

PURDUE AGRICULTURAL ECONOMICS REPORT

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The Benefits and Costs of COOL

John M. Connor

In the last PAER the legal and regulatory aspects of the new Country-of-Origin-Labeling (COOL) law were discussed. The American Meat Institute, other meat-industry trade associations, and many USDA officials generally opposed the passage of the COOL legislation. Some economists are skeptical about the wisdom of this policy. These positions were publicly justified by assertions that the industry costs of implementing COOL were significantly higher than the benefits to consumers of red meats, peanuts, fruits, and vegetables. This article examines the issues surrounding the benefits and costs of implementing COOL by comparing the USDA's analysis with other economic information.

Benefits

The benefits side of the COOL equation has been sorely neglected in the national debate. USDA has failed to consider any information relevant to benefits; so have the industry opponents of COOL. There is evidence that substantial benefits arise from country of origin labeling from the consumer perspective and from the perspective of the industry.

At a fundamental level, our society values information and choice for consumers. Markets cannot operate properly unless information valued by the purchaser is available. Similarly, without meaningful choice,

consumers are unable to express their preferences.

The methods of estimating costs and benefits with regard to labeling are very different. The last major change in food labeling occurred in 1994, when federal legislation was passed requiring nutritional labeling

“Markets cannot operate properly unless information valued by the purchaser is available.”

on foods covering over two-thirds of the U.S. food system. COOL is far simpler than nutritional labeling that requires a chemical analysis of the content of each food item by an independent laboratory.

The nature of the benefits depend in large part upon the “utility value” or “satisfaction” attributed to them by the consumer. Economic studies have shown that there are added benefits to be gained by using labels to segment the market, allowing each group of consumers to buy the products corresponding to their willingness to pay. When consumers are unable to distinguish the specific qualities of different products, they are not willing to pay as high a price as they would if they were sure that the product was of a quality more likely to precisely meet their needs.

Many surveys relevant to the labeling of food have revealed overwhelming consumer support for such labeling and significant concern for information as to where food is produced. For example:

- ▶ Fresh Trends 2002 found that 86 percent of consumer respondents in a national survey favor country of origin labeling.
- ▶ The National Public Policy Committee performed a study designed to evaluate producer preferences for agricultural, food and public policy found that 98 percent of U.S. agricultural producers favored labeling.
- ▶ A multi-university study published in February 2003 on the North Carolina State University Web site found that a large majority of consumers was concerned about where their food originated.

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- The Florida Department of Agriculture and Consumer Services performed a survey in January 2003, finding that 62 percent of consumers interviewed would purchase U.S. produce if it had an identifying mark.

Colorado/Nebraska Study of Benefits

There is a substantial body of research on the specifics of food labeling within the discipline of agricultural economics. A recent study regarding consumer willingness-to-pay for beef labeled as to country of origin was conducted by researchers at Colorado State University and the University of Nebraska-Lincoln and released on March 20, 2003.) The study used panel survey data to determine consumers' willingness to pay for meat labeled as U.S. origin. The researchers pointed to the specific characteristics that generally motivate consumers as shown in past research:

Consumers are becoming increasingly concerned with the quality, safety, and production attributes

of their food (Caswell, 1998). Consumers' concern with the safety and origin of beef is especially true in light of the recent European and Japanese BSE outbreaks and concerns with E-coli 0157:H7 in the U.S. beef. The origin and processes used to produce beef products are not apparent to the consumer through experience, consumption or visual inspection of the product. Therefore, without additional information, consumers are not able to differentiate the origin or processes used to produce the beef products they purchase in the retail store. Production attributes that may be valued by consumers such as organic, non-GMO or country of origin are considered to be credence characteristics. Truthful labeling of credence characteristics allows the consumer to judge the product before purchasing (Caswell, 1998).

The credence characteristics identified by Colorado State/University of Nebraska study apply to other food items as well as beef, the subject of their analysis. In the beef study, the researchers found that the vast majority of consumers (73 percent) in Denver and Chicago were willing to pay an 11 percent and 24 percent premium for steak and hamburger, respectively, that is an average of 19 percent more for steak labeled "Guaranteed USA: Born and raised in the U.S." The primary drivers of these results were consumers' food safety concerns, preferences for labeling source and origin information, desires to support U.S. producers, and beliefs that U.S. beef was of higher quality.

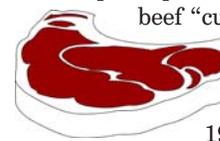
Value of Benefits

This willingness-to-pay calculates into a substantial monetary amount. There are approximately 29 million steers and heifers slaughtered each year. Each animal produces an average of 90 pounds of steak, according to industry experts. Origin labeling was found to be worth a 10.5 percent increase in steak prices for 72.9 percent of those surveyed. USDA scanner data for February, 2003 show

that the average U.S. steak price is \$4.75 per pound. This results in an aggregate willingness-to-pay of \$964.51 million per year based upon the number of steaks produced by U.S. slaughter steers and heifers, the 10.5 percent increase, and the 72.9 percent of consumers that have such a willingness.

As to ground beef, the nation's 275 million consumers ate an average of 29.63 pounds of ground beef per year. Assuming a 24.3 percent increase in the price found in the Colorado State study, the aggregate willingness-to-pay is \$3,070.78 million.

The per capita consumption for beef "cuts", (steaks and roasts) is 38.97 pounds on average from 1999 to 2001. USDA scanner data show \$4.75 per pound for steaks and \$2.56 for roasts in February 2003. An average steer or heifer produces about 90 pounds of retail steaks and 150 pounds of roasts. Using these weights, the average price for "cuts" is \$3.38 per pound. Assuming that 72.9 percent of consumers are willing to pay 10.5 percent, or 34 cents per pound more for the cuts, the aggregate willingness-to-pay is \$2,772.66 million.



Other Benefits for Consumers

In addition to the willingness-to-pay, there are other possible benefits that are important but difficult to quantify. For example, the U.S. has spent considerable resources to maintain confidence in the integrity of the food supply. As a result, the U.S. food system has been largely insulated from the global food scares such as foot and mouth disease and mad cow disease. Product labels increase consumer confidence by allowing them to feel informed and knowledgeable, even if they do not actually read the label information. The consumer confidence issue incorporates a risk reduction benefit. If the consumer perceives that they are at reduced risk of harm, they feel protected. As an analogy, consumers buy insurance to be protected, but they hope that they will not have to actually utilize

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the insurance protection they purchased.

Second, there is an opportunity to reduce risk and cost due to food safety problems or outbreaks that may originate in a particular country. If processing plants have product segregated and identified, they can avoid some of the tremendous losses emanating from shutdowns and recalls. Further, consumers can avoid products from the affected countries that are already on the retail shelf or in the consumer's pantry. Past recall efforts have been hampered by an inability to procure a large portion of the product because it had already been sold. This is especially the case with regard to perishable foods.

Producer Benefits

Producers may also benefit from food origin labeling, because an increased willingness to pay on the part of the consumers will be passed on at least partially as higher farm prices and increased returns to producers. Depending on the way in which consumer preferences shift, either domestic or foreign producers will benefit, possibly both. Apart from the direct mark-up in prices to reflect the added assurance, another way that prices might increase is as a result of an expansion of demand for the product. When products are displayed side by side with one of lesser quality and the consumer has no way of telling the difference, potential customers might shy away from the market, especially in cases where consumer health might be affected. Rectifying such a situation by providing consumers with the knowledge and information needed and leaving the choice up to them could not only maintain current customers but attract new consumers who are prepared to act on the information given. This would result in an overall increase in the demand for the product and an increase in net returns for producers. Thus, the benefits of country of origin labeling are significant. The science of quantifying such benefits is well recognized in the field of economics, though few detailed studies have been commissioned on this specific issue.

Record-Keeping Costs

The USDA issued an estimate as to the record-keeping costs of the voluntary guidelines on November 21, 2002. It was required to do so under the Paperwork Reduction Act of 1995. The total cost calculated was \$1,967.76 million in the first year for all covered entities. For the following reasons, it appears that the USDA cost estimate was high.

Costs to Producers

The USDA cost estimate stated that the producer record-keeping burden would be \$1 billion. It assumed that there were 2 million farms, ranches, and fisherman (production entities) that the time required to develop a record-keeping system to comply with the voluntary guidelines is one day; that the time required to generate and maintain records is one hour per month; and that labor cost \$25 per hour. This resulted in a cost estimate of \$400 million to establish a record-keeping system and \$600 million per year to maintain records, for a total fiscal year cost of \$1 billion.

The first issue is the number of production entities that will be affected. It is possible that the guidelines may not cover production entities at all because they are not within the textual scope of the labeling legislation. However, for argument's sake, let us assume that such entities may be covered.

The USDA assumption that 2 million producers will be affected is far too high. First, all 2 million producers in the country do not produce covered commodities. Statistics from the National Agricultural Statistics Service (NASS) show that there are 1.03 million cattle producers (2003), 75,350 hog farms (2002), 64,170 sheep and goat farms (2002), 12,221 peanut farms (1997), 106,069 fruit and nut farms (1997), and 53,7171 vegetable farms (1997). The total number of producers [excluding fisherman] that could potentially be affected is 1,342,527. This number is 33 percent less than the USDA estimate.



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The second issue is whether the USDA estimate as to number of additional labor hours to maintain records is correct. The USDA assumed, without articulation, that each producer would require one day to implement a record-keeping system and one hour per month to maintain records. However, there should be no need for new records, beyond those records kept for other purposes, that are required for producers and growers to show the country of origin their product.

Livestock producers currently maintain records for taxes, health rules, and other programs that are sufficient to show the origin of their livestock. These records include records on births, animal purchases, feed purchases, sales, inventory and health. Any auditor can glean sufficient information from these records to determine whether producer representations are accurate as easily as a tax or accounting auditor can verify the propriety of tax or financial documents. Thus, no new record keeping will be necessary for livestock producers (See the last issue of PAER on this issue).

Growers of fresh produce maintain the same records as livestock producers as well as any extra documentation required under the Perishable Agricultural Commodities Act and its regulations. The seed and input records maintained by growers should be sufficient to demonstrate U.S. product. We anticipate that no new records should be necessary with regard to such growers.

Though the majority of producers of covered commodities produce exclusively U.S. product, we acknowledge that producers of fish, shellfish, cattle, hogs, and sheep can procure their product from other countries. Documents showing such purchases are currently maintained for tax and other purposes. Therefore, such producers should have no additional record-keeping burden.

The third issue is whether the USDA applied the proper labor cost to the labor requirements. USDA estimated the value of time for producers at \$25 per hour. No basis for that labor cost number was provided. USDA further estimated

that each producer would require eight hours (a one time cost) to establish a record-keeping system and 12 hours per year to maintain the records. Keeping in mind that the additional labor could be zero, let us examine the USDA assumptions on their own merit.

The best data source to estimate the value of each hour of labor comes from the Bureau of Labor Statistics (BLS). BLS data show that the median value of farm labor is \$7.76 per hour. If one applies the BLS data for labor cost and the aforementioned NASS data on producer numbers to the USDA labor hour estimate for establishing a record-keeping system, the labor cost is reduced by almost 80 percent. In sum, producers' labor costs for COOL are at most \$124 million and quite possibly nothing.

Costs to Handlers

The labeling legislation allows, but does not require, the Secretary of Agriculture to require "that any person that prepares, stores, handles, or distributes a covered commodity for retail sale maintain a verifiable record-keeping audit trail." The USDA has not only chosen to require such an audit trail, but also has required retailers to ensure that this is done through private contracts.

USDA estimates that there are 100,000 food handlers (including packers, processors, importers, wholesalers, and distributors) in the country. Though it concedes that many do not handle covered commodities, USDA goes on to assume all will choose to comply. Further, USDA presumes that food handlers require two days of labor to create a record-keeping system at an additional one hour per week to maintain the system. Last, USDA establishes a value of \$50 per hour for labor to generate a \$340 million record-keeping burden. This cost estimate is inflated.

First, the number of affected entities is too high. For the covered commodities, the proper number of relevant packers, processors and manufacturers is about 9000. Similarly, for the covered commodities, the total number of wholesalers, distributors and importers is at most

15,000. This is 76 percent less than the USDA estimate.

Second, as with producer cost estimate, USDA's per hour labor value is too high and without support as to handlers. The Bureau of Labor Statistics value of the closest category of laborer shows a mean wage rate of approximately \$13.60 per hour, almost 75 percent less than the USDA estimate.

“Country of origin labeling is a potentially important component of consumer needed for food choices.”

Third, because the vast majority of covered commodities are produced within the U.S., most handlers will not have any purchases from foreign origin. There are only a few dominant firms in each category likely to procure product from many sources, including foreign sources. Importers, however, procure all products from foreign sources by definition.

As a result, the record-keeping burden for handlers resulting from the labeling legislation will be minimal. All importers already must keep records on the country of origin of their product pursuant to customs regulations. Thus, they will not be affected with an increase burden. More than 90 percent of other food handlers are unlikely to purchase foreign origin products at the current time.

Thus, a maximum of 10 percent, or 2,400, of the food handling firms are likely to be affected by an additional record-keeping burden as a result of labeling legislation. In sum, the total first year labor cost for record-keeping will be \$2.21 million for those 10 percent of food handlers above and beyond the records currently maintained for other purposes.

Costs to Retailers

All retailers will be required to provide information to consumers as to the country of origin of covered commodities. The labeling legislation defines retailers as those licensed

by the Perishable Agricultural Commodities Act. There are 31,000 such licensees.

USDA claims that each retailer will require five days for one person to establish a record-keeping system and one hour per day to maintain the records. USDA presumes that the wage rate for such duties is \$50 per hour. Thus, their total cost estimate is \$625.75 million for retail record-keeping. That estimate is again too high.

First, the record-keeping time assumed by the USDA is exaggerated. Retailers are merely a conduit of labeling claims made by their suppliers. Thus, they need merely to pass such information on to consumers. In the case of covered commodities sold in packages, retailers can merely require that suppliers place the required origin information on the package label. In the case of covered commodities that are sold in bulk form, the origin claims made by suppliers on the boxes and invoices should contain the necessary information for retailers to pass on to their customers. Some of the bulk products, such as apples and oranges, often contain individual stickers that could be modified or added to contain origin information.

Retailers currently maintain detailed records as to purchases and sales. Certainly, there has been a proliferation of product categories in recent years, with promotions of higher value products with special attributes, including organic, natural, or another branded program. The addition of a category containing origin information would not be a significant feat. Such information should be sufficient for auditors to verify labeling claims. In sum, there will be little need to create a new record-keeping system for COOL. Rather, slight changes to existing record-keeping and display processes are all that is necessary. The labor time is probably less than half of USDA's assumption.

The USDA labor hour rate is also too high. The Bureau of Labor Statistics show that the median wage rate for retail wage earners is approximately \$9 per hour. There may be some involvement

of supervisory personal at a higher median wage rate of \$24.75 per hour, but such involvement is likely no more than 10 percent of the total hours. The weighted average per hour wage rate is thus \$10.75 per hour. The total cost of establishing a record-keeping system for retailers in the first year at most \$70 million for retailers, would be almost 90 percent less than the USDA estimate.

Total Record Keeping Cost

Assuming that the USDA adopts at the least, a cost alternative program for complying with the labeling legislation, the total record-keeping cost for producers, handlers and retailers should be between \$69.86 million and \$193.43 million. These more realistic estimates constitute a 90-95 percent reduction in the USDA estimate. Considering that U.S. consumers purchase and eat approximately 236.4 billion pounds of covered commodities, per pound cost of record-keeping for labeling is between three-hundredths (3/100ths) and eight-hundredths (8/100ths) of

a cent per pound. There is no reason to believe that this small cost impact would lead to consumers avoiding covered commodities (such as beef) and substituting non-covered commodities (such as poultry).

Conclusion

Country of origin labeling for food is a potentially important component of consumer choice. The reduction of food-system risk and the preservation of consumer confidence in the food system are additional benefits. Every credible study has shown that consumers value this information, and some studies show a significant willingness-to-pay to get this information. The combination of survey data and experimental auction data that is currently available leads us to the conclusion that the consumer willingness-to-pay for labeling amounts to billions of dollars across all covered commodities.

References

Umberger, Feuz, Calkins, and Sitz, "Country of Origin Labeling of Beef Products: U.S.

Consumers' Perceptions," Presented at the 2003 FAMPS Conference: "Emerging Roles For Food Labels: Inform, Protect, Persuade." Washington, D.C., March 20-21, 2003, available online at <http://dare.agsci.colostate.edu/extension/cool.pdf>.

Note: This article summarizes part of "Country of Origin Labeling: A Legal and Economic Analysis" by professors John Van Sickle (University of Florida), Roger McEowen (Kansas State University), C. Robert Taylor (Auburn University), Neil E. Harl (Iowa State University), and John M. Connor (Purdue University). It can be read in its entirety on the Worldwide Web at: http://www.iatpc.fred.ifas.ufl.edu/docs/policy_brief/PBTC_03-5.pdf.



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Farmland Lease Law

Gerald A. Harrison, Professor

While landlords and tenants are encouraged to decide on their lease arrangement for the following year as early as August, some may choose to wait. Lease decisions at an early date are important for timely, farm management decisions including entitlement for farm program payments.

For leases that are not governed by another rule or are a term lease, a three month rule, in Indiana law, may still apply. When the three month advance notice to quit applies, the three months requirement is in advance of the end of the lease year. Where no other date applies, the custom for a farmland lease year end may be the last day of February. In this case, the "late notice" date would be December 1. Proper form and delivery of a notice to terminate a lease is also important and may require legal assistance.

Written leases are strongly urged with appropriate counsel for the parties involved. Many important issues should be considered such as the choice of lease type (cash or share). And, many more specific issues can be added to the writing to resolve carry-over activities such as soil fertility reimbursement when a lease is terminated. Note, Indiana law requires leases for more than three years to be in writing, and *if not recorded within forty-five (45) days after their execution, the lease is void against any subsequent purchaser, lessee, or mortgagee who acquires the real estate in good faith and for valuable consideration.*

For a paper with more information on landlord-tenant lease law and landlord's tax considerations contact Gerry Harrison, phone: 765-494-4216; toll free, 1-888-EXT-INFO or E-mail: <harrisog@purdue.edu>.

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first-year depreciation are higher for MACRS assets with longer class lives. In general, the expensing election and additional first-year depreciation are applied to the qualifying property with the longest lives and those assets that are the least likely to be resold or traded. If the current marginal tax rate is low, relative to what is anticipated for future years, then slower methods of depreciation are likely to result in greater tax savings. The additional first-year depreciation is not recognized for Indiana state income taxes, thus Indiana producers may prefer to utilize Section 179 expensing to avoid having multiple depreciation schedules.



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Potential Profitability of Feeding Dairy Steers in Indiana

Michelle M. Schank, Chris Hurt, and Kern Hendrix

The inventory of dairy cattle in Indiana is rising dramatically. Currently, Indiana is one of the fastest growing dairy states in terms of the number of milk cows. After decades of decline, milk cow numbers reached a low of 135,000 cows in 1999. That long-term trend has, however, reversed as Indiana milk cow numbers rose to as high as 155,000 in 2002. Most of the growth has been in large-scale specialized dairies that are not involved in crop production.

The increase in dairy cows has, of course, led to an increase in dairy calves. While these new specialized dairies tend to subcontract replacement heifer rearing, bull calves are viewed as a byproduct. Therefore, there has been an equally dramatic expansion in the supply of dairy steers, providing new opportunities for farmers in Indiana to finish these steers.

This article provides potential dairy steer finishers with an analysis of potential profitability and possible risk management strategies. While this appears to be a growing business opportunity, there is limited information regarding the historical returns from feeding dairy steers. To help fill this void, we had four objectives:

1. To develop an Indiana Dairy Steer Feeding Budget;
2. To examine the historical returns from feeding dairy steers in Indiana;
3. To identify the primary factors that created variability in the historic returns;
4. To examine risk management strategies.

Our Approach

The first step in examining the profitability of dairy steer feeding was to develop an Indiana Dairy Steer Feeding Budget that incorporated all costs and revenues. Budgets for finishing dairy steers were examined from the University of Wisconsin, Michigan State University, University of Minnesota, The Ohio State University, and Land O' Lakes. With these as a basic framework and the guidance of Dr. Kern Hendrix of the Purdue University Department of Animal Sciences, the Indiana Dairy Steer Feeding Budget was developed.

The analysis of returns was conducted on a monthly basis where cattle were placed on feed each month from January of 1992 through December of 2000. Cattle were assumed to be purchased at 500 pounds and sold nine months later at 1300 pounds. This provided returns for 108 months, beginning

with placements in January 1992 and ending with the last cattle sold in September of 2001.

Prices for the budgets came from official public sources. Monthly dairy calf prices for USDA #2 feeder calves and finished USDA choice #2-3 dairy steer prices were from the Wisconsin Agriculture Statistics Services (USDA, NASS). Corn prices were the monthly Indiana corn prices received by farmers from USDA. The corn silage cost was derived from the corn price using a formula from the University of Nebraska's Web site. Prices of protein supplement were 48 percent soybean meal prices at Decatur, Illinois. Monthly hay prices were for the U.S. average of "all hay" prices from USDA. Costs for veterinary and medical expenses, processing, yardage, marketing, and death loss were assumed to be fixed costs per head as determined by Dr. Hendrix and were constant throughout the analysis period. Yardage includes items such as labor, facilities, equipment, bedding, fuel, and utilities. Yardage cost was set at about \$.26 per head per day, or about \$70 per head for the nine-month feeding period.

Moderate Losses and High Variability

The average of the monthly returns for cattle placed from 1992 to 2000

Table 1. Estimated Return for Feeding Indiana Dairy Steers (\$ Per Head)

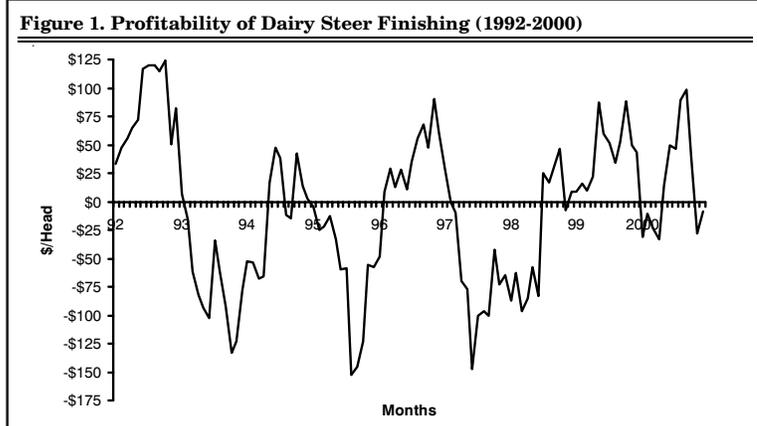
Month Bought-Sold	1992	1993	1994	1995	1996	1997	1998	1999	2000	Avg 92-00
Jan-Oct	32.96	6.90	(52.39)	(4.28)	(48.67)	28.77	(87.33)	8.17	(31.61)	(16.39)
Feb-Nov	47.89	(15.50)	(54.03)	(24.95)	8.40	(0.94)	(62.27)	15.33	(10.85)	(10.77)
Mar-Dec	55.13	(62.04)	(67.94)	(21.97)	29.16	(10.19)	(96.03)	10.03	(23.72)	(20.84)
Apr-Jan	64.71	(82.38)	(65.87)	(12.33)	12.80	(69.43)	(85.53)	21.96	(32.86)	(27.66)
May-Feb	72.08	(93.33)	16.41	(33.11)	28.53	(76.59)	(57.81)	87.72	13.87	(4.69)
June-Mar	116.77	(102.73)	47.64	(59.66)	11.19	(147.55)	(83.48)	59.25	49.55	(12.11)
July-Apr	120.21	(34.20)	38.04	(59.15)	35.60	(100.27)	24.74	51.23	46.38	13.62
Aug-May	119.98	(62.20)	(11.87)	(152.19)	55.87	(96.16)	16.41	34.41	89.23	(0.73)
Sept-June	114.59	(92.39)	(14.77)	(145.34)	67.44	(100.72)	33.43	52.29	98.44	1.44
Oct-July	123.57	(133.60)	42.09	(122.93)	47.39	(42.75)	46.41	88.57	39.14	9.76
Nov-Aug	50.89	(123.10)	13.57	(55.84)	90.58	(73.09)	(7.35)	49.03	(27.76)	(9.23)
Dec-Sept	81.69	(77.66)	2.90	(57.27)	61.12	(65.16)	8.72	43.33	(8.62)	(1.22)
Average	83.37	(72.69)	(8.85)	(62.42)	33.28	(62.84)	(29.17)	43.44	16.77	(6.57)

(108 feeding periods) was a loss of \$6.57 per head, with a standard deviation of \$66.49 per head. The range of estimated monthly returns was from a maximum loss of -\$152.19 per head to a gain of \$123.57 over the nine-year period. This information is shown in Table 1.

Figure 1 is a graphic illustration of the monthly returns. Periods of profit and others of loss are indicated, but there does not seem to be a cyclical pattern. However, the data period may not be long enough to reflect the traditional 10-to-12 year cattle cycle. Because of the apparent non-cyclical behavior of dairy steer returns shown here, it will more difficult for producers to predict profitable or unprofitable periods based upon potential indicators from the cattle cycle.

Figure 2 illustrates the seasonal pattern of returns and may prove beneficial to producers considering feeding dairy steers. The placement months that were more profitable tended to occur in late summer and early fall. Cattle purchased in July and sold in April, as an example, had the highest returns, averaging \$13.62 per head. Buying in October and selling in July was the next most profitable practice, with an average return of \$9.76 per head. Both of these periods generated a profit in six out of nine years. During the period of the study, it was most profitable for producers to place calves on-feed from July through October. The least profitable placement months were from January through April.

In the 1992 to 2000 time frame, 50 percent of the months had an estimated profit, and 50 percent of the months produced an estimated loss. The distribution of monthly profits and losses is shown in Figure 3. While the odds of making or losing money were 50/50, the magnitude of the dollar losses in the negative months exceeded the same average magnitude of profits in the positive months. As an example, 14 percent of the months had profits that were \$60 per head or greater, but 25 percent of the months had losses that were \$60 or more per head. An overall description would be that, "there was a 50/50 chance



of making or losing money, but some of the loss months were very large."

What is the source of the variability in estimated returns to finishing dairy steers in Indiana? About 63 percent of the variation in profitability was explained by three items: finished cattle prices, hay prices, and protein supplement prices. Finished cattle prices were by far the most important explaining 55 percent of the variation in returns, and hay prices were the second most important. Corn prices explained less than 1 percent of the variation in returns.

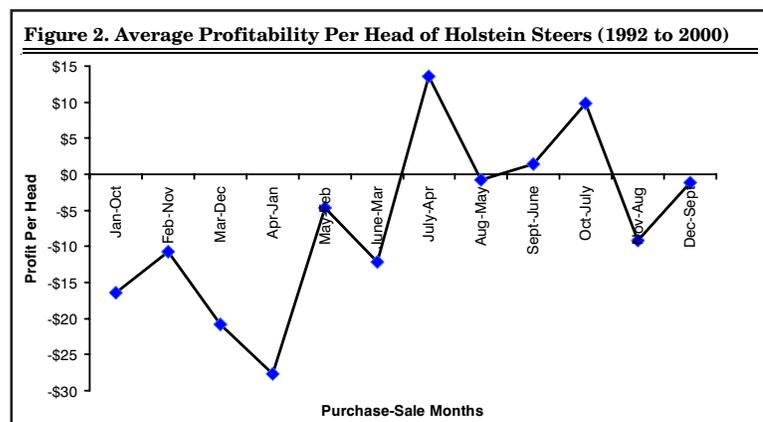
Difficult to Manage Price Risks

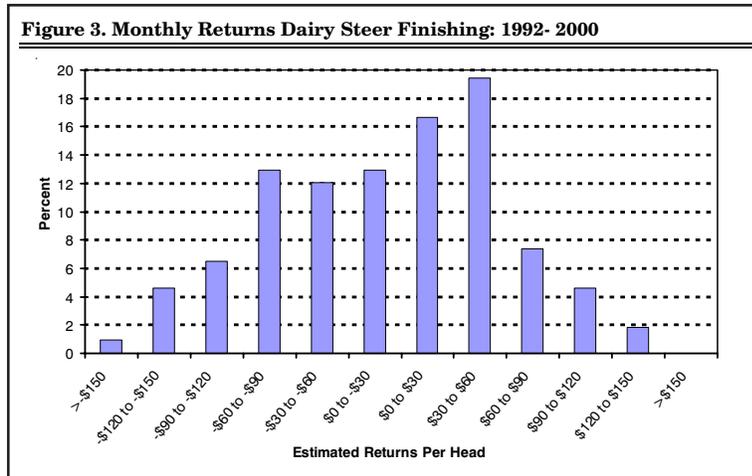
The two variables that most directly impacted profitability were finished cattle prices and hay prices. Therefore, risk management tools for these variables may help reduce producers' vulnerability in the market. Hay, however, is not traded on a futures exchange, limiting producers' ability

to control this risk through hedging. Hence, the only significant price variable that affects returns within producers' control are finished cattle prices using live cattle futures traded at the Chicago Mercantile Exchange.

To examine the possible positive returns to routine hedging with futures, the daily average price for each live futures contract was calculated from 1992 to 2000. These were then graphed to determine when routine hedging might be profitable. The results show that on average across the data period, it would not have been beneficial for producers to routinely hedge, because the highest average futures prices tended to occur at the end of the contract month, as illustrated by the February futures in Figure 4.

Individual years were then examined to determine if hedging was possible in the three years with extremely large losses: 1993, 1995,





and 1997. During these unprofitable years, the highest futures prices still tended to occur near the end of the contract maturity, meaning that hedging during the feeding period would reduce returns compared to simply taking the higher cash market price. In addition, there would be additional costs for interest on margin money and brokerage costs if futures were used. Thus, during 1992 to 2000, routine futures hedging would have increased losses on average, and so there was little that producers could do to help manage their price risks through the futures market. Producers may be able to manage their risk through other mechanisms such as contracting, however.

But Maybe Our Costs Estimates Were Too High

This analysis has shown that returns over the 1992 to 2000 feeding period tended to be negative on average. However, this may also be an incorrect conclusion for some producers if their costs were distinctly different from those assumed in the Indiana Dairy Steer Feeding Budget.

Of particular interest is the yardage cost, which includes items such as labor, management, and facility costs that are resources provided by the family. These costs would vary from farm to farm and would be unique for each operation.

An alternative analysis could leave these out of the cost structure and view returns as a "return to yardage." This would allow individual producers to calculate their own

costs and evaluate whether this "return to yardage" would be sufficient to cover their facility, labor, and management costs.

Figure 5 does this by reducing the total cost by the yardage. Without the incorporated yardage cost, producers have a positive "return to yardage" 80 percent of the time, with an average return of \$64.41 per head. In essence, this is a linear transformation of the previous method of calculation, but it allows potential dairy steer finishers to evaluate whether this is sufficient to cover their own costs.

Summary and Conclusions

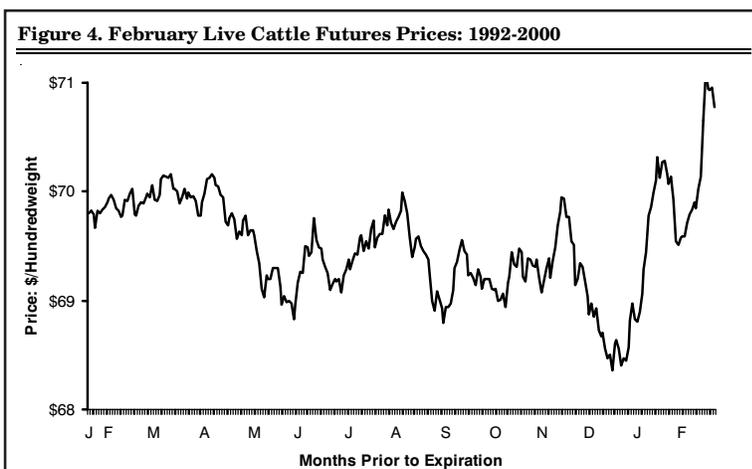
Large dairies are causing a rapid



growth in Indiana's dairy cow numbers, thus creating an opportunity for farmers to finish

the dairy steers that are a by-product. While this is a potential new opportunity, there has been little available information on the possible returns from such an enterprise. To help fill this void, the Indiana Dairy Steer Feeding Budget was developed to capture the level and distribution of monthly returns from feeding Indiana dairy steers and was applied to a study period for cattle placed on-feed from January 1992 through December 2000.

Given the assumptions and estimated costs used in the study, dairy steer finishing was not a profitable enterprise on average over the data period. The average loss was \$6.57 per head. The monthly returns ranged from +\$123.57 to -\$152.19. During this time frame there was no distinguishable cyclical impact; however, there was notable seasonality. Producers would have had losses, on average, for steers placed in the January to April period. Profitability tended to be greatest, on average, for cattle placed on-feed during the months of July through October. The simulated feeding operation would have lost money 50 percent of the time and made money 50 percent of the time. However, the months of large losses more than offset the months of high profits, thus resulting in a net loss on average.



Hay prices and prices received for the finished cattle were the two variables that most significantly affected returns. The price received for the finished cattle was by far the most important, explaining 55 percent of the variation in returns over the data period. Hay prices were the second most important, but corn prices and the purchase prices of the calves were not significant variables in explaining the variation in returns.

Because there is no futures exchange for hay, the only marketing tool available to producers for price risk management of important variables is the live cattle futures at the Chicago Mercantile Exchange. An examination of average daily futures prices from 1992 to 2000 for each of the live cattle delivery contracts revealed that the highest prices tended to come near the maturity of the contract. Therefore, hedging with futures would have resulted in lower net prices of finished cattle and thus increased the average losses above simply taking the cash price when the steers were market ready.

Returns to feeding Indiana dairy steers tended to be very risky, with wide variations across the 108 monthly observations. The average loss was \$6.57 per head, but the standard deviation of returns was \$66 per head. In addition, while the odds of a profit or loss were 50/50 overall, these returns were not evenly distributed. As an example, 14 percent of months had positive returns per head of \$60 or more, but 25 percent of the months had losses of \$60 or more per head. It is this much larger probability of very large losses that is of greatest concern.

It is important to realize that these results may not have held for all Indiana feeders because individual costs could have been distinctly different from those assumed in the Indiana Dairy Steer Feeding Budget. To account for this, total cost was reduced by yardage to determine a "return to yardage." Dairy feeder steers had a positive "return to yardage" 80 percent of the time and a mean return to yardage of \$64.41 per head. Potential dairy steer finishers should calculate their own costs and determine if they could

provide facilities, utilities, labor, and management for \$64.41 a head or less. If so, dairy feeding would have been profitable overall in the 1992 through 2000 period, given our other assumptions.

This analysis shows that dairy steer feeding returns tend to be unpredictable, highly volatile, and prone to some large losses that are not easily reduced by futures hedging. To the extent these characteristics continue in the future, only producers in a strong financial position should consider this enterprise. Those with a stable financial position who already have usable facilities and excess labor would also be likely candidates because they may be able to keep costs moderate.

Finally, given the volatile nature of returns, those who do not meet the above conditions could consider feeding on contract, perhaps with the large dairies retaining ownership and taking the market risks.

Related References

- "Feeding and Management of Dairy Beef Steers." Land O' Lakes Feed, 1999.
- Hendrickson, S.R. "Enterprise Budgets: Dairy Steer Calves." University of Wisconsin-Extension, February 2001.
- Jones, Rodney, James Minert, and Martin Albright. "Seasonality in Steer Feeding Profitability, Prices, and Performance." *Kansas State University Agricultural Experiment Station and Cooperative Extension Service*. June 1997.
- Lawrence, John D. "Live Cattle Futures and Options: How Have They Done?" Iowa State

University. <http://www.econ.iastate.edu/faculty/lawrence/Cattle%20Futures%20and%20Options.pdf>. 2000

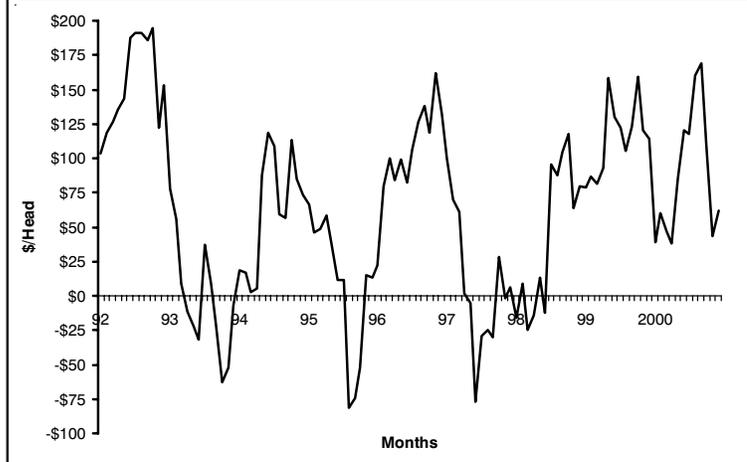
Lawrence, John D, Alexander H. Smith. "Managing Cattle Price Risk with Futures and Options Contracts." Iowa State University. <http://www.econ.iastate.edu/faculty/lawrence/Acrobat/ManagingCattlePriceRisk.pdf>. 2001.

Lawrence, John D., Zhi Wang, and Dan Loy. "Elements of Cattle Feeding Profitability in Midwest Feedlots." *Journal of Agricultural and Applied Economics*, 31,2 (August 1999):349-357.

Nott, Sherrill B., Gerald D. Schwab, John D. Jones, James H. Hilker, and Lawrence O. Copeland. "1995 Crops And Livestock Budgets Estimates For Michigan" Michigan State University. *Agricultural Economics Report*. 581, May 1995.

Zimmerman, Bill, and Brian Buhr. "Finishing Budget for Cattle." University of Minnesota Extension, June 1999.

Figure 5. Return to Yardage: \$ Per Head (1992-2000)



Michelle M. Schank (Top Left) is a Graduate research assistant in Agricultural Economics. Chris Hurt (Top Right) is an Extension Specialist in Agricultural Economics; and Kern

Hendrix (Bottom Left) is an Extension Specialist in Animal Sciences at Purdue University. This study was completed as Schank's undergraduate honors project.

Depreciation and Section 179 Expensing

George F. Patrick

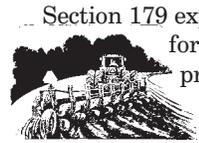
The Job Creation and Worker Assistance Act of 2002 (2002 Act) provided 30-percent additional first-year depreciation for qualifying property purchased after September 11, 2001 and placed in service before September 11, 2004. The Jobs and Growth Tax Relief Reconciliation Act of 2003 (2003 Act) increased the additional first-year depreciation to 50-percent of the adjusted basis for property acquired after May 5, 2003 and before January 1, 2005. The 2003 Act also increased the Section 179 deduction to \$100,000 for tax years beginning in 2003, 2004, and 2005. These new tax developments allow producers considerable flexibility in tax management. Furthermore, unlike many tax management tactics, these decisions can be made after the close of the tax year when completing the tax return.

For 2003 and 2004, taxpayers have both the 30-percent and 50-percent additional first-year depreciation alternatives. Farmers and others in an active trade or business can elect to treat the cost of up to \$100,000 of qualifying property purchased during 2003 as an expense (rather than as a depreciable capital expenditure). Under prior law, the annual Section 179 expensing limit was increased to \$25,000 for 2003 and later years. However, the 2003 Act increased the Section 179 expensing deduction to \$100,000. This is in addition to the 30-percent or 50-percent additional first-year depreciation. The Section 179 expensing election is made before any additional first-year depreciation.

Additional, First-Year Depreciation vs. Section 179

To be eligible for the additional first-year depreciation allowance, property must have a MACRS class life of 20 years or less, and original use (it must be new) must begin with the taxpayer. For the 30-percent additional first-year depreciation, the property must have been acquired after September 10, 2001 and placed in service before January

1, 2005. For the 50-percent additional first-year depreciation, the property must have been acquired after May 5, 2003 and placed in service before January 1, 2005. Qualifying assets with a MACRS class life of 10 years or more can be placed in service before January 1, 2006 and still qualify. Listed property (e.g. cars and computers), that is used less than 50 percent for business, and property subject to the Alternative Depreciation System (ADS) are not eligible for the additional first-year depreciation.



Section 179 expensing can be used for tangible personal property used in a trade or business. Property qualifies if it would have been eligible for investment tax credit. Farm machinery and equipment, livestock used for draft, breeding or dairy purposes, grain storage, single purpose livestock/horticultural structures, orchards and vineyards, and field tile all qualify for both the Section 179 expensing and the 30-percent or 50-percent additional first-year depreciation. General-purpose farm buildings, such as machinery sheds or hay barns, are eligible for the 30-percent and 50-percent additional first-year depreciation but not Section 179 expensing.

Purchased new or used property can be expensed under Section 179. Only new (original use) property is eligible for the additional first-year depreciation. Livestock used for breeding or dairy purposes appears to be considered new until they have their first offspring or first give milk, unless previously used for some other purpose. Property previously used by the purchaser is not eligible for expensing or additional first-year depreciation. Inherited property or property acquired from a spouse, ancestors, or lineal descendants is also not eligible for either Section 179 expensing or additional first-year depreciation. On like-kind exchanges (swaps or trades), only the boot portion paid is eligible for expensing.

For like-kind exchanges, following the temporary Treasury regulations released in September 2003, both the boot portion and the adjusted basis of the asset traded in would qualify for the additional first-year depreciation.

The entire Section 179 expensing deduction can be taken on one large item, reducing the basis for cost recovery. Alternatively, several small items can be completely written off in the year of purchase. Less than the full \$100,000 expensing deduction can also be claimed. The amounts expensed are treated the same as depreciation when the property is sold or traded, and for depreciation recapture purposes. If a Section 179 expensing election is made, notations regarding the specific allocations should be made on the depreciation schedule. If no allocations are specified, IRS prorates the expensing election among all eligible assets.

For the 30- and 50-percent additional first-year depreciation, the law presumes that the taxpayer will take the additional first-year depreciation, and the deduction is taken after any Section 179 deduction. Taxpayers may elect not to take the additional first-year depreciation by attaching a statement to that effect to their return. This election is made annually on a MACRS class by class basis. If two assets in the same MACRS class (e.g., 7-year MACRS property) are acquired in a year, then both assets must be treated the same with respect to the additional first-year depreciation. The additional first-year depreciation must be taken on both of the assets or neither of them. The 30-percent additional first-year depreciation cannot be taken on one asset if 50-percent additional first-year depreciation is taken on the other. However, 5-year and 7-year MACRS property can be treated differently. Like the Section 179 expensing, additional first-year depreciation is treated like other depreciation deductions when the property is sold or traded, and for depreciation recapture purposes.

The expensing deduction is phased out on a dollar-for-dollar basis if over \$400,000 of qualified property is placed in service during a tax year. For example, if a farmer buys \$450,000 of machinery in 2003, the maximum Section 179 expensing allowed would be \$50,000 that year (\$450,000 - \$400,000). An individual is not allowed to elect the full \$100,000 and carryover the \$50,000 excess. Only the boot portion on like-kind trades is considered for the \$400,000 limit. Thus, if the boot portion of the \$450,000 purchase with a like-kind trade-in was only \$150,000, then the full \$100,000 expensing could be elected. For the 30- and 50-percent additional first-year depreciation, there is no limit on the amount of the qualified property placed in service.

The expensing deduction is limited to the taxable income from any active trade or business before any Section 179 expensing. A farmer's and/or spouse's off-farm wage or business income can be combined with Schedule F loss so that aggregate taxable income would be positive. This would permit a Section 179 expense for an asset acquired by the farm business. Gain or loss from the sale of livestock, machinery, and other business assets reported on Form 4797 is also included in taxable income for Section 179 purposes. "Suspended losses" are not considered in determining the taxable income limit. In contrast, there is no income limit associated with the 30- and 50-percent additional first-year depreciation. Only the amount of qualifying property purchased during the year limits the additional first-year depreciation. Large first-year depreciation deductions could result in a net operating loss, which should generally be avoided.

Tax Planning with Depreciation and Section 179

Businesses making investments in qualified assets have great flexibility in handling these assets for tax purposes. For example, assume a farmer purchases \$200,000 of agricultural machinery and equipment (7-year MACRS property) in 2003 and there is no income

limitation on the Section 179 expensing. The farmer has an almost infinite number of alternative ways in which these acquisitions could be handled for tax purposes. The following calculations illustrate seven allowable alternatives ranging from the fastest (77.7 percent in year of purchase) to the slowest possible recovery (5 percent in the year of purchase) of the capital investment of assets used in farming:

1. \$100,000 Section 179, 50-percent additional first-year depreciation, and MACRS provides an initial deduction of \$100,000 Section 179, \$50,000 additional first-year depreciation, and MACRS depreciation of \$5,355 (10.71 percent of \$50,000) for total first-year deduction of \$155,355 (77.7 percent of cost recovered in year of purchase).
2. \$100,000 Section 179, 30-percent additional first-year depreciation, and MACRS provides an initial deduction of \$100,000 Section 179, \$30,000 additional first-year depreciation, and MACRS depreciation of \$7,497 (10.71 percent of \$70,000) for total first-year deduction of \$137,497 (68.7 percent of cost recovered in year of purchase).
3. \$100,000 Section 179, no additional first-year depreciation and MACRS provides an initial deduction of \$100,000 Section 179 and MACRS depreciation of \$10,710 (10.71 percent of \$100,000) for a total first-year deduction of \$110,710 (55.4 percent of cost recovered in the year of purchase).
4. No Section 179 expensing, 50-percent additional first-year depreciation and MACRS provides an initial deduction of \$100,000 of additional first-year depreciation, and MACRS depreciation of \$10,710 (10.71 percent of \$100,000) for a total deduction of \$110,710 (55.4 percent of cost is recovered in the year of purchase). This is the same as alternative 3, but would not be subject to the Section 179 income limitation.
5. No Section 179 expensing, 30-percent additional first-year depreciation and MACRS provides an initial deduction of \$60,000 of additional first-year depreciation, and MACRS depreciation of \$14,994 (10.71 percent of \$140,000) for a total deduction of \$74,994 (37.5 percent of cost is recovered in the year of purchase).
6. MACRS only provides deduction of \$21,420 (10.71 percent of \$200,000) or 10.7 percent in the year of purchase.
7. Alternative Depreciation System (straight-line over 10 years) provides an initial deduction in the year of purchase of \$10,000 (\$200,000 divided by 10 years divided by 2 for the half-year convention) or 5 percent.

If the qualifying new property was acquired through a like-kind exchange, the tax planning alternatives would be similar to those just illustrated above. Only the boot portion of the new asset would be eligible for the Section 179 expensing election. However, the entire basis of the new asset (adjusted basis of the old asset plus any boot paid) would be eligible for the additional first-year depreciation. With a trade-in, MACRS depreciation would continue to be taken on the basis of the asset which was traded in. The boot portion would be depreciated over the class life of the new asset.

Which of the many possible options for Section 179 expensing and depreciation should be taken by individual producers will depend on their overall 2003 tax situation. There are trade-offs between the value of tax-savings of deductions for income and self-employment tax purposes in the current year versus those deductions being spread over several future years. Both time value of money and expected future income are important in making these decisions. If the farmer's marginal tax rate (or tax bracket) will be unchanged, the tax benefits from Section 179 expensing and additional

Continued, page 5.

New Faculty

Associate Professor Jayson Lusk conducts research in the area of agribusiness marketing with focus on non-market valuation and the use of experimental methods to value novel and quality differentiated agricultural products. Dr. Lusk also has a research interest in food safety issues, individuals' perceptions of and attitudes toward risk, and modeling effects of food policy issues.

Dr. Lusk joined the faculty at Purdue University in June 2003. Prior to that time, Dr. Lusk was an assistant professor in the Department of Agricultural Economics at Mississippi State University. Dr. Lusk has a Ph.D. in Agricultural Economics from Kansas State University and a B.S. in Food Technology from Texas Tech University, where he was named Outstanding Student in the College of Agricultural and Life Sciences in 1997. At Kansas State,



Jayson Lusk

Dr. Lusk was a USDA National Needs Fellow and was awarded the Gamma Sigma Delta Outstanding Dissertation Award in 2000.

Since 2001, Lusk has had over 20 articles published or accepted for publication in academic journals such as the American Journal of Agricultural Economics, the Australian

Journal of Agricultural and Resource Economics, Economics Letters, the Journal of Agricultural and Resource Economics, the Journal of Economic Behavior and Organization, the Review of Agricultural Economics, Agribusiness: An International Journal, the Journal of Agricultural and Applied Economics, Food Technology, the Agricultural and Resource Economic Review, and the International Food and Agribusiness Management Review. Lusk currently serves as the director of a large international project funded by the USDA, which is focused on determining factors affecting consumer acceptance of genetically modified foods.

Dr. Lusk teaches two graduate classes in Agribusiness Management and International Marketing.

He may be reached at Purdue by phone: (765) 494-4253, and E-mail: <jlusk@purdue.edu>.

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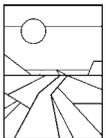
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