related data used in this report are included in Appendix A, Tables [1](#) and [2](#). Prices for agricultural chemicals, fertilizers, and other budget input materials are reported in Appendix A, [Table 3](#). In this report, all labor is charged at a rate of \$5 per hour. Prices for agricultural chemicals, fertilizers, and other budget input materials are reported in Appendix A, [Table 4](#).

The basic technique used in this report is enterprise budgeting (10). Each budget lists and describes all operations used to produce the crop on a per-acre basis. The costs associated with each trip across the field make up a large percentage of the costs. Other cost items, not directly associated with field activities, such as housing and advertisement, are included. Each budget is reported in several formats or tabular forms.

The growers were selected to represent two types of production. Grower 1 employs a commercial harvest system. Grower 2 operates a pick-your-own system. Commercial harvest requires a large number of harvest laborers for an extended period of time. This method is most suited for commercial producers engaged in the production of many crops throughout the year. It probably involves the housing of laborers. The pick-your-own system can be employed as a single crop or specialty crop. A part-time grower could utilize the pick-your-own system and engage in the production of no other crop. However, both systems are most often found on commercial operations involved in the production of several crops (often at the same time) most months of the year.

The major difference identified between the two systems centers around row width and plants per acre. The commercial harvest system employs 48-inch beds on 72-inch centers. Four rows of plants are transplanted on each bed. The pick-your-own system utilizes 30-inch beds on 58-inch centers with two rows per bed. The 48-inch bed requires two drip lines, while the 30-inch bed requires only one. The number of plants per acre is approximately 36,000 for commercial harvest and 16,000 for the pick-your-own system.

[Table 3](#) lists and summarizes the estimated resource use and costs for field operations for the commercial harvest system. Similar information for the pick-your-own system is reported in [Table 4](#). Strawberry production is expensive. For the pick-your-own system, the planting operations -- final bedding plus custom transplanting - cost \$2,491.17 per acre ([Table 4](#)). For the commercial harvest system, the planting operations total an estimated \$3,973.80 per acre. The increased cost is primarily due to the difference in the number of transplants per acre.

Many of the components of the two production systems are substitutable. Examples are fertility, fumigation, weed control, disease control, insect control, and freeze protection.

Fertility: The budget for Grower 1 ([Table 3](#)) denotes 0.5 ton of lime and 22.5 hundredweight of 10-5-10 fertilizer. The fertility program for Grower 2 was based on a soil test. [Table 4](#) reports 1 ton of lime plus 10 hundredweight of custom-blend fertilizer. A portion of the custom blend material is time released.

Fumigation: Both producers reported the use of methyl bromine. Grower 1 reported 200 pounds per acre, while Grower 2 reported 225 pounds per acre.

Weed Control: Because both systems are based on plastic mulch, weed control is not extensive. The commercial harvest budget reflected some hand weed control in December and some spot spraying with Roundup in February. Roundup was employed to destroy the crop. The pick-your-own budget indicated no cost for hand or chemical weed control and employed Gramoxone to destroy the crop.

Disease Control: The disease control program for both growers was built around Captan and Benlate. Both employed some Rovral. Grower 1 used some tribasic copper. The commercial harvest budget ([Table 3](#)) reports 19 fungicide applications. The pick-your-own budget ([Table 4](#)) denotes 28 fungicide applications. In both cases materials were often tank mixed.

Insect Control: The commercial harvest budget denotes five insecticidal applications, one with Lorsban, two with Thiodan, and two with Kelthane. The pick-your-own budget reports no true insecticide applications. However, six applications of sulphur (tank mixed with other materials) were employed primarily to control insects.

Freeze Protection: Grower 2 used an overhead sprinkler irrigation for freeze protection (9). In the budget presented in [Table 4](#), 10 hours are indicated to set up the irrigation or freeze-control system in October. The other freeze-protection costs are reported in February. The line labeled "Irrigation" is associated with the irrigation system itself, a durable good, and the \$74.65 charge is the annual fixed cost per acre. The line labeled "Freeze protection" denotes 6 hours of labor. Grower 1 did not employ freeze protection. There are no freeze-protection-related costs in [Table 3](#).

Harvest Cost: The pick-your-own system required labor at harvest to supervise (sup) the operation. Supervisor harvest labor totals \$800 per acre in the budget. This charge assumes that two laborers (7 days per week, 10 hours per day) can supervise the handling of 7 acres of pick-your-own strawberries. Grower 1 employed custom

harvest labor at a charge of \$1.35 per flat. The per-acre charge for harvest labor is \$2,970 in the budget.

Post-Harvest Cost: Grower 1 destroyed the crop and replanted to a second crop, utilizing the same plastic. [Table 3](#) does not indicate any charges for removing the plastic, etc. However, the entire cost of the plastic and its installation was charged to the strawberry crop. Grower 2 did not follow the strawberry crop with a second crop. He destroyed the crop with Gramoxone, subsoiled the field, employed labor to collect the plastic and other trash, paid a trash disposal fee, and finished with a discing operation at a total cost of \$97.78 per acre.

Housing: Grower 1 reported a housing charge estimated at \$80 per acre. Grower 2 did not face this expense.

Costs and Returns

Tables [5](#) and [6](#) summarize costs and returns. Commercially harvested strawberries are sold by the flat (10-pound box). In [Table 5](#), the price per flat is estimated at \$10. At the yield indicated, commercially harvested strawberries generate a total income of \$18,000 per acre. The pick-your-own budget ([Table 6](#)) indicates strawberries sold at \$0.93 per pound. At the yield indicated, pick-your-own strawberry production provides a total income estimated at \$13,392 per acre.

Total direct expenses are estimated at \$5,291.46 for the pick-your-own system (approximately 70% of the commercial harvest system). The difference in fixed cost of approximately \$100 per acre is primarily associated with the sprinkler irrigation system employed for freeze protection in [Table 6](#). Differences in returns above total specified expenses are primarily associated with yield (a small portion of the difference in returns is due to price -- \$1 versus \$0.93 per pound). Returns above total specified expenses for the pick-your-own system are estimated at \$7,893.96, while the estimated returns above total specified expenses for the commercial harvest system totaled \$10,265.55.

Other Budget Tables. Appendix B is provided primarily for potential new growers and summarizes the data several different ways. Tables [1](#) and [2](#) (Appendix B) allow the reader to examine fuel and labor costs per operation.

Tables [3](#) and [4](#) in Appendix B summarize estimated costs and returns. The direct expense items labeled "Fertilizer" through "Other Labor" are unique to the strawberry budgets. The direct cost items labeled "Operator Labor," "Hand Labor," "Diesel Fuel," "Repairs and maintenance," and "Interest on operating capital" are internal to the budget generator. Hence, "Hand labor" is primarily associated with tractor driver time and labor to support the implement being towed by the tractor. "Other labor" is associated with practices more uniquely associated with strawberry production and is explained in more detail in Appendix B, Tables [5](#) and [6](#). Appendix B, Tables [7](#) and [8](#) summarize estimated returns at selected prices.

Summary and Limitations

Strawberries are a high-cost, high-valued crop. This report does not emphasize, but the reader is cautioned, that strawberry production requires a high level of management (6) in addition to a large amount of capital per acre. New growers should give serious consideration to marketing opportunities before initiating strawberry production.

Successful strawberry production and marketing can result in relatively large returns per acre when compared to Mississippi's traditional broad-acreage agricultural enterprises.

Grower 1 (commercial harvest) produced many crops and did not provide freeze protection. New growers are cautioned that freezing temperatures without freeze protection *will* result in delayed maturity, reduced prices, lower yield, and *large* financial losses.

With Mississippi's small number of strawberry producers, in the opinion of the authors, it is reasonable to expect that considerable expansion of the Mississippi strawberry acreage could occur without impacting price received by growers.

Acknowledgments

Special appreciation is extended to the cooperating producers who provided the basic input on practices used in this study. The various equipment dealers and other input dealers who provided information on prices are also gratefully acknowledged. Computer and other assistance provided by Keith Saum and Derrick Surette, undergraduate assistants in the Department of Agricultural Economics at Mississippi State University, is acknowledged. Appreciation is extended to Virginia Mapp for secretarial assistance and for locating much of the published information necessary for the completion of this report. Special appreciation is extended to Susan Stockslager for typing the manuscript and for her exceptional computer assistance.

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