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Plant Cost Accounting: A Personal Computer Program to Calculate Crop Production Costs and Price Per Plant

People starting greenhouse or nursery businesses or growers who want to add a new plant to their product line sometimes price their stock based on competitors' prices rather than actual costs. Growers using this pricing procedure may lose money since costs of production vary widely in the nursery industry (3). Production costs vary from firm to firm due to differences in management, cultural practices, size of the operation, production facilities, costs of labor and supplies, and availability of natural resources. Although cost studies for producing ornamental plants have been published (1,2,4) and can be used as guidelines for estimating production costs, these studies are limited to specific plants, size of operation, and cultural practices rather than tailored to a particular firm. A microcomputer program that requires minimal computer experience has been developed to calculate price per plant based on production costs and desired profit. This program, PLANT COST ACCOUNTING, is intended to be used as a management tool for growers and as a learning resource for students.

Program execution

The program is menu-driven and consists of three parts: (1) Plant Cost Accounting, used for entering production input; (2) Tables, used for summarizing production costs and calculating price per plant; and (3) Work Sheets used for recording cultural practices.

The accounting system used for production input was modeled after that used by the S-103 Technical Committee (1,2,4). The user must enter costs for land and its improvements, buildings, machinery and equipment, general overhead expenses, and supplies. The program will calculate depreciation, interest, insurance, and taxes if the user is unsure of these costs. In addition, the production schedule, including machinery, man-hours, and supplies used for cultural practices, must be entered for each crop. The program will accommodate a production schedule that includes a propagation phase, a growing phase, or a combined growing regime. A total of 76 plant species or crops can be stored in any one database (disk).

Once all fixed and variable costs are entered, the user can access the cost summaries part of the program. Data are presented in tables and include capital requirements and annual fixed costs of the firm and variable cost per hour of equipment used for cultural practices. The user than selects a crop and the program will present the production schedule, estimated costs of production (Fig. 1), and final price per plant. The user can then specify any profit percentage to see the effect on

price per plant. The program calculates profit by multiplying a specified percentage by the total production cost. All tables can be viewed on the monitor or printed for reference.

Figure 1. Excerpt from the table of estimated costs of production for a crop (flowering dogwood) entered in the Plant Cost Accounting Program. The program calculated these costs from information on a nursery's capital assets and the dogwood production schedule. For brevity, only the first and last parts of the table are shown.

Estimated costs of producing 4350 flowering dogwood : Budded plants.

Item	Description	Unit	Number of units	Cost per unit	Total cost
Propagation					
Year 1: Propagation:					
Materials					
Contract labor	Budding seedlings	Each	6,912.00	0.08	552.96
Budding wrap	Budding wrap:graft	Each	2,074.00	0.01	20.74
Dogwood seeds	Dogwood seeds-stck	Pound	9.00	0.60	5.40
Fertilizer	Fertilizer:6-12-12	Ton	0.04	242.00	10.89
Labor requirements					
Hired labor	General worker	Hrs.	3.08	4.50	13.86
Related labor	General worker	Hrs.	0.62	4.50	2.77
Subtotal					16.63
Variable costs, year 3					8,473.10
Interest on operating capital, 7 mos. ® 13.000% and compounded interest on expenses from previous years @ 13.000%					677.60
Total variable cost, year 3					9,150.70
Total variable cost for growing phase					12,249.13
Total variable cost for the crop					13,849.59
Total fixed cost for the crop (7.429% of the annual fixed cost)					9,883.85
Total production cost for the crop					23,733.44

The program can be used in greenhouse operations that grow potted plants or container and field nurseries. The program advantages include its simplicity and usefulness as a management tool. Little or no prior computer experience is needed since the user's guide includes a tutorial lesson for entering production information. The program also saves hours of manually collating and adding production costs. The time savings is especially important if the user wants to determine how a new piece of equipment or a change in cultural practices will affect plant prices before actually buying the equipment or making the change. Perhaps the greatest advantage of the program is that the grower can compare his or her estimated price per plant against those of competitors and determine if the crop will be profitable before investing any money in

production. The user must remember, however, that production costs generated by the program are only as accurate as the information entered.

The program was written in Turbo Pascal (Borland International, Scotts Valley, CA) and will work with any IBM PC/XT/AT, PS/2, (International Business Machines Corp., Boca Raton, FL) or 100% compatible computer that has at least 256 RAM and operates on PC- or MS-DOS (Microsoft Corporation, Seattle, WA) version 2.0 or higher. The program, Plant Cost Accounting, is available on a 3.5- or 5.25-inch disk and may be purchased from the Agricultural Publications Department, Ag Publications Bldg. J 40, University of Idaho, Moscow, ID, 83843-4196. The software disk and user's guide are sold for $10.00.

Literature Cited

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