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## Economic Impact of Expanded Backgrounding in North Dakota

F. Larry Leistritz and Randy Sell<sup>1</sup>

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Feeder cattle production is the most common form of livestock enterprise on North Dakota's farms and ranches. In 1991, about 669,000 feeder calves were produced in North Dakota, and an estimated 50 percent of those were sold outside the state at weaning (Systems Research and Development, Ltd. 1992). An alternative to selling feeder calves outside the state at weaning is to retain them in the state in a "backgrounding" program. Producers in backgrounding feed the calves a ration of roughage and concentrates to achieve a gain of 150 to 300 pounds per animal with the specifics of the program varying from producer to producer.

The profitability of backgrounding operations varies among producers and also from year to year, depending on feed costs and cattle price movements and relationships. However, on average, backgrounding has been profitable during 22 of the past 34 years and should be profitable during 1993 to 2001 (Systems Research and Development, Ltd. 1992). In other words, most producers can achieve positive net returns by backgrounding calves rather than selling them out of state at weaning (see note in box, last page).

If additional calves were retained in the state for backgrounding, local and state economies would be stimulated through expenditures for feeds, fuel, utilities, and other inputs, including additional income for producers. The *purpose* of this paper is to estimate the economic impact of additional backgrounding on the North Dakota economy.

The North Dakota Input-Output Model (used in this analysis) consists of interdependence coefficients or multipliers that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a given sector. (A sector is a group of similar economic units.) For a complete description of the input-output model, see Coon et al. (1985 and 1989). This model estimates the changes in gross business volume (gross receipts) for all sectors of the state economy that arise from the direct expenditures associated with expanded backgrounding operations. The increased gross business volumes of the various sectors are used to estimate such economic indicators as secondary employment and tax revenue based on historic relationships.

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<sup>1</sup>Leistritz is professor and Sell is research assistant, Department of Agricultural Economics, North Dakota State University, Fargo.



This analysis follows the assumptions of the backgrounding feasibility report prepared by Systems Research and Development, Ltd. (1992). Backgrounded calves are assumed to be on feed for 150 days and to gain 250 pounds. Each backgrounded calf results in an estimated \$154 in additional direct expenditures/receipts within the North Dakota economy (Table 1). The potential for increased backgrounding was estimated to be one-half of the feeder calves (about 160,800) that are currently sold outside the state at weaning. If these calves are backgrounded within the state, the direct expenditures would total about \$25 million.

Table 1		
Estimated Direct Expenditures From Expanded Feeder Calf Backgrounding in North Dakota, 1992		
Sector	Per Calf	Statewide (160,800 calves)
	-dollars-	-thousand dollars-
Agriculture, Crops	18.37	2,954
Transportation	4.26	685
Communications & Public Utilities	1.25	201
Retail Trade	9.25	1,487
Finance, Insurance & Real Estate	18.33	2,947
Business and Personal Services	15.11	2,430
Professional and Social Services	7.00	1,126
Households	<u>80.06</u>	<u>12,874</u>
Total	153.63	24,704

Sectors that receive substantial direct expenditures include *agriculture, crops* (for roughage and feed grains), *finance, insurance, and real estate* (interest payments), *business and personal services* (repairs and maintenance), and *households* (hired labor and returns to operator labor and management). Since this study addresses the economic impact to the state economy arising from

additional backgrounding, the initial cost of the calves and about 72.5 percent of the feed and roughage costs are *not* included in the direct expenditures. The reason for excluding these expenditures is that the calves would be sold outside the state if not backgrounded as would most of the feed (90% of the grain and 65% of the roughage were assumed to be sold out of state). This analysis measures the additional economic impact that results when these resources are retained in the state.

The direct expenditures associated with expanded backgrounding result in a total impact of about \$77 million statewide (Table 2). Substantial effects occur in the *household* sector (\$30.6 million), the *retail trade* sector (\$18.2 million), and the *finance, insurance, and real estate* sector (\$6.6 million). These secondary impacts are more than twice the magnitude of the direct impacts



(\$52.8 million vs. \$24.7 million).

Additional business activity from expanded backgrounding generates additional state tax revenues. Additional sales and use tax, personal income tax, and corporate income tax receipts associated with expanded backgrounding are estimated to total about \$1.4 million (Table 3).

Table 2	
Estimated Total (Direct Plus Secondary) Impact From Expanded Feeder Calf Backgrounding in North Dakota, 1992	
Sector	Gross Business Volume
	--thousand dollars--
Agriculture, Crops	3,802
Construction	1,934
Transportation	937
Communications & Public Utilities	2,754
Ag Processing & Misc. Mfg.	1,410
Retail Trade	18,188
Finance, Insurance & Real Estate	6,638
Business & Personal Services	3,879
Professional & Social Services	3,144
Households	30,590
Government	2,532
Other	<u>1,742</u>
Total	77,549

Table 3	
Estimated State Tax Revenue Resulting From Expanded Feeder Calf Backgrounding in North Dakota, 1992	
Tax	Amount
	--thousand dollars--
Sales and Use	842.1
Personal Income	397.7
Corporate Income	<u>121.0</u>
Total	1,360.8

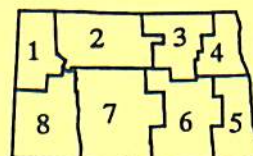
The expanded economic activity additional backgrounding supports also would create additional secondary jobs. An estimated 1,030 full-time secondary jobs would be created, besides persons employed directly in the backgrounding operations.

The foregoing analysis developed statewide estimates of the potential economic impact of expanded backgrounding. A related question pertains to the potential distribution of backgrounding activities and associated economic benefits within the state. If the increased backgrounding activity was distributed among counties and



state planning regions in proportion to their total beef cattle production, the estimated distribution of backgrounding by region would be as follows:

Region 1 -- 6.7%	Region 5 -- 6.6%
Region 2 -- 11.7	Region 6 -- 19.6
Region 3 -- 5.3	Region 7 -- 30.2
Region 4 -- 2.5	Region 8 -- 17.5



Backgrounding feeder calves can provide increased income for farm and ranch operators and also additional gross business volume, employment, and tax revenues for the North Dakota economy. Instead of exporting raw commodities at a lower value, backgrounding and other livestock enterprises can represent an opportunity to increase the value of the state's agricultural products *before* they leave the state. The economic benefits of adding value to agricultural products can be expected to be distributed widely.

Not all backgrounding operations are profitable every year. To determine whether backgrounding would likely be profitable for an individual operation, producers are encouraged to use the service of the NDSU Extension Service's Value-Added Agriculture (V-AA) Specialists. The V-AA Specialists may be contacted through any County Agent or by calling 701 237-7393.

#### References

- Coon, Randal C., F. Larry Leistritz, and Thor A. Hertsgaard. 1989. *The North Dakota Input-Output Economic Projection Model (NDIO/EPM): Documentation and User's Guide*. Agr. Econ. Software Series No. 4. Fargo: North Dakota State University, Department of Agricultural Economics.
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- Systems Research and Development, Ltd. 1992. *Feasibility Report for North Central Cattle Feeders Cooperative, Phase One*. Fargo: Systems Research and Development, Ltd.

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