VEGMARC II©: A COMPUTERIZED RECORD KEEPING SYSTEM FOR VEGETABLE MARKETING COOPERATIVES

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Abstract

Poor management of the southeastern vegetable marketing cooperatives has been linked to poor record keeping practices. The VEGMARC II© Record Keeping Program is part of a comprehensive multi-agency effort to provide solutions to the problems of southeastern vegetable marketing cooperatives. This computer program has been refined and expanded during four years of field testing. VEGMARC II© features include pool price calculations, deduction of packing fees, calculation of grower net returns, and the printing of reports, checks, and mailing labels. Eighty percent of cooperatives responding to user surveys indicated the program was meeting the needs of their cooperative.

Key words: record keeping program, vegetable marketing cooperative, microcomputer.

Vegetable marketing cooperatives in the southeastern United States historically have had a high failure rate. The reasons often cited for these failures include limited access to markets and poor management. A federation of cooperatives was proposed by the United States Department of Agriculture, Agricultural Cooperative Service (ACS) and the Tennessee Valley Authority (TVA) in the early 1980's as a vehicle through which services addressing many of these problems could be offered to individual cooperatives. The level of interest in nine problem-specific services that a federation of cooperatives could offer its members was determined through a survey of 30 southeastern vegetable marketing cooperatives (Lively and Bell). Provision of microcomputer application software was determined to be one way in which at least three of these services could be provided. These three services were accurate record keeping, timely market information, and improved financial planning-accounting-tax management (Kirkpatrick and Bell).

In late 1983, a federation of five southeastern cooperatives in four states was organized as the Horticultural Producers Federation (HPF). By 1988, the HPF had 13 member cooperatives in eight states: Alabama, Arkansas, Kentucky, Mississippi, North Carolina, Oklahoma, Tennessee, and Virginia. Since its inception, the HPF has worked with the ACS, TVA, USDA Agricultural Marketing Service (AMS), and the land-grant universities in the region to develop a comprehensive package of services for its member cooperatives. These services include development and distribution of both commercial and customized microcomputer software (Kirkpatrick and Bell). A major portion of the software made available to the Federation members is a record-keeping program developed specifically for use by vegetable marketing cooperatives.

The poor records of grower and buyer transactions in many cooperatives were thought to be a major factor in the problems cooperatives encountered. Disciplined record keeping of the sales of each member through a marketing cooperative is a vital management tool (Roy; USDA/ACS). Poor management practices are among the most frequently cited reasons for cooperative failures (McBride; USDA/ACS). The VEGMARC II© Record Keeping Pro-

gram was developed to improve the management practices of the cooperatives by addressing the record keeping problems of the cooperatives and providing a mechanism through which they could accurately pool prices[1] received for their product, while decreasing the amount of time required to calculate these prices.

PROGRAM DEVELOPMENT

The VEGMARC II© Record Keeping Program is a fifth-generation computer program. The first version of the record keeping program was distributed to six cooperatives in time for the 1984 marketing season. This program was designed to accept grower-buyer
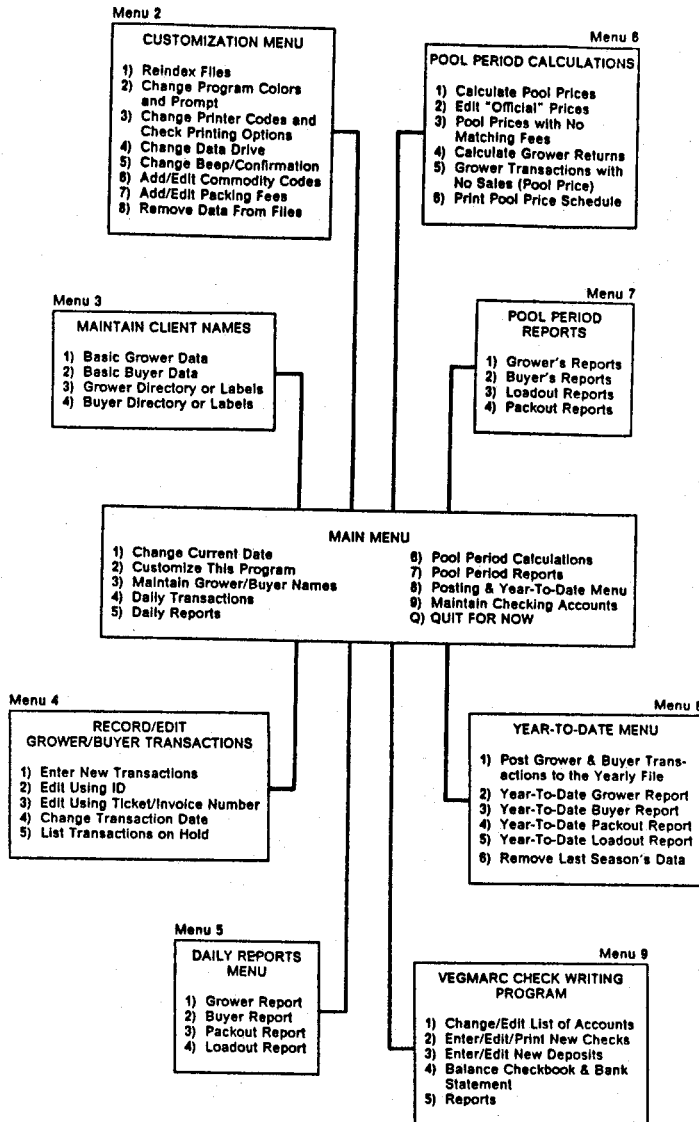
Menu 2

CUSTOMIZATION MENU

1) Reindex Files
2) Change Program Colors and Prompt
3) Change Printer Codes and Check Printing Options
4) Change Data Drive
5) Change Beep/Confirmation
6) Add/Edit Commodity Codes
7) Add/Edit Packing Fees
8) Remove Data From Files

Menu 6

POOL PERIOD CALCULATIONS

1) Calculate Pool Prices
2) Edit "Official" Prices
3) Pool Prices with No Matching Fees
4) Calculate Grower Returns
5) Grower Transactions with No Sales (Pool Price)
6) Print Pool Price Schedule

Menu 3

MAINTAIN CLIENT NAMES

1) Basic Grower Data
2) Basic Buyer Data
3) Grower Directory or Labels
4) Buyer Directory or Labels

Menu 7

POOL PERIOD REPORTS

1) Grower's Reports
2) Buyer's Reports
3) Loadout Reports
4) Packout Reports

MAIN MENU

1) Change Current Date
2) Customize This Program
3) Maintain Grower/Buyer Names
4) Daily Transactions
5) Daily Reports

6) Pool Period Calculations
7) Pool Period Reports
8) Posting & Year-To-Date Menu
9) Maintain Checking Accounts
Q) QUIT FOR NOW

Menu 4

RECORD/EDIT GROWER/BUYER TRANSACTIONS

1) Enter New Transactions
2) Edit Using ID
3) Edit Using Ticket/Invoice Number
4) Change Transaction Date
5) List Transactions on Hold

Menu 8

YEAR-TO-DATE MENU

1) Post Grower & Buyer Transactions to the Yearly File
2) Year-To-Date Grower Report
3) Year-To-Date Buyer Report
4) Year-To-Date Packout Report
5) Year-To-Date Loadout Report
6) Remove Last Season's Data

Menu 5

DAILY REPORTS MENU

1) Grower Report
2) Buyer Report
3) Packout Report
4) Loadout Report

Menu 9

VEGMARC CHECK WRITING PROGRAM

1) Change/Edit List of Accounts
2) Enter/Edit/Print New Checks
3) Enter/Edit New Deposits
4) Balance Checkbook & Bank Statement
5) Reports

Figure 1. The Menus of VEGMARC II©.

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[1]A pool price is a weighted average of prices received by the cooperative for a specific commodity during a specified time period called a pool period.

information, transactions, and per-box packinghouse fees. The program used this information to print grower-buyer directories, calculate pool period prices, calculate grower returns, and print several reports from the transaction data. After one season of field testing, it was clear that the cooperatives wanted more out of the program. Feedback obtained during the next three years of field testing was used to expand these early efforts into VEGMARC II©, a program that more closely addresses the needs of the cooperatives.

PROGRAM DESCRIPTION

VEGMARC II© is a menu-driven program[2] designed to keep accurate records and save time and effort by performing repetitive calculations for vegetable marketing cooperatives. The program will be described as if a user were examining the operations within the program in the order they appear on the Main Menu (Figure 1). VEGMARC II© will maintain transaction records for 35 different crops and virtually unlimited grade and size combinations for each of these crops (Figure 1, Menu 2). The program will store up to eight packinghouse fees[3] to be deducted on a per-box basis from the growers' returns for each of the commodity, grade, and size combinations stored in the program. Four of these fees are designed to be deducted on a percentage basis and the other four on a flat-fee basis. One time and limited use fees, independent of the number of boxes packed, can also be deducted from the growers' returns by the program. These one-time and limited-use fees are especially important to cooperatives charging membership fees, bulk bin fees,[4] and cull fees.[5]

VEGMARC II© will store a large database of grower and buyer names, addresses, and ID's (Figure 1, Menu 3). The program easily allows the user to edit all information for each grower and buyer except his/her permanent ID. Grower and buyer directories, summary lists, and mailing labels can also be printed. Transactions for each commodity, grade, and size combination occurring through the cooperative are entered into the program attached to the ID of the grower or buyer whose produce is involved (Figure 1, Menu 4). Figure 2 shows how a transaction of 75 boxes of 14 count broccoli was entered into the program for Lynch from ticket number 40 written on July 13, 1987. Information in transactions can also be edited with the exception of the transaction's permanent ticket or invoice number. Four major types of daily reports can be printed from the transaction data before it is used in any calculations (Figure 1, Menu 5). These are the Grower, Buyer, Packout,[6] and Loadout[7] Daily Reports which present the raw transaction information from various points of view.

VEGMARC II© will calculate a pool period price for any combination of one to six crops or for all crops with transactions occurring between the beginning and ending dates of the chosen pool period (Figure 1, Menu 6). This pool period price is computed for each commodity, grade, and size combination. The program multiplies this pool period price by the units of that commodity, grade, and size combination each grower sold through the cooperative. The per-box packinghouse fees and one-time/limited-use fees are then deducted from this amount to obtain the net return to the grower. If needed, VEGMARC II© allows the cooperative to withhold grower and buyer transactions of an uncertain nature, such as transactions without a confirmed sales price, from the pool price calculations. In addition, the program allows the cooperative to override the calculated pool period price with a price the cooperative determines before it is multiplied by the matching grower transactions and before any fees are subtracted. The flexibility of the program in allowing the user to choose the length of the pool period, withhold uncertain transactions from pool price calculations, and override the calculated pool price allows VEGMARC II© to be used by cooperatives employing vastly different operating procedures. For example, the pool periods of cooperatives currently using the program range from three days to a whole season. This flexibility accommodates

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[2]VEGMARC II© was written in dBASEIII, a trademark of Ashton-Tate, and compiled for distribution.

[3]Packinghouse fees are deducted on a per-box basis for costs incurred by the cooperative as a result of handling the product.

[4]A bulk bin fee is a one-time dump charge to growers for delivering a bulk bin (large crate) of product to the cooperative regardless of the number of marketable boxes that are packed out of that bin.

[5]A cull fee is charged on boxes of substandard product generally to encourage growers to field grade their product.

[6]The Packout Report displays the transaction data for each commodity packed by the cooperative.

[7]The Loadout Report displays the transaction data for each commodity sold by the cooperative.

TABLE 1. RESPONSES TO SURVEY QUESTIONS ASKED IN 1985–87

Abbreviated Question	Year Answered		
	1985	1986	1987
Average Number of Weeks Used	9.5	15.4	18
(sample size)	n = 7	n = 5	n = 5
Primary Record Keeping System	71% VEGMARC	71% VEGMARC	NA
	29% Books	29% Books	NA
(sample size)	n = 7	n = 7	
Accuracy of Program	100% Good	1.5 rating[a]	NA
(sample size)	n = 6	n = 6	
Ease of Use	NA	1.4 rating[a]	NA
(sample size)		n = 7	
Meet the Needs of Your Co-op	83% Yes	NA	80% Yes
	17% No	NA	20% No
(sample size)	n = 6		n = 5

[a]On a scale of 1 to 5 with 1 representing very good and 5 representing not very good.

NA: Question not asked in that year.

Entering Grower Unloads for 07/13/87

GROWER ID: LYNJ: Jack Lynch

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Ticket number  . . . . . . . . . . . . . . . . . . :40:
Commodity  . . . . . . . . . . . . . . . . . . . . :B:
Container size  . . . . . . . . . . . . . . . . .  :  :
Grade  . . . . . . . . . . . . . . . . . . . . . . .  :  :
Size  . . . . . . . . . . . . . . . . . . . . . . . :14:
Number of containers  . . . . . . . . . . . . :75:
Hold this item from pool  . . . . . . . . . . :N:
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enter ? to see a list of commodities

Figure 2. The Grower Transaction Screen from VEGMARC II©.

cooperatives not wishing to lower the pool price for everybody because of one grower's bad load. It also allows cooperatives to pay a portion of the pool price shortly after delivery and the remainder at the end of the marketing season.

The Grower, Buyer, Packout, and Loadout Pool Period Reports printed by VEGMARC II© arrange the same pool period data in different ways (Figure 1, Menu 7). Examples of Pool Period Grower and Pool Period Packout Reports shown in Figures 3 and 4 contain pool period information on the same transactions displayed from different perspectives. Figure 3 displays the information on a grower basis complete with item totals for each commodity, grade, and size combination and per-grower

totals of all combinations. The 14 count broccoli entered for Lynch earlier in Figure 2 is shown here as the first listing with the per box pool period price of $8.156, the gross amount of $611.70 for the 75 boxes, the packing fee deductions, and the net amount of $409.11 owed to Lynch by the cooperative. A grower total of 161 boxes and $874.37 net is listed under all transactions for Lynch as well as a cooperative total of 2,150 boxes and $11,679.66 net at the bottom of the report. Figure 4 arranges the same information contained in Figure 3, according to the quantity of each commodity, grade, and size packed by the cooperative with totals for each day and period. The 75 boxes of 14 count broccoli appear in the second listing on this report along with the pool period price, gross, packing fee deductions, and net for that transaction. The transactions for each commodity, grade, and size combination are totaled for each day and the entire pool period.

Once the pool period price has been calculated, the program is able to post the historical data from the closed pool period to the year-to-date files (Figure 1, Menu 8). Although the transaction data cannot be edited after it is posted, it can be accessed through the Year-To-Date Reports at any time. Each of the four major Year-To-Date Reports can be printed in detail, including every transaction that occurred during the season, or the reports can be printed in summary including only totals for certain time periods, growers, buyers, or crop combinations.

DATE TICKET	QUANTITY	P-PRICE	GROSS	RET.CAP.	PK-FEE	M-FEES	NET
Grower: Lynch	Grower ID:	LYNJ	: BROCCOLI, ,14				
07/13/87 40	75	8.156	611.700	122.340	75.000	5.250	409.11
Item Total	75		611.700	122.340	75.000	5.250	409.11
Grower: Lynch	Grower ID:	LYNJ	: BROCCOLI, ,18				
07/13/87 40	86	8.100	696.600	139.320	86.000	6.020	465.26
Item Total	86		696.600	139.320	86.000	6.020	465.26
Grower Total	161		1308.300	261.660	161.000	11.270	874.37
Grower: Minor	Grower ID:	MINJ	:BROCCOLI, , 14				
07/11/87 10	1000	8.156	8156.000	1631.200	1000.000	70.000	5454.80
Item Total	1000		8156.000	1631.200	1000.000	70.000	5454.80
Grower: Minor	Grower ID:	MINJ	:BROCCOLI, ,18				
07/11/87 10	989	8.100	8010.900	1602.180	989.000	69.230	5350.49
Item Total	989		8010.900	1602.180	989.000	69.230	5350.49
Grower Total	1989		16166.900	3233.380	1989.000	139.230	10805.29
Coop Total	2150		17475.200	3495.040	2150.000	150.500	11679.66

Key to Abbreviations:

P-PRICE: Pool Price   RET.CAP.: Retained Capital

PK-FEE: Packing Fees   M-FEES: Miscellaneous Fees

Figure 3. An Example Pool Period Grower Report of VEGMARC II©.

Lastly, VEGMARC II© also has the capability to print checks to growers, buyers, and other people or companies providing services to the cooperative (Figure 1, Menu 9). These checks can be written on multiple checking accounts for which the program will also maintain the deposit records and balance the account books. Check and deposit reports can be printed for each individual checking account.

PROGRAM EVALUATION AND DISCUSSION

The VEGMARC II© Record Keeping Program and its predecessors were field tested in 15 vegetable marketing cooperatives located in Alabama, Kentucky, North Carolina, Tennessee, and Virginia during the 1984–87 marketing seasons. On-site and telephone support were provided to cooperatives using the program during these years. In addition to this support, a user's manual was written and distributed for all versions of the program used during these marketing seasons (Kirkpatrick 1985, 1988).

The cooperatives using the program were surveyed at the end of each marketing season in an attempt to quantify how well the program performed for them and to elicit their responses on portions of the program for which changes had been suggested or considered. Several questions related to the entire program and the responses to these

questions have been tabulated for the years 1985–87 (Table 1). The information in this table is not strictly comparable among years because all VEGMARC II© users did not respond each year and because the questions were slightly different in various years.

The average number of weeks the cooperatives used the VEGMARC II© program increased from 9.5 weeks in 1985 to 18 weeks in 1987. The actual marketing season for most cooperatives involved in the survey was between eight and 16 weeks. Several factors accounted for the lower rate of use in the early years. In 1985, the record keeping program was not distributed in time for some cooperatives to use it during their entire marketing season. Exceptionally large staff turnovers also occurred in at least one of the cooperatives attempting to use the program. In addition, communication difficulties in 1985 and 1986 resulted in several of the cooperatives not utilizing the year-end report aspects of the program that extend the use of VEGMARC II© beyond the marketing season. Of course, factors such as program design and resistance to change also affected the number of weeks some of the cooperatives used the program.

Seventy-one percent of the cooperatives responding to the survey in 1985 and 1986 used VEGMARC II© as their primary record keeping system, whereas 29 percent used the program as their secondary system. Although

GROWER	TICKET	QUANTITY	P-PRICE	GROSS	RET-CAP	PK-FEE	M-FEES	NET
07/11/87, BROCCOLI, ,14								
MINJ	10	1000	8.156	8156.000	1631.200	1000.000	70.000	5454.80
Daily Totals		1000		8156.000	1631.200	1000.000	70.000	5454.80
07/13/87, BROCCOLI, ,14								
LYNJ	40	75	8.156	611.700	122.340	75.000	5.250	409.11
Daily Totals		75		611.700	122.340	75.000	5.250	409.11
Period Totals		1075		8767.700	1753.540	1075.000	75.250	5863.91
07/11/87, BROCCOLI, ,18								
MINJ	10	989	8.100	8010.900	1602.180	989.000	69.230	5350.49
Daily Totals		989		8010.900	1602.180	989.000	69.230	5350.49
07/13/87, BROCCOLI, ,18								
LYNJ	40	86	8.100	696.600	139.320	86.000	6.020	465.26
Daily Totals		86		696.600	139.320	86.000	6.020	465.26
Period Totals		1075		8707.500	1741.500	1075.000	75.250	5815.75
Coop Total		2150		17475.200	3495.040	2150.000	150.500	11679.66

Key to Abbreviations:

P-PRICE: Pool Price RET.CAP.: Retained Capital
PK-FEE: Packing Fees M-FEES: Miscellaneous Fees

Figure 4. An Example Pool Period Packout Report of VEGMARC II©.

these figures appear consistent in these two years, there was a substantial difference in the specific cooperatives responding to the two surveys. Some of this variability was due to changes in the specific cooperatives choosing to use the program. These changes in some cooperatives' decisions to use the program were primarily related to factors external to VEGMARC II© that affected their operations, such as weather and poor management.

In 1985, the cooperatives were asked to rate in words the accuracy of VEGMARC II©. One hundred percent of the responding cooperatives rated the program as good. In 1986, the cooperatives were asked to rate the accuracy of the program on a scale of one to five, with one representing very good and five representing not very good. On this scale the cooperatives assigned the program a 1.5 average rating. The 1986 survey also asked the cooperatives to rate the ease of use of the program on the same one-to-five scale. The average rating assigned by the cooperatives was 1.4. The user friendliness of VEGMARC II© had been a major concern since its inception, because diverse geographical locations of the cooperatives made it impractical for on-site help to be available to the cooperatives at all times. Moreover, the cooperative staffs generally had no previous computer experience and had high employee turnover rates. VEGMARC II© would not have been ac-

cepted without an emphasis on ease of use during its development.

In 1985 and 1987, the cooperatives using the program were asked whether the program met the needs of their cooperative. In 1985, 83 percent of the responding cooperatives said that the program did meet their needs, whereas 17 percent indicated that it did not. In 1987 these figures were 80 percent and 20 percent, respectively. Factors contributing to the negative responses included resistance to change in a few cooperatives and unrealistic expectations in others. Some cooperatives expected a single computer program to keep financial records, perform financial analysis, make financial projections, and maintain their transaction records. Although commercial programs and application spreadsheets were located or written for specific cooperatives to accommodate these requests, some remained critical of VEGMARC II©'s "limited scope."

CONCLUSION

The VEGMARC II© Record Keeping Program is part of a comprehensive effort by several government agencies to provide solutions to the problem of high failure rates among southeastern vegetable marketing cooperatives. This computer program addresses the specific problem of poor record keeping in many of these cooperatives. Targeting the record keeping problems of

these cooperatives was seen as one way to address their much broader problems of operational inefficiencies, including poor management strategies.

The overall reception of VEGMARC II© in the field has been positive, and its four years of field testing has resulted in a flexible, accurate program. Although VEGMARC II© has only been tested in vegetable marketing cooperatives, the program has applications in any organization that pools prices and handles large numbers of producer and buyer transactions. The program is currently being considered for use by flower, herb, and vegetable-marketing cooperatives in the states of Arkansas, Hawaii, Mississippi, Oklahoma, and Wisconsin, as well as in Israel.

The multi-agency and multi-year effort represented by VEGMARC II© may have applications to other regional agribusiness problems faced by extension today. As communications links between various states and regions become more established, the possibility for regional solutions will also increase. By fostering multi-agency efforts, extension can gain funding and expertise to tackle previously insurmountable problems on a regional basis.

SYSTEM REQUIREMENTS

VEGMARC II© requires the user to have an IBM-compatible computer with a hard disk and at least 512k of memory. The program will run with either a monochrome or color monitor and a variety of printers. The complete package of original disks and user's guide is available for $30. To order the package contact Tamra Kirkpatrick Kazmierczak, Department of Agricultural Economics, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061. Checks should be made payable to Agricultural Economics. Limited telephone support is available to those purchasing the program.

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