



# ANALYSIS AND COMMENTS

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## **A Summary of the Impact of Country of Origin Labeling (COOL) on the Mexican Beef Cattle Industry and U.S./Mexican Cattle and Beef Trade**

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### **Executive Summary**

Country Of Origin Labeling (COOL) provisions applied to beef products may affect U.S. imports of cattle and beef from other countries. Mexico has exported significant numbers of feeder cattle to the U.S. for many years. This paper reports on an analysis of the impact on Mexican and U.S. cattle and beef markets if COOL should result in no cattle imports into the U.S. from Mexico. The resulting increased availability of animals and increased fed beef production in Mexico results in a decrease in Mexican fed beef imports of 56,248 metric tons annually, down 12.2 percent from the baseline (current situation). The adjustments that result from altering current markets and the net impacts are often not obvious prior to analysis. In this comparison, the longer-term net impacts in the U.S. from this one change in feeder cattle flows would likely be lower U.S. calf prices of \$1.13 per cwt., decreased feeder cattle prices of \$0.56 per cwt., and fed cattle prices reduced by \$0.35 per cwt.

### **Introduction**

The Farm Security and Rural Investment Act of 2002 included a provision for Country Of Origin Labeling (COOL) of fresh meats (beef, pork and lamb), fish, fruits, vegetables and peanuts. The labeling provision is scheduled to become mandatory September 30, 2004. There is a great deal of uncertainty regarding the impacts of COOL on U.S. markets and trade. Much of the debate to date has focused on implementation methods and costs. Other market impacts have not been addressed.

COOL provisions applied to beef products may affect U.S. imports of cattle and beef from other countries. Mexico has exported significant numbers of cattle to the U.S. for many years. U.S. imports of Mexican cattle have averaged just over 1 million head per year since 1986. This paper reports on a comparative analysis of the Mexican and U.S. cattle and beef markets if COOL has a major impact on U.S. imports of Mexican cattle. Clearly, COOL would likely have broader impacts well beyond what is evaluated in this study, but this is an important dimension and

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one that sheds light on economic linkages and impacts.

### **Elimination of Mexican Cattle Imports**

COOL will likely increase the costs of segregating and managing imported cattle and may decrease the demand in the U.S. for Mexican feeder cattle. If the increase in costs is sufficiently high, it is possible that COOL could reduce demand for Mexican feeder cattle to the point where no imports by the U.S. occur. The following analysis uses the GANAMEX model (Peel) to analyze the impact of a situation where no cattle are imported by the U.S. from Mexico.

GANAMEX is a regional linear programming model of the Mexican cattle industry that solves for optimal production levels and methods for specified exogenous conditions. It should be noted that elimination of Mexican cattle imports is not predicted by this or any other analysis but is merely one possibility, albeit the extreme situation, to be analyzed. This analysis serves as a starting point for further analysis as COOL implementation guidelines are clarified. The GANAMEX model analyzes these impacts in terms of key parameters (Table 1) from the perspective of how the Mexican cattle and beef industry would respond domestically to this change in the market and the subsequent impacts on other trade flows. These impacts are then evaluated with respect to the impacts of changes in trade flows on U.S. markets.

A baseline was developed using the GANAMEX model to represent the current situation in Mexico. These baseline values are presented in the second column of Table 1. The level of imports in this baseline is close to the average level of imports since 1986. COOL impacts were then modeled after lowering exports of Mexican cattle to zero. No other external changes are made in values affecting production or consumption in Mexico. After incorporating these changes, the GANAMEX model shows how the Mexican industry would adjust production in response to the reduction in cattle exports. These adjustments are the changes that would be

expected to occur over time and are presented in the third column of Table 1.

The net results of COOL-induced reduction in Mexican cattle imports by the U.S. are depicted by the difference between the baseline and the COOL scenario results. The fourth column of Table 1 shows percentage changes between the baseline and the COOL scenario for selected parameters. This approach of comparing model results does not depict the time line of adjustments, but simply the current situation versus the expected final impacts.

### **Impacts on the Mexican Cattle and Beef Industry**

The loss of the U.S. market for Mexican cattle would necessarily result in changes in the Mexican market. This occurs despite the fact that total beef consumption in Mexico is unchanged in the COOL scenario (Table 1). Moreover, the quality profile of beef consumption is identical in the baseline and in the COOL scenario. In both the baseline and the COOL scenario, total per capita beef consumption is 16.2 kilograms per year, broken down as 8.2 kilograms of fed beef; 4.4 kilograms of grass-fed beef; and 3.6 kilograms of cull beef.

In the COOL scenario, total cattle slaughter in Mexico increases by 5.5 percent resulting in increased beef production of 3.6 percent. The increased availability of northern type cattle (European cross) results in increased fed beef production of 17.1 percent. Grass-fed beef production is unchanged, and cull beef production decreases by 5.6 percent.

The overall cow herd in Mexico decreases 0.4 percent from 10.41 to 10.37 million head. Regional changes are more dramatic with cow-calf production in the Northeast part of Mexico decreasing 13.9 percent while the cow inventory in the Tropical region increases by 3.2 percent. Changes in the cow herd in the North and Central parts of Mexico are less than 1 percent, with slightly more in the North and slightly less in the Central region. Despite only a slight decrease in the cow herd, the

total calf crop decreases by 14.6 percent, lowering the national average calf crop percentage from 48.9 to 41.9 percent. This occurs because more intensive and productive cow-calf production systems are replaced by less productive, lower intensity production systems. These lower intensity systems have a lower cost of production for the Mexican market.

The number of animals in stocker production systems decreases by 0.9 percent while the number of animals in grass-finishing production increases 1.3 percent. Although total grass-fed beef production is unchanged, slightly smaller animal weights were compensated for by a slight increase in the number of animals in grass-finished production. Feedlot production increases by nearly 19 percent from 1.3 million head to 1.55 million head annually.

The basis of the COOL scenario analyzed here is a 100 percent reduction in cattle exports from Mexico, from 981,824 head per year to 0. The resulting increased availability of animals in Mexico and increased fed beef production results in a decrease in fed beef imports by Mexico of 56,248 metric tons, down 12.2 percent from the baseline. Additionally, cow imports by Mexico nearly double from 90,170 to 173,903 head per year.

Overall, the Mexican beef cattle industry reverts back to less intensive production in the COOL scenario. One measure of productivity is the harvest percentage, which is the sum of slaughter plus exports as a percent of the total cattle inventory. In the COOL scenario, this value drops to 19.9 percent, down from the baseline value of 22.4 percent. Mexico becomes somewhat more self sufficient in beef production in the COOL scenario with the percent of domestic consumption coming from imports decreasing from 30.6 percent to 28.2 percent. The loss of the U.S. market for Mexican calves, along with the changes in production in Mexico, causes a general decrease in cattle and meat values in Mexico. The GANAMEX model indicates a decrease in

average Mexican beef values of 12.2 percent in the COOL scenario.

### **Impacts of Trade Changes in the U.S.**

The changes presented above include the COOL scenario adjustment of reducing annual U.S. imports of Mexican feeder cattle by 981,824 head. Two important secondary impacts are:

- Reduction in U.S. fed beef exports to Mexico: 56,248 metric tons; and
- Additional Cow exports to Mexico: 83,733 head.

Previous research (Cockerham) has estimated that the economic impact of Mexican cattle imports is to increase (decrease) price by \$0.70 per cwt. for 400-to 500-pound steers for each 100,000 head decrease (increase) in imports per month. The COOL scenario reduces U.S. feeder cattle imports from Mexico by 81,819 head per month. So, this change would imply an increase in U.S. calf prices of \$0.57 per cwt.

The relationship between feeder and fed cattle and beef (meat) prices means that a change in any one will have impacts in the other markets. Average price relationships for cattle in the U.S. indicates that price changes for 450-pound animals average 2.03 times the level of changes for 750-pound feeders while price changes for 750-pound feeders tend to be 1.59 times the level of changes for fed cattle. Using these averages, the increase in calf prices of \$0.57 per cwt. would result in an increase of \$0.28 per cwt. for 750-pound feeders and about \$0.18 per cwt. for fed cattle prices.

The reduction in beef exports to Mexico is a secondary impact on the U.S. and represents about 0.47 percent of total U.S. beef production. Using a price flexibility of 1.6, this implies a price change of 0.75 percent at the fed cattle or wholesale beef level. An average fed cattle price of \$70.00 per cwt., therefore, implies a price reduction of about \$0.53 per cwt. Using the same average price relationships as in the previous paragraph, this implies price reductions of

\$0.84 per cwt. for 750-pound feeder cattle and \$1.70 for 450-pound calves.

Combining these two effects means that the net impacts in the U.S. from less cattle imports and less beef exports would be lower U.S. calf prices by \$1.13 per cwt. (\$1.70-\$0.57), decreased feeder cattle prices of \$0.56 per cwt., and fed cattle prices reduced by \$0.35 per cwt.

The GANAMEX model results also include a significant increase in U.S. cull cow exports to Mexico. This would be a longer-term effect as the Mexican industry adjusts to different production systems and reduced cow numbers. The increased cow exports to Mexico implies a reduction in cull cow slaughter in the U.S. equivalent to roughly 22,400 metric tons of processing beef. This means roughly 40 percent of the fed beef previously exported to Mexico would be needed for grinding to replace reduced cow beef or additional imports of processing beef would be needed. Increased beef imports to cover the processing beef needs would increase total beef imports about 2 percent over current import levels. The increased demand for cull cows should result in some increase in cow prices.

### **Concluding Comments**

Scenario analysis with the GANAMEX model is a comparison of long run, steady-state solutions and estimated significant changes in Mexico to a COOL-induced reduction in Mexican cattle exports. The GANAMEX model does not predict how long it would take for the adjustments predicted above to occur. However, whether they occur immediately or over a longer period of time, the results identify the forces that will be affecting the Mexican industry and U.S.-Mexican cattle and beef trade relationships. The results presented here are purely the economic impacts, that is, this analysis assumes nothing about possible political ramifications of COOL on U.S. international trade.

It should be noted that these results assume nothing else is changing in the international market environment and that the U.S. would bear the full brunt of reduced Mexican beef imports. However, if COOL had the impact assumed here on Mexican cattle demand in the U.S., it might also result in reduced U.S. imports of Canadian cattle and beef. In that event it is likely that Canada would be in a position to increase market share in Mexico and further erode U.S. exports of beef to Mexico.

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### **References**

Cockerham, Laura Louise. "The Impact of the North American Free Trade Agreement on the U.S. Feeder Cattle Market." Unpublished M.S. thesis, Department of Agricultural Economics, Oklahoma State University, December 1995.

Peel, Derrell S., "GANAMEX: Ganadería Mexicana." Working Paper, 2001a.

**Table 1. GANAMEX Model Results**

| MEXICAN PARAMETERS                | BASELINE | COOL     | NET % CHANGE |
|-----------------------------------|----------|----------|--------------|
| TOTAL COWS <sup>1</sup>           | 10413334 | 10373497 | -0.4         |
| COWS – NORTH <sup>1</sup>         | 1918403  | 1919801  | +0.1         |
| COWS - NORTH EAST <sup>1</sup>    | 1369519  | 1179358  | -13.9        |
| COWS – CENTRAL <sup>1</sup>       | 2240282  | 2233904  | -0.3         |
| COWS – TROPICAL <sup>1</sup>      | 4885128  | 5040434  | +3.2         |
| CALF CROP <sup>1</sup>            | 5094953  | 4350542  | -14.6        |
| CALF CROP %                       | 48.9     | 41.9     |              |
| STOCKERS <sup>1</sup>             | 3358535  | 3326631  | -0.9         |
| GRASS FINISH <sup>1</sup>         | 2247741  | 2277733  | +1.3         |
| FEEDLOT <sup>1</sup>              | 1303384  | 1548886  | +18.8        |
| SLAUGHTER <sup>1</sup>            | 4654928  | 4911940  | +5.5         |
| FED PRODUCTION <sup>2</sup>       | 336389   | 394023   | +17.1        |
| GRASS-FED PRODUCTION <sup>2</sup> | 429187   | 429187   | 0.0          |
| CULL PRODUCTION <sup>2</sup>      | 328374   | 309994   | -5.6         |
| TOTAL PRODUCTION <sup>2</sup>     | 1093950  | 1133204  | +3.6         |
| TOTAL CONSUMPTION <sup>2</sup>    | 1586996  | 1586996  | 0.0          |
| CALF EXPORTS <sup>1</sup>         | 981824   | 0        | -100.0       |
| COW IMPORTS <sup>1</sup>          | 90170    | 173903   | +92.9        |
| BEEF EXPORTS <sup>2</sup>         | 0        | 0        | 0.0          |
| FED BEEF IMPORTS <sup>2</sup>     | 462132   | 405884   | -12.2        |
| TOTAL BEEF IMPORTS <sup>2</sup>   | 483311   | 444056   | -8.1         |
| HARVEST % <sup>3</sup>            | 22.4     | 19.9     |              |
| IMPORT % <sup>4</sup>             | 30.6     | 28.2     |              |
| BEEF COST <sup>5</sup>            | 18.54    | 16.21    | -12.6        |

<sup>1</sup> Head

<sup>2</sup> Metric Tons

<sup>3</sup> (Domestic Slaughter + Cattle Exports)/Total Cattle Inventory

<sup>4</sup> Total Imported Beef / Total Domestic Consumption

<sup>5</sup> Cost (Pesos) per Kilogram of Beef Consumed