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**EXTENSION DECISION AIDS FOR THE MILK PRODUCTION  
TERMINATION PROGRAM AND THE CONSERVATION RESERVE PROGRAM:  
A COMPARATIVE ANALYSIS**

by

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Extension educational materials have traditionally been developed by subject matter specialists in each state. Until recently, the Federal Extension Service (ES-USDA) had made few and infrequent attempts to coordinate national or regional development efforts. In the past decade, however, the number of coordinated materials development efforts has increased. This trend is not surprising given the budgetary problems faced by the ES and many state Cooperative Extension Services. Coordinated development could reduce duplication of effort and increase the efficiency of the extension system. Moreover, coordinated development could potentially improve the quality of extension educational materials through increased concentration of efforts and peer review.

Agricultural policy has been an area of emphasis in recent coordinated development efforts. Three factors that might account for this emphasis are (a) the ES is the USDA agency with responsibility for informing agricultural producers of policies and policy options, (b) policy materials are often applicable on a national basis and (c) timing is often critical in policy education. Coordinated materials development could have a positive impact on state extension programs in agricultural policy as well as other areas provided three conditions are met: (a) the quality of the materials must be of an acceptable standard, (b) the materials must be developed and released to state specialists in a timely manner, and (c) the materials must be adopted and used in state

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each program is followed by an assessment of critical economic considerations involved in a decision to participate. Next the related nationally coordinated materials development effort is overviewed and the materials produced through those efforts are described. An assessment of materials used in state extension programs is followed by a comparison of results of an example farm analysis derived with the nationally developed materials and with materials developed by extension specialists in a number of states. An effort is made to account for differences in these results. The final section summarizes the results and draws implications concerning coordinated materials development and the consistency and quality of extension educational materials.

#### **THE MILK PRODUCTION TERMINATION PROGRAM**

The Milk Production Termination Program was established in Title I of the Food and Security Act of 1985. The program's objective was to encourage the adjustment of milk production to levels consistent with national demand. The mechanism through which this objective was to be achieved involved payments to dairy producers who terminated milk production for five years. Entry into the MPTP was decided through a competitive bidding process. Eligible dairy producers who wished to participate were required to submit bids through county ASCS offices. The bid period was February 10, through March 7, 1986. A dairy producer's MPTP milk base was determined by milk marketings during the period July 1, 1984 through December 31, 1985. A producer's bid was the dollar amount, per hundredweight (cwt.) of program base, he/she was willing to accept as consideration for not producing milk for five years.

Income tax considerations were also an important issue for many producers. Obviously the sale of dairy animals and other assets could have significant tax consequences. Dairy producers contemplating re-entry at contract expiration might, however, expect substantial tax benefits due to investment tax credit and first year depreciation.

#### **Coordinated MPTP Extension Educational Materials**

Extension economists from six states (New York, Michigan, North Carolina, Ohio, Texas and Wisconsin) organized the National Dairy Herd Buyout Extension Program Committee to develop extension educational materials relating to the MPTP. This group was not officially commissioned by the Federal Extension Service but its efforts were supported by Extension Service administrators who assisted the group in obtaining partial funding from the Farm Foundation. The Committee met in November, 1985, to discuss the development effort and to assign responsibilities to individual group members. Materials produced by the group were made available in January 1986 to extension personnel in all states. A series of 8 publications was produced by the Committee. These publications were designed to assist dairy producers in evaluating the wide range of economic and noneconomic consequences of MPTP participation. Each publication focused on a specific aspect of the program participation decision. Publication 1 (Novakovic) summarized the dairy provisions of the 1985 Farm Bill, including the MPTP. Publication 2 (Jacobson, et al) provided an assessment of the dairy outlook for the 1986 through 1990 period along with a brief outlook for other farm enterprises. Publication 3 (Ervin and Hamm) was designed to assist producers in evaluating the MPTP decision in the context of their personal

itemized worksheets were provided to assist in these computations. The difference in net asset sales proceeds and replacement cost was estimated by subtracting net after-tax sales proceeds from the estimated asset replacement cost. A detailed procedure was also provided for estimating net after-tax sales proceeds. Once the difference in net asset sales proceeds and asset replacement cost was estimated, the annual amount required to compensate for this difference was calculated using a sinking fund factor.

After the amounts (a) and (b) above were estimated, the annual MPTP payment required to break even was calculated by adding (a) and (b), and dividing by one minus the marginal tax rate to convert to a before-tax basis. This amount was then divided by base period milk production to convert to a "dollars per cwt. of program base" basis, and multiplied by 5 to determine the breakeven bid (multiplication by 5 was necessary since the bid was made on a total rather than annual amount basis).

#### **Materials Used in State MPTP Extension Programs**

Details concerning state MPTP educational programs were obtained through a two part process. First, Departments of Agricultural Economics or, where appropriate, state extension services in all states were contacted by telephone and asked whether educational programs were conducted concerning the MPTP. If the response was affirmative, the identity of the person or persons responsible for those programs was requested. These individuals, all state extension specialists, were interviewed by telephone and questioned regarding the source of the educational materials used in their MPTP programs. If they responded that they or other state personnel had developed materials other than

- (a) Seven used the materials produced by the National Committee without major revision.
- (b) Thirteen used the national materials as a reference in their own development efforts.
- (c) One used other states' materials without major revision.
- (d) Five used other states' materials as a reference in their own development efforts.
- (e) Five developed their own materials independently.

The numbers reported above do not total to 25 because some respondents checked both items (b) and (d) indicating that they developed their own materials using the national materials as well as materials from at least one other state as references.

The mail survey also questioned the specialists about their perspectives concerning coordinated extension educational materials development. Twenty-two of the 25 respondents indicated that national coordination could produce materials that are timely and effective for use in their extension programs. Among those who viewed nationally coordinated development efforts favorably, the advantage cited most frequently was elimination of a duplication of efforts. Timing of availability and complexity of the materials were the primary problems cited by the three specialists who opposed national coordination.

#### **Comparative Analysis**

The example farm situation chosen for the comparative analysis was one used in the National Committee's publications. This farm was chosen primarily because sufficiently detailed data were provided to supply the input requirements of all the worksheets. Summary information about the example farm is presented in table 1.

A key assumption of the analysis concerns the dairy producer's motives for entering the MPTP. As stated before, it is assumed that the producer viewed entering the program as a temporary action and

anticipated re-entering dairying at the end of five years. This assumption is chosen because it is the most complex decision situation, involving all economic factors relevant for producers who did not anticipate re-entry as well as the additional uncertainty of re-entry cost. Table 2 presents bids derived from the worksheets under several sets of assumptions concerning tax rates and asset replacement (re-entry) costs. The first line of the table is treated as the base scenario. These bids assume a zero percent marginal tax rate and no increase in asset replacement cost (i.e., the cost of replacing dairy assets in five years is equated to their current market value). In the remainder of the analysis, causes for differences among these base bids are examined first, then changes in bids resulting from different tax rates and replacement costs are investigated.

A zero percent marginal tax rate is chosen for the base scenario because many of the worksheets do not incorporate federal income taxes, except those resulting from asset disposal, into their calculation procedures. Choice of a zero percent marginal tax rate eliminated this as a factor in determining differences in bids, making it easier to isolate other causes. This assumption is, however, unrealistic for many dairy producers. It is, therefore, worthwhile to examine the effect of different tax rates on bids derived from the various worksheets. Additionally, a zero percent increase in asset replacement cost over current value was chosen for the base scenario to facilitate isolation of other technical differences.

Differences in base bids produced by the worksheets are striking. The highest bid (worksheet 4) is nearly 3 times the lowest bid (worksheet 5) and 56 percent larger than the bid obtained from the national

worksheet. Differences of this magnitude among worksheets provided to dairy producers for use in making a decision of such importance are disturbing and warrant close examination. This examination is conducted using the national worksheet as a reference.<sup>2</sup>

Analytically worksheet 1 differs from the national worksheet in three fundamental ways: (a) worksheet 1 does not include the current account balance in determining the difference between asset disposal value and replacement cost, (b) a difference in timing of MPTP payments (beginning of the year) and dairy receipts (end of the year) is incorporated in worksheet 1 but not in the national worksheet, and (c) a sinking fund approach is not taken in determining the payment required to replace the dairy herd in five years.

The effect of omitting the current account balance of \$10,000 in determining the difference in asset disposal value and replacement cost is to increase the deficit from sale and re-establishment by \$10,000 and the bid by \$0.81 per cwt. relative to the national worksheet bid. The alternative treatment of timing of MPTP payments versus milk receipts reduces the worksheet 1 bid by \$0.97 per cwt relative to the national bid. Worksheet 1 assumes that MPTP payments are received at the beginning of the year, whereas milk production income is considered to be received at years end. The national worksheet treats these payments as though they are contemporaneous. Finally, the payment to compensate the producer for the difference in net sales proceeds and asset replacement cost is computed using a financial factor for determining the five year annuity with present value of \$1. This reduces the worksheet 1 bid by \$1.37 relative to the national worksheet bid, which uses a sinking fund factor to compute the payment.



loss in net worth. If all these factors were treated as in the national worksheet, the worksheet 3 bid would have been \$11.43 per cwt. The remaining difference between the worksheet 3 bid and the national bid is the result of use of a different financial factor (assuming beginning of the year payments) in determining the payment required to compensate the producer for the difference in net asset sale proceeds and replacement cost.

Two factors account for the difference in the base bids for worksheet 4 and the national worksheet. One factor is that the calculated difference in net annual income with and without participation is much larger with worksheet 4 (\$60,225 versus \$20,950) because noncash costs of dairying and income from off farm and other sources, with participation, are ignored. If these factors were included the portion of the bid required to offset foregone annual income would be the same, \$7.25 per cwt., as for the national worksheet. Instead the amount required by the worksheet 4 procedure is \$16.21 per cwt. (using a present value adjustment factor for beginning of year payments). The difference between the resulting bid and the amount required to offset forgone income in worksheet 4 is smaller than in the national worksheet because the financial factor used assumed MPTP payments are received at the beginning of the year.

Worksheet 5 is designed to calculate the bid required to compensate for the loss due to dairy asset disposal, and any farm and nonfarm cash flow deficit associated with program participation. The worksheet simply computes net cash flow, including family living expenses, for the first program year and for the four succeeding years. The loss due to asset sale is added to the first year cash flow, and the sum of the

percent over the base bid with a 25% marginal tax rate and double with a 50% marginal tax rate.

Scenario 4 in table 2 examines the response of the breakeven bids to a 25% increase in asset replacement cost. The marginal tax rate is set at zero percent to isolate the effects of a change in asset values. Four of the eight worksheets accommodated differences in asset replacement costs; both the national worksheet bid and the worksheet 1 bid increase by 14 percent over their base bids. Bids for worksheets 2 and 6 increase by 16 and 20 percent, respectively, while bids for worksheets 3, 4, 5 and 7 do not change because the worksheets do not accommodate asset replacement cost increases.

#### THE CONSERVATION RESERVE PROGRAM

Title XII of the Food and Security Act of 1985 (1985 Farm Bill) created the Conservation Reserve Program. The stated objective of the program is to protect the nation's natural resource base by removing highly erodible land from crop production. A second objective is to adjust the production of some agricultural commodities currently in surplus. The program provides for annual rental payments to landowners who remove qualifying land from crop production for a 10 year period. Government cost sharing is also provided for conservation practice installation on CRP acreage. The program goal is to enroll at least 40 million acres of cropland over a 5 year period.

Eligibility for the CRP is based on erosiveness criteria. Land in soil capability classes VI through VIII is automatically eligible while land in classes II through V is eligible if it is eroding at three times or more its natural replacement rate. Furthermore, the land must have

permitted income from CRP acreage is income derived from recreational uses such as hunting leases and camping fees.

Annual CRP rental payments and establishment cost sharing are the most obvious economic benefits associated with program participation. Several other favorable economic consequences may include (a) reduced machinery and equipment ownership cost, (b) increased off-farm income and (c) property tax reduction. Machinery and equipment ownership cost may be reduced substantially if a landowner's CRP acreage is large, since the machinery line may be reduced. Likewise, if a landowner enters a substantial portion of his/her farm into the program, off-farm employment may be secured. In some areas a substantial property tax reduction may be realized by converting land from cropping to conserving use. Eligibility of CRP acreage for this reduction will, however, be decided at the local level and is not assured.

#### **Coordinated CRP Extension Educational Materials**

The ES and the Agricultural Stabilization and Conservation Service (ASCS) commissioned Kansas State University to develop materials for use in a nationwide CRP educational effort. A microcomputer spreadsheet was developed to assist landowners in evaluating the CRP decision. The spreadsheet was designed to compute a breakeven bid which would leave the landowner equally well off with and without participation. This spreadsheet template was provided to extension personnel in all states, without supporting documentation.

The Kansas State (national) spreadsheet consists of four sections. Section 1 is designed to calculate a bid for CRP acreage that would not go into forestry use. Sections 2 and 3 are used to develop input infor-

based on retiring land from commodity program crop production is described here since it is used in the example calculations. This procedure is very basic. Average annual per acre net returns with CRP participation are subtracted from annual per acre net returns from continued crop production to obtain the breakeven bid.

#### **Materials Used in State CRP Extension Programs**

Information concerning state CRP educational efforts was obtained through the same telephone/mail survey procedure described for the MPTP. Responses to the telephone survey indicated that extension specialists in 36 states conducted educational programs relating to the CRP. Extension economists from 22 of these states replied to the mail survey. Sources of educational materials used by these respondents were the following:

- (a) Two used the materials produced at Kansas State (the national materials) without major revision.
- (b) Six used the national materials as a reference in their own development efforts.
- (c) None used other state's materials without major revision.
- (d) Five used other state's materials as a reference in their own development efforts.
- (e) Nine developed their own materials independently.

Like the MPTP survey, the CRP survey questioned the specialists about their perspectives on coordinated development. Eighteen of the 22 respondents indicated that nationally coordinated efforts can produce materials that are timely and effective for use in their extension programs. Even among these individuals who viewed national coordination favorably, there were a number of comments that the quality of the materials would have to be improved. Among the 4 specialists who did not favor national development efforts, 2 cited factors unique to specific states (i.e., difficulty of generalization) as a problem, 1

TABLE 3. EXAMPLE FARM DATA FOR CRP ANALYSIS

- General Information -	
Total Farm acres	1,000 acres
Acres eligible for CRP	100 acres
CRP cover establishment cost per acre	\$70.20
Landowner's share of establishment costs per acre	\$37.60
Government share of establishment costs per acre	\$32.60
Maintenance costs per CRP acre in years 2-10	\$ 6.08
- Cotton Costs and Returns -	
Total returns per acre from lint sales, seed sales and commodity program payments	\$430.10
Returns from market loan per acre	\$ 63.80
Cash Costs per planted acre	\$262.00
Maintenance Costs per set-aside acre	\$ 20.00
Net returns per planted acre (including set-aside costs)	\$184.87
- Grain Sorghum Costs and Returns -	
Total returns per acre from grain sorghum sales and commodity program payments	\$130.05
Cash Costs per planted acre	\$ 92.05
Maintenance Costs per set-aside acre	\$ 20.00
Net returns per planted acre (including set-aside costs)	\$ 52.41

TABLE 4. BREAKEVEN BIDS FOR THE EXAMPLE SITUATION BASED ON ALTERNATIVE DISCOUNT RATES, INFLATION RATES AND OWNERSHIP COST SAVINGS

Bids Produced by Different Worksheets (\$/acre)														
Worksheet - Assumptions	1a (3)*	1b (1)	1c (1)	1d (1)	2a (4)	2b (1)	2c (1)	2d (1)	3a (3)	3b (1)	3c (1)	4 (1)	5 (1)	6 (1)
Scenario 1														
0% discount rate														
0% inflation rate	61.64	61.64	61.64	61.64	64.14	64.13	64.32	65.03	62.25	62.25	62.25	64.90	57.95	40.30
0% ownership savings														
Scenario 2														
5% discount rate														
0% inflation rate	61.64	61.64	62.61	61.64	64.13	64.13	64.32	65.03	63.36	63.36	63.13	64.90	57.95	40.30
0% ownership savings														
Scenario 3														
10% discount rate														
0% inflation rate	61.64	61.64	63.71	61.64	64.13	64.13	64.32	65.03	64.61	64.61	64.05	64.90	57.95	40.30
0% ownership savings														
Scenario 4														
0% discount rate														
5% inflation rate	61.64	61.64	63.71	63.56	64.13	84.65	77.18	65.03	80.61	62.25	80.61	64.90	57.95	40.30
0% ownership savings														
Scenario 5														
0% discount rate														
10% inflation rate	61.64	61.64	61.64	66.16	64.13	112.23	77.18	65.03	101.31	62.25	101.31	64.90	57.95	40.30
0% ownership savings														
Scenario 6														
0% discount rate														
0% inflation rate	51.64	61.64	61.64	61.64	54.13	54.13	54.13	55.03	62.25	52.25	52.25	54.90	47.95	31.35
\$43.49/acre ownership cost savings														

\* Numbers in parentheses below the worksheet identification numbers give the number of worksheets included in that subgroup.

computing commodity program payments foregone, whereas the national worksheet computes the deficiency payment (\$1.89 per cwt.) consistent with the example farm data. If the same deficiency payment rate were used, the bids obtained from the two worksheets would be equal.

Two features of worksheet 6 make its base bid different than that of the national worksheet: (a) 10 years of maintenance costs are assumed and (b) no commodity program payments are assumed to be foregone in years after 1990. The first feature has been discussed earlier for other worksheets but the second is unique to worksheet 6 and merits a brief explanation since it accounts for most of the difference in the base bids.

The sodbuster provision of the 1985 Farm Bill is designed to exclude agricultural producers who farm highly erodible land from commodity program participation. Developers of worksheet 6 interpreted the sodbuster provision as stating that a landowner who farms acreage eligible for the CRP after 1990 will not receive commodity program payments. This interpretation appears to be incorrect, as supported by the fact that none of the other worksheets make the assumption. The sodbuster provision states that all persons producing agricultural commodities on highly erodible land must have begun implementing a conservation plan by January 1, 1990 to be eligible for government program benefits. Persons actively implementing a conservation plan have until January 1, 1995 to complete it. This does not necessarily imply that farm program benefits will be lost after 1990. By taking this approach, the developers should also have included the possibility of implementation of a conservation plan, and included the expense of developing and implementing the plan in the calculations for net returns forgone. If this assumption had not

inflation. This multiplier is presumably based on a historical or expected inflation rate but the rate is not indicated.

Ten of the worksheets accommodate a change in annual machinery and equipment ownership cost due to CRP participation. Scenario 6 illustrates that, for all of these except worksheet 6, the effect of such a reduction is a dollar for dollar reduction in the breakeven bid. That is, a \$10 per acre reduction in ownership cost reduces the bids by \$10. The reduction for worksheet 6 is only \$8.95 because ownership cost savings are incorporated in the commodity program analysis which adjusts for set aside acres.

#### IMPLICATIONS

This study examines extension educational materials developed through two recent nationally coordinated efforts. The study results have important implications concerning both coordinated development and the consistency and quality of extension educational materials.

One observation that can be made based on the survey results is that coordinated development is viewed favorably by a large majority of the participating extension specialists. A majority of the specialists responsible for MPTP programs used the national materials either directly or as a reference in their own development efforts. However, fewer than half of the specialists involved in CRP educational programs elected to use the national materials, even as a reference. This is consistent with comments from the survey which suggested that the MPTP materials were viewed as of good quality, whereas, the CRP materials were not.



Cooperative development has several advantages. First, a consolidation of efforts among states reduces the number of personnel involved and the amount of resources required. Recent budget cuts on both the state and federal levels have effectively imposed limits on the resources available to develop such educational materials. With cooperative development resources may be pooled, thus enabling a more professional detailed product to be produced. Secondly, as alluded to above, by bringing together specialists from several states there exists a group of qualified reviewers. This should accelerate the review process since they are already familiar with the materials, and additional time will not be spent soliciting reviews. Finally, the members of the development group share responsibility for the quality of the materials, thus increasing the likelihood of a well prepared and screened product being delivered to the producer.

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