A Microcomputer Program to Aid in Making Store Vs. Sell Decisions for Gain

Warren C. Couvillion
Richard A. Levins

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Market Pack I
A Microcomputer Program
To Aid In Making Store Vs. Sell Decisions For Grain

By Warren C. Couvillion
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MARKET PACK I

A MICROCOMPUTER PROGRAM TO AID IN MAKING STORE VS. SELL DECISIONS FOR GRAIN

by

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MARKET PACK I
A MICROCOMPUTER PROGRAM TO AID IN MAKING
STORE VS. SELL DECISIONS FOR GRAIN

BY
WARREN C. COUVILLION AND RICHARD A. LEVINS

INTRODUCTION

Determining a comprehensive marketing strategy for storable agricultural commodities is a complex undertaking. Depending upon the commodity, cash sale, forward contracting, hedging, government loan programs, and taxes must all be considered if profits are to be maximized.

Two common questions that arise in planning a marketing strategy are:

1. "What would the market have to be at specified future dates to offer the same financial benefits as the price offered today?"
2. "What would be the net financial outcome of storing a commodity under different projected price situations?"

The answers to these questions depend on storage costs, interest paid on loans, and interest received when cash is placed in short term interest bearing ventures. Although these questions are not concep-
tually difficult, the calculations involved in answering them can be very time consuming unless they are performed by a computer. Market Pack I is a program suitable for microcomputer use which can do these calculations in a matter of minutes.

**MARKET PACK I**

Market Pack I can be used to evaluate storage decisions for such crops as soybeans, corn, and rice. It was developed for Radio Shack's TRS-80 Level II, 16 K machine and is written in BASIC. The program requires approximately 4,500 bytes of RAM storage.

The program has three sections:
1. **Part 1: Data Entry**
2. **Part 2: Break-Even Price Analysis**
3. **Part 3: Financial Analysis of Price Estimates Supplied by the User**

**Part 1: Data Entry**

The program assumes the crop is already in storage. In Part I of the program, the user supplies information concerning loans, interest and storage costs. This information will later be used to answer the two questions posed in the introduction.

**Part 2: Break-Even Price Analysis**

The break-even price computed in Market Pack I is the minimum price at some future month that will justify leaving the crop in storage. Costs considered include storage costs and interest on the production loan while the crop is in storage. Potential earnings from the purchase of short term certificates of deposit (CD's) after the crop is sold are also considered.

In Part 3, the user can supply his own price estimates for future months. Based on these expected future prices, the cash position one would have at the end of the marketing season is calculated for each price. Cash outflows include principal payment on the production loan, interest on the production loan, and storage costs. Income includes cash sales plus interest earned on cash placed in interest bearing ventures.

HOW TO USE MARKET PACK I

Part 1: Data Entry

The first information to be entered is the number of bushels in storage and the monthly storage charge in cents per bushel (not dollars per bushel). For example, a charge of $.04/month would be entered as 4. The computer then displays the entered data and calculates the total monthly storage charge.2/

If the crop has already been in storage for several months when this program is run, storage charges already accumulated must be considered to accurately estimate the ending cash position. Therefore, the computer will next ask how many months the crop has been in storage and print the accumulated storage charges. If this is the first month the

2/ If you make a mistake in entering data, it is no trouble to correct. If you type in some wrong information and recognize it before hitting "ENTER", simply backspace and type in the correct information. If you have entered incorrect data, you will have to hit the "BREAK" key, then type in "RUN". This will restart the program.
crop has been in storage, simply enter a zero for the months the crop has already been in storage.

The production loan taken out for the crop in storage will, of course, show a higher total interest charge for longer periods of storage. To account for this, the computer next asks for the amount of the total production loan and the annual percentage rate (APR) on the note. Enter 15, not .15, for a 15 percent note, 10 for a 10 percent note, etc. Finally, enter the number of months ago the loan was taken out. (If there is no production loan outstanding, simply enter a zero for the size of loan, interest rate, and months outstanding). The computer will then display the amount of the loan, the interest rate, and the months outstanding on the note. The present debt (principal plus interest to date) and the monthly interest cost will also be displayed.

Next, enter the interest rate available on short-term cash investments. Typically, this will be the rate on a short term certificate of deposit (CD), but other investments with differing rates are also possible. Interest rates vary depending upon time held and amount placed in these ventures.

A final question is, "How many months remain in this marketing season?". For example, if it is November the crop could be held until May, enter a 7 (the number of months in the marketing season). If it is already late in the season, say February, and the crop must be sold by May, enter a 4. The program will handle a maximum of 10 months in the season.

3/ It is realized that in many cases farmers may have loans from several sources made at different times. Since the program handles only one note, one may have to do some calculations outside the program to be able to enter the debts as one note.
Part 2: Break-Even Price Analysis

The price next month that is just high enough to justify holding the crop for another month is called the "break-even price".

Suppose the crop was sold today, the production loan and storage costs paid, and any remaining cash invested in a CD until the end of the marketing season. If the crop is held for another month, storage charges will be higher when the crop is sold, additional interest will be due on the production loan, and there will be less time to earn interest on a CD. Therefore, it is necessary to receive a higher price next month to justify holding the crop. How much higher depends on storage rates, the terms of your production loan, and current CD interest rates.

To start a break-even analysis, enter this month's price in dollars per bushel. The computer calculates the prices necessary in each month remaining in the marketing season to retain the present cash position. If the break-even price is higher than the price in some future month (even if the price in that month is higher than this month's price), waiting to sell the crop will not pay.

For example, assume that 100,000 bushels were placed in storage this month with a five cent per month storage cost. A production loan of $350,000 at 19 percent was taken out five months ago. CD's will pay 12 percent, and there are six months (counting this month) left in the marketing season. By entering these numbers and $6.50 per bushel as this month's cash price, the user will get the output presented in Table 1. The output has four columns labelled "Price", "Income", "Expense", and "Position at 6".
Reading down the "Price" column gives the break-even price for each remaining month in the season. This month's price appears first, then the price for the second month, etc.

It is assumed that the production loan (principal plus interest) and all storage costs will be paid at the time of sale. The remaining cash will be invested until the end of the season. The "Income" column gives the sum of cash from sales and interest earned.

The "Expense" column gives the total of accumulated storage cost, principal on the production loan, and accumulated interest on the production loan, which are all assumed payable at the time of sale.

The "Position at 6" column gives the difference between "Income" and "Expense" for each month. Notice that the numbers in this column are all the same. That is the whole point of break-even analysis. Each monthly price in the "Price" column yields exactly the same cash position as any other.

In this example, if beans bring $6.50 this month and $7.16 six months later, one would neither gain nor lose by holding the crop. A price of more than $7.16 is necessary to justify holding the crop. How much more depends on the individual's financial position and attitudes towards risk. In any case, a price less than $7.16 six months from now is worse than $6.50 per bushel now.

Part 3: Financial Analysis of Price Estimates Supplied By the User

In Part 3 of Market Pack I, price estimates for each month remaining in the marketing season are entered. The computer will then calculate which month would be the most profitable one in which to sell based on the prices estimated by the user.
<table>
<thead>
<tr>
<th>PRICE</th>
<th>INCOME (*)</th>
<th>EXPENSE (**)</th>
<th>POSITION AT 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>663088</td>
<td>338250</td>
<td>274838</td>
</tr>
<tr>
<td>6.63059</td>
<td>673629</td>
<td>398792</td>
<td>274838</td>
</tr>
<tr>
<td>6.76166</td>
<td>684171</td>
<td>409333</td>
<td>274838</td>
</tr>
<tr>
<td>6.89324</td>
<td>694713</td>
<td>419875</td>
<td>274838</td>
</tr>
<tr>
<td>7.02533</td>
<td>705254</td>
<td>430417</td>
<td>274838</td>
</tr>
<tr>
<td>7.15796</td>
<td>715796</td>
<td>440958</td>
<td>274838</td>
</tr>
</tbody>
</table>

* CASH SALES PLUS INTEREST EARNED

** PRINCIPAL REPAYMENT + INTEREST ON LOAN + STORAGE CHARGES
For example, suppose the Part 1 data are the same as that used in the break-even example (100,000 bushels in storage, 5¢/month storage cost, etc.). Also suppose that these are the price estimates supplied for this season:

<table>
<thead>
<tr>
<th>Month</th>
<th>Price per Bushel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month 1</td>
<td>$6.50/bushel</td>
</tr>
<tr>
<td>Month 2</td>
<td>$6.60/bushel</td>
</tr>
<tr>
<td>Month 3</td>
<td>$6.85/bushel</td>
</tr>
<tr>
<td>Month 4</td>
<td>$6.95/bushel</td>
</tr>
<tr>
<td>Month 5</td>
<td>$7.10/bushel</td>
</tr>
<tr>
<td>Month 6</td>
<td>$7.20/bushel</td>
</tr>
</tbody>
</table>

The computer will display a table similar to the one shown in Table 2 when the above prices are entered. Prices supplied are shown in the price column. The "Income", "Expense", and "Position at 6" columns mean the same as in the break-even example.

Notice that the highest "Position at 6" figure is $283,937, which appears opposite the $6.85 price for month 3. This would be the best month to sell. In fact, the "Position at 6" numbers for months 3, 4, 5 and 6 are all higher than the one for this month, so it would be more profitable to sell in any of these late months rather than this month. The $6.50 price for month 2, however, yields a lower "Position at 6", so it would be less profitable to sell in that month.
Table 2. Sample Output for Analyzing User-Supplied Prices

<table>
<thead>
<tr>
<th>PRICE</th>
<th>INCOME (*)</th>
<th>EXPENSE (**)</th>
<th>POSITION AT 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>663088</td>
<td>388250</td>
<td>274838</td>
</tr>
<tr>
<td>6.6</td>
<td>670448</td>
<td>398792</td>
<td>271657</td>
</tr>
<tr>
<td>6.85</td>
<td>693270</td>
<td>409333</td>
<td>283937</td>
</tr>
<tr>
<td>6.95</td>
<td>700503</td>
<td>419875</td>
<td>280628</td>
</tr>
<tr>
<td>7.1</td>
<td>712796</td>
<td>430417</td>
<td>282379</td>
</tr>
<tr>
<td>7.2</td>
<td>720000</td>
<td>440958</td>
<td>279042</td>
</tr>
</tbody>
</table>

* CASH SALES PLUS INTEREST EARNED

** PRINCIPAL REPAYMENT + INTEREST ON LOAN + STORAGE CHARGES
SUMMARY

Market Pack I is a microcomputer program to help individuals analyze their storage decisions for such crops as rice, corn, and soybeans. It is not designed to handle some of the more complex situations that some individuals may encounter. It will, however, allow individuals to consider both storage costs and the effects of today's high interest rates in determining when to sell a crop in storage.
APPENDICES

A P P E N D I C E S

The derivation of the financial formulas used in Market Plan I should prove very helpful for the interested reader. The latter designation of formulas in parentheses is most useful those used in the program listing.

Let 

\[ S \] = number of bushels in storage
\[ C \] = storage cost per bushel per month, converted from cents to dollars
\[ P \] = principal on production loan (s)
\[ I \] = interest rate on production loan (APR), expressed as a decimal fraction
\[ N \] = months outstanding on production loan at beginning of marketing period
\[ g \] = interest rate on short term cash investments, expressed as a decimal fraction
\[ k \] = months remaining in marketing season
\[ X \] = storage costs accumulated prior to marketing month

Then the accumulated interest if the crop is sold in month \( k \) can be defined as

\[ I = \left( P \times A \right) + \frac{N - k}{12} \times R \times \left( P \times A - C - S \right) \]

The first term in parentheses is the accumulated interest on the production loan, the second term in parentheses is the storage charge accumulated since marketing month \( k \), and \( C \) and \( S \) are as defined previously.

The income received if the crop is sold in month \( k \) can be expressed as

\[ I = \left( P \times A \right) + \frac{N - k}{12} \times R \times \left( P \times A - C - S \right) \]
APPENDIX A: DERIVATION OF FORMULAS

The technical derivation of the financial formulas used in Market Pack I is provided here for the interested reader. The letter designations of variables are in most cases those used in the program listing of Appendix B.

Let \( A \) = number of bushels in storage
\( B \) = storage cost per bushel per month, converted from cents to dollars
\( C \) = principal on production loan ($)
\( D \) = interest rate on production loan (APR), expressed as a decimal fraction
\( E \) = months outstanding on production loan at beginning of marketing period
\( H \) = interest rate on short term cash investments, expressed as a decimal fraction
\( M \) = months remaining in marketing season
\( S \) = storage costs accumulated prior to marketing month 1

Then the accumulated expenses if the crop is sold in month \( N \) can be defined as:

\[
C_n = (C \times D \times \frac{E + N}{12}) + (B \times N \times A) + C + S
\]

The first term in parenthesis is the accumulated interest on the production loan, the second term in parenthesis is the storage charge accumulated since marketing month 1, and \( C \) and \( S \) are as previously defined.

The income received if the crop is sold in month \( N \) can be expressed as:

\[
I_n = (P_n \times A) + \left[ \frac{M-N}{12} \times H \times (P_n \times A - C_n) \right]
\]
In the income equation, $P_n$ is the price per bushel ($\$) received in month $N$. The $(P_n \times A)$ term represents cash received at the time of sale. The term in [ ] represents interest earned during the remaining $M - N$ months of the marketing season on the cash from sales remaining after all expenses ($C_n$) are paid.

The ending cash position is simply:

$$W_n = I_n - C_n$$

The break-even price for month $N$ is that price $P_n$ for which:

$$W_n = W_1$$

Substituting for $W_n$ and $I_n$, we have:

$$I_n - C_n = W_1$$

and

$$(P_n \times A) + \frac{M - N}{12} \times H \times (P_n \times A - C_n) - C_n = W_1$$

Finally, solving for $P_n$:

$$P_n = \frac{\frac{M - N}{12} \times H \times C_n + (C_n + W_1)}{A + \frac{M - N}{12} \times H \times A}$$
APPENDIX B: LISTING OF MARKET PACK I

10 CLS
20 PRINT: PRINT: PRINT
30 PRINT: PRINT: PRINT
40 PRINT: PRINT
50 PRINT: PRINT
60 PRINT: PRINT
70 PRINT: PRINT
80 FOR N = 1 TO 1000
90 NEXT N
100 CLS
110 PRINT: PRINT
120 PRINT "THIS PROGRAM ANALYZES MARKET PRICES FOR RICE, SOYBEANS, & CORN."
130 PRINT "IT ASSUMES THE GRAIN IS IN STORAGE AND HELPS SELECT THE MOST PROFITABLE TIME TO MARKET THE CROP.
140 PRINT
150 PRINT "THE PROGRAM HAS THREE PARTS:"
160 PRINT 1. DATA ENTRY
170 PRINT 2. BREAK EVEN PRICE ANALYSIS
180 PRINT 3. FINANCIAL ANALYSIS OF YOUR OWN PRICE ESTIMATES."
190 PRINT
200 INPUT "HIT ENTER TO CONTINUE"; B$ 
210 CLS
220 PRINT: PRINT
230 PRINT: PRINT: PRINT
240 PRINT: PRINT
250 PRINT "IN THIS PART OF THE PROGRAM YOU WILL BE ASKED TO"
260 PRINT "TYPE IN INFORMATION ON THE CROP IN STORAGE, "
270 PRINT "STORAGE CHARGES, YOUR PRODUCTION LOAN, AND "
280 PRINT "INTEREST RATES."
290 PRINT "THIS INFORMATION WILL BE THE BASIS FOR THE"
300 PRINT "FINANCIAL ANALYSIS IN PARTS 2 AND 3." 
310 PRINT
320 INPUT "HIT ENTER TO CONTINUE"; B$ 
330 CLS
340 PRINT: PRINT: PRINT
350 PRINT "HOW MANY BUSHELs ARE IN STORAGE"; A
360 PRINT
370 INPUT "ENTER MONTHLY STORAGE COST IN C/BU."; B
380 PRINT
390 C = A$ / 100
400 PRINT "LET ME SEE."; A$ " BUSHELs AT ". B$ " CENTS PER MONTH."
410 B = B / 100
420 PRINT
430 FOR N = 1 TO 500
440 NEXT N
450 PRINT "THAT COMES TO ". C$ " PER MONTH FOR STORAGE." 
460 PRINT
470 PRINT "HOW MANY MONTHS HAS THIS CROP ALREADY BEEN IN"
480 INPUT "STORAGE (IF NONE ENTER 0)"; S1
490 S = S1 * C
500 PRINT "YOU ALREADY OWE ". S$ " FOR STORAGE." 
510 PRINT
520 INPUT "HIT ENTER TO CONTINUE"; B$ 
530 CLS
540 PRINT: PRINT: PRINT
550 PRINT "INTEREST MUST ALSO BE CONSIDERED, SO . . ."
560 PRINT
570 PRINT "WHAT WAS YOUR TOTAL PRODUCTION LOAN (IN $) FOR" 
580 INPUT "THIS CROP IN STORAGE"; C
590 PRINT
600 PRINT "WHAT IS THE INTEREST RATE (APR) ON THIS NOTE"; D
610 D = D / 1.00
620 PRINT
630 PRINT "HOW MANY MONTHS AGO DID YOU TAKE OUT THIS LOAN"; E
640 F = (D/12) * C
650 G = C - F * D
660 PRINT
670 PRINT "OK, YOU TOOK OUT ". F$ " OF ". C$ " MONTHS AGO AT ". D$ 
PERCENT." 
680 PRINT "THIS MEANS YOU NOW OWE ". G$ 
690 PRINT "EACH EXTRA MONTH YOU HOLD THE NOTE COSTS ". F$ 
700 PRINT
710 INPUT "HIT ENTER TO CONTINUE"; B$ 
720 CLS
730 PRINT: PRINT: PRINT
740 PRINT "THE NEXT QUESTION CONCERNS HOW YOU WILL INVEST THE MONEY YOU WILL RECEIVE WHEN THE CROP IS SOLD."
750 PRINT "CASE ON HAND CAN BE INVESTED IN VARIOUS WAYS SUCH AS"
760 PRINT "CERTIFICATES OF DEPOSIT SO INTEREST CAN BE EARNED." 
770 PRINT
15

760 INPUT "WHAT INTEREST RATE (%) CAN YOU GET?"; H
770 H = H/100
780 PRINT
790 PRINT "AND FINALLY..."
800 PRINT
810 PRINT "HOW MANY MONTHS REMAIN IN THIS MARKETING SEASON?"; X
820 PRINT "HOW TO GET DOWN TO BUSINESS."
830 INPUT "HIT ENTER TO CONTINUE"; BS
840 CLS
850 PRINT; PRINT; PRINT
860 PRINT "PART 2 OF THIS PROGRAM CALCULATES WHAT PRICES"
870 PRINT "YOU WOULD HAVE TO SELL IN LATER MONTHS TO BE AS"
880 PRINT "WELL OFF AS YOU WOULD BE IF YOU SOLD YOUR CROP" 890 PRINT "THIS MONTH."
900 PRINT; PRINT
910 INPUT "DO YOU WANT TO USE PART 2 (YES OR NO)"; AS
920 PRINT
930 IF AS = "YES" GOTO 1000
940 PRINT "IN THAT CASE WE GO ON TO PART 3."
950 CLS
960 GOTO 2000
970 PRINT "YOU, NEXT WE GO.
980 PRINT "WHAT PRICE CAN YOU GET THIS MONTH ($/BU)?"; P(l)
990 FOR N = 1 TO M
1000 C(N) = ((C(N-1))/12) + (3*A) + C + S
1010 NEXT N
1020 I(l) = (P(l)*A) - (((N-1)/12)*H*(P(l)*A-C(l)))
1030 W(l) = I(l) + C(l)
1040 CLS
1050 PRINT
1060 PRINT "", "BREAK EVEN PRICE ANALYSIS"
1070 CLS
1080 PRINT "PRICE", INCOME(*), "EXPENSE(**)", "POSITION AT ";M
1090 PRINT
1100 FOR N = 2 TO M
1110 P = ((M-N)/12) * H
1120 F(N) = (C(N)+W(N)+F*C(N))/(A+F*A)
1130 I(N) = (P(N)*A) - (((M-N)/12)*H*(P(N)*A-C(N)))
1140 W(N) = I(N) - C(N)
1150 NEXT N
1160 FOR N = 1 TO M
1170 PRINT P(N), I(N), C(N), W(N)
1180 NEXT N
1190 CLS
1200 PRINT "", "CASH SALES PLUS INTEREST EARNED"
1210 PRINT "", "PRINCIPAL REPAYMENT - INTEREST ON LOAN - STORAGE CHARGES"
1220 PRINT
1230 CLS
1240 PRINT "HIT ENTER TO CONTINUE"; BS
1250 CLS
1260 PRINT "YOU CAN NOW REPLAY PART 2 WITH A DIFFERENT STARTING PRICE OR GO ON TO PART 3."
1270 PRINT
1280 INPUT "DO YOU WANT TO REPLAY PART 2 (YES OR NO)"; AS
1290 FOR N = 1 TO 500
1300 NEXT N
1310 IF AS = "YES" GOTO 1000
1320 CLS
1330 PRINT; PRINT; PRINT
1340 PRINT "PART 3 OF THIS PROGRAM ASKS YOU TO ESTIMATE MARKET PRICES"
1350 PRINT "THE REMAINING MONTHS OF THIS SEASON."
1360 PRINT "BASED ON THESE PRICES, THE MOST PROFITABLE MONTH TO"
1370 PRINT "SELL THE CROP IS DETERMINED."
1380 PRINT; PRINT
1390 INPUT "DO YOU WANT TO USE PART 3 (YES OR NO)"; AS
1400 IF AS = "NO" GOTO 3000
1410 FOR N = 1 TO 500
1420 PRINT "", "FOR THE NEXT MONTH $"; P(N)
1430 NEXT N
1440 CLS
1450 PRINT; PRINT; PRINT
1460 PRINT "", "BEGIN PART 3 ***"
1470 PRINT; PRINT
1480 PRINT "WHAT ARE YOUR MARKET PRICE ESTIMATES ($/BU) FOR:"
1490 PRINT "THIS MONTH $"; P(l)
1500 FOR N = 2 TO M = 1
1510 PRINT "FOR THE NEXT MONTH $"; P(N)
1520 NEXT N
1530 CLS
1540 PRINT; PRINT; PRINT
1550 PRINT "", "BEGIN PART 3 ***"
1560 PRINT; PRINT
1570 PRINT "WHAT ARE YOUR MARKET PRICE ESTIMATES ($/BU) FOR:"
1580 PRINT "THIS MONTH $"; P(l)
1590 FOR N = 2 TO M = 1
1600 PRINT "FOR THE NEXT MONTH $"; P(N)
1610 NEXT N
1620 CLS
INPUT "AND FOR THE LAST MONTH $"; P(M)
PRINT
PRINT "BASED ON THESE PRICES, YOUR EXPECTED INCOME,"
PRINT "EXPENSES, AND ENDING NET WORTH ARE AS FOLLOWS..."
PRINT "HIT ENTER TO CONTINUE"; BS
CLS
PRINT
PRINT "ANALYSIS OF YOUR PRICE ESTIMATES"
FOR N = 1 TO M
C(N) = (C*((E+N)/12)*D) + (B*N*A) + C + S
I(N) = (P(N)*A) + (((M-N)/12)*H*(P(N)*A+C(N))
W(N) = I(N) - C(N)
NEXT N
PRINT
PRINT "PRICE", "INCOME(*)", "EXPENSE(**)", "POSITION AT"; M
PRINT
FOR N = 1 TO M
PRINT P(N), I(N), C(N)
NEXT N
PRINT
PRINT
PRINT "CASH FROM SALES + INTEREST EARNED"
PRINT "PRINCIPAL REPAYMENT + INTEREST ON LOAN + STORAGE CHARGE"
PRINT
INPUT "HIT ENTER TO CONTINUE"; BS
CLS
PRINT
PRINT
PRINT "YOU CAN NOW REPLAY PART 3 WITH DIFFERENT PRICES OR END THIS PROGRAM"
PRINT
INPUT "DO YOU WANT TO REPLAY PART 3 (...YES OR NO)"; AS
FOR N = 1 TO 500
NEXT N
IF AS = "YES" GOTO 2500
CLS
PRINT
PRINT
PRINT "END OF PROGRAM"
PRINT
END
Appendix C. An Interactive Microcomputer Session Using Market Pack I.

Computer prompts are in all caps; operator responses are underlined; and general explanations are enclosed in parentheses. The symbol means depress the enter key.

First CLOAD or LOAD program from cassette tape or disk, or key in the program from the keyboard using a listing of the program.

>`Run`<br>

MARKET PACK I<br>DEPARTMENT OF AGRICULTURAL ECONOMICS<br>MISSISSIPPI STATE UNIVERSITY<br>

THIS PROGRAM ANALYZES MARKET PRICES FOR RICE, SOYBEANS, AND CORN. IT ASSUMES THE GRAIN IS IN STORAGE AND HELPS SELECT THE MOST PROFITABLE TIME TO MARKET THE CROP.

THE PROGRAM HAS THREE PARTS:

1. DATA ENTRY
2. BREAKEVEN PRICE ANALYSIS
3. FINANCIAL ANALYSIS OF YOUR OWN PRICE ESTIMATES

HIT ENTER TO CONTINUE? <br>

PART 1: DATA ENTRY

IN THIS PART OF THE PROGRAM YOU WILL BE ASKED TO TYPE IN INFORMATION ON THE CROP IN STORAGE, STORAGE CHARGES, YOUR PRODUCTION LOAN, AND INTEREST RATES.

THIS INFORMATION WILL BE THE BASIS FOR THE FINANCIAL ANALYSIS IN PARTS 2 AND 3.

HIT ENTER TO CONTINUE? <br>

HOW MANY BUSHELS ARE IN STORAGE? 100,000<br>ENTER MONTHLY STORAGE COSTS IN C/BU.? 5<br>LET ME SEE. 100,000 BUSHELS AT 5 CENTS PER MONTH. THAT COMES TO $5,000 PER MONTH FOR STORAGE.

HOW MANY MONTHS HAS THIS CROP ALREADY BEEN IN STORAGE (IF NONE ENTER 0)? 0<br>YOU ALREADY OWE $0 FOR STORAGE.

HIT ENTER TO CONTINUE? <br>

INTEREST MUST ALSO BE CONSIDERED, SO ...<br>
WHAT WAS YOUR TOTAL PRODUCTION LOAN (IN $) FOR THIS CROP IN STORAGE? 350,000<br>WHAT IS THE INTEREST RATE (APR) ON THIS NOTE? 19<br>HOW MANY MONTHS AGO DID YOU TAKE OUT THIS LOAN? 5<br>O.K. YOU TOOK OUT $350,000 5 MONTHS AGO AT 19 PERCENT.

THIS MEANS YOU NOW OWE $377,708.

EACH EXTRA MONTH YOU HOLD THE NOTE COSTS $5,541.67.

HIT ENTER TO CONTINUE? <br>
THE NEXT QUESTION CONCERNS HOW YOU WILL INVEST THE MONEY YOU WILL RECEIVE WHEN THE CROP IS SOLD. CASH ON HAND CAN BE INVESTED IN VARIOUS WAYS SUCH AS CERTIFICATES OF DEPOSIT SO INTEREST CAN BE EARNED.

WHAT INTEREST RATE (%) CAN YOU GET? 12

AND FINALLY...

HOW MANY MONTHS REMAIN IN THIS MARKETING SEASON? 6

NOW TO GET DOWN TO BUSINESS.

HIT ENTER TO CONTINUE? 

PART 2 OF THIS PROGRAM CALCULATES WHAT PRICES YOU WOULD HAVE TO GET IN LATER MONTHS TO BE AS WELL OFF AS YOU WOULD BE IF YOU SOLD YOUR CROP THIS MONTH.

DO YOU WANT TO USE PART 2 (YES OR NO)? YES

O.K. HERE WE GO.

WHAT PRICE CAN YOU GET THIS MONTH ($/BU.)? 6.50

(Table 1 from the text will be displayed.)

HIT ENTER TO CONTINUE? 

YOU CAN NOW REPLAY PART 2 WITH A DIFFERENT STARTING PRICE OR GO ON TO PART 3.

DO YOU WANT TO REPLAY PART 2 (YES OR NO)? NO

PART 3 OF THIS PROGRAM ASKS YOU TO ESTIMATE MARKET PRICES FOR THE REMAINING MONTHS OF THIS SEASON.

BASED ON THESE PRICES, THE MOST PROFITABLE MONTH TO SELL THE CROP IS DETERMINED.

DO YOU WISH TO USE PART 3 (YES OR NO)? YES

***BEGIN PART 3***

WHAT ARE YOUR MARKET PRICE ESTIMATES ($/BU.) FOR:

THIS MONTH $? 6.50

FOR THE NEXT MONTH $? 6.60

FOR THE NEXT MONTH $? 6.85

FOR THE NEXT MONTH $? 6.95

FOR THE NEXT MONTH $? 7.10

AND FOR THE LAST MONTH $? 7.20

BASED ON THESE PRICES, YOUR EXPECTED INCOME, EXPENSES, AND ENDING NET WORTH ARE AS FOLLOWS . . .

HIT ENTER TO CONTINUE? 

(Table 2 from the text will be displayed.)

HIT ENTER TO CONTINUE? 

YOU CAN NOW REPLAY PART 3 WITH DIFFERENT PRICES OR END THIS PROGRAM.

DO YOU WANT TO REPLAY PART 3 (YES OR NO)? NO

END OF PROGRAM
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