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The Honorable Ann Veneman
Secretary, U.S. Department of Agriculture
Country of Origin Labeling Program
Agricultural Marketing Service
Stop 0249 Room 2092-S
1400 Independence Avenue, SW
Washington, DC 20250-0249

Delivered by email to cool@usda.gov

Re: Comments on Guidelines for Voluntary Country of Origin Labeling Program

Dear Secretary Veneman:

Sparks Companies, Inc. (Sparks) and Cattle Buyers Weekly (CBW) are pleased to submit the attached document in response to your request for comments on the U.S. Department of Agriculture's Guidelines for the Interim Voluntary Country of Origin Labeling of Beef, Lamb, Pork, Fish, Perishable Agricultural Commodities and Peanuts. This work was conducted on behalf of the Sparks/CBW COOL Consortium.

As interested food industry participants, Sparks and CBW are concerned about the costs, impacts and potential unintended consequences that Country of Origin Labeling will have on the industries producing covered products. The analysis being submitted provides a detailed assessment of potential cost burdens that could occur based on our interpretation of the current voluntary guidelines as published by the USDA.

Sincerely,

Richard S. Andersen
Senior Vice President
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Steve Kay
Editor and Publisher
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COOL COST ASSESSMENT

**PREPARED FOR THE
SPARKS/CBW COOL CONSORTIUM**

April 2003

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The information, data and industry cost estimates contained herein have been developed from industry sources and proprietary industry data that we believe to be reliable. Sparks Companies, Inc. (Sparks) and Cattle Buyers Weekly (CBW) do not guarantee that such information is accurate or complete, however, and it should not be relied upon as such. Opinions expressed reflect judgments at this date and are subject to change without notice. This material was developed for the Sparks/CBW COOL Consortium and is being submitted to the USDA in response to an invitation for comments regarding the proposed implementation guidelines for Country of Origin Labeling.

I. SUMMARY AND KEY FINDINGS

Country of origin labeling (COOL) is a two-phase labeling program authorized in the 2002 Farm Bill that is intended to specifically identify domestic and imported food products at the retail consumer contact point. In its first phase, the program is voluntary. However, by September 30, 2004 the law requires labels and records to support them throughout each vertical supply chain. As an example of the coverage to be imposed, retailers, at the final point of sale, must label all covered products with specific country of origin information and they must be able to verify label claims using an auditable record for each product. Covered products span several major food supply chains, including cattle/beef, hogs/pork, fish and seafood, produce (fruits & vegetables), lamb and peanuts **but not poultry**.

COOL requirements assign substantial risk of violations and penalties throughout the system. To avoid these will necessitate many changes in current business processes and the development of new tracing and record-keeping systems for the impacted product supply chains. To support any claim by retailers regarding country of origin, all segments in the supply chain will need to develop and execute a system for gathering, storing and communicating information and data pertinent to the origin of all covered products moving through each supply chain. In addition to the substantial information and record-keeping requirements, there are requirements to segregate product to assure accurate and verifiable identification at retail. Meeting those requirements will be difficult because there are no industry or government standards or definitions to satisfy all the complex requirements necessary to satisfy the origin labeling law.

Due to the complexity and extent of the COOL requirements, identification of their eventual implementation costs has varied widely. Sparks' efforts have focused primarily on the beef and pork supply chains but estimates have been developed as well for the fish/seafood and produce supply chains. No attempt was made to develop costs for the peanut industry or the sheep/lamb industry even though these supply chains will also be impacted by the labeling legislation.

Cattle and Beef

Table 1 provides a detailed summary of estimated COOL costs for the beef supply chain. Several segments of the beef supply chain are identified and costs for each segment are provided on a per head basis as well as on a total industry basis. Key conclusions from the analysis are:

- Costs for the cattle and beef industry are enormous, with per head costs estimated to total in the \$50 per head range. The cost burden is primarily due to the likelihood that individual animal identification will need to be implemented due to significant commingling of Canadian and Mexican feeder cattle and calves with US origin animals at the lower end of the chain, as well as integration of Canadian fed cattle at the slaughter stage and imported beef (primarily from Canada, Australia and New Zealand) at the processing stage of the supply chain.
- For the industry in total, it is estimated that the annual cost to satisfy COOL requirements will range from \$1.5 billion to \$1.7 billion.

- All production stages of the beef supply chain will experience a significant cost burden, ranging from \$198 million dollars for the cow-calf and back-grounding segment to an estimated \$110-170 million at the feedlot level.
- Costs for the packer/processor segment exceed those of the live animal owners because packers will incur huge costs for segregating beef products during the slaughter and fabrication stage of production.
- Costs at the retail distribution and retail store level nearly match the aggregated costs for the remainder of the supply chain and are estimated at \$23 per head or roughly \$800 million.

Table 1**BEEF SUPPLY CHAIN COOL COST ESTIMATES**

	\$/Head	Segment Cost (Million \$)	Calculation Process
Cow-Calf Producer, Backgrounders	\$4.88	\$198.0	38 Million Head Calf Crop 2.5 Million Head Imports
Feedlot	\$3.75-5.75	\$109-\$167	29 Million Head Sold
Packer/Processor	\$15-18 \$4*	\$435-522 \$24	29 Million Head Steer/Heifer 6 Million Head Cows/Bulls
Retail Distribution and Retail Store	\$23	\$805	8 Billion lbs. sold @ 10 cents/lb from 35 Million Cattle
TOTAL	\$47.13- \$51.63	\$1,571- \$1,716	

* Not included in total per head cost

Hogs and Pork

Due to the structural nature of the pork supply chain, the Source, Materials, Process, Verification (SMPV) System (a .k. a traceability) needed to meet COOL requirements at the retail level for pork products has less overall complexity than for beef. Consequently, the costs of compliance are likely to be lower. A large portion of the pork industry is vertically integrated. Even in the non-integrated segment of the industry, significant concentration of production, packing and processing has occurred. The existence of large, closed hog production systems where only US hogs are born and raised suggests that individual animal identification for a large part of the hog industry is likely not needed as commingling of foreign origin animals with US origin animals does not and cannot occur. This is not the case for all hogs produced, however, so it is likely that pork supply chain costs will be highly variable depending on the specific construct of the production system utilized. Key cost estimates for the pork supply chain are provided in Table 2 along with the following primary findings.

- The US hog industry has undergone significant structural change in the past twenty years. The integrated business model has grown in importance to the point where more than one-quarter of all hogs produced come from fully integrated systems.
- Integrated hog production systems already have in place animal segregation and the costs associated with verifying these systems as to country of origin (all US) will be minimal.
- It is estimated that a vertically integrated hog production/slaughter/processing system will face per head costs of \$.50 to origin identify their product into processed pork boxes ready to ship to retail customers.
- Other components of the hog production sector are also highly concentrated and produce hogs in closed/confined production systems. These producers will likely benefit from their business structure in terms of being able to provide verification of origin on all hogs flowing from their facilities. Many of these hogs will probably not need to be individually identified. These hogs will not fully capture the cost savings at the packer/processor level, however, as they will be vulnerable to commingling with hogs from other country origins at the packing plant.
- For that portion of the US hog production base that is exposed to multiple hog ownership and transactions, there will likely be the need for individual animal identification and animal/product segmentation at the packing facility. Costs for such a business model are significant.
- It is estimated that for the non-integrated segment of the hog industry, COOL costs at the producer level will range from \$.75 per head to \$1.50 per head.

Table 2**PORK SUPPLY CHAIN COOL COST ESTIMATES**

	\$/Head	Segment Cost (Million \$)	Calculation Process
Integrated Hog Production and Packer/Processor System	\$0.50	\$12.5	25 Million Hogs per Year
Retail Distribution and Retail Store	\$2.75		
Total Integrated System	\$3.25		
Large Scale Closed Production System, Non-Integrated	\$.75	\$18.75	25 Million Head per Year
Small Independent Non-Integrated Production System	\$1.50	\$67.5	45 Million Head per Year
Non-Integrated Packer/Processor	\$2.00-6.00	\$146-\$438	73 Million Head per Year
Retail Distribution and Retail Store	\$2.75		
Total Non-Integrated System	\$5.50-10.25		
Sows and Boars	\$2.00	\$6.0	3 Million Head per Year
Retail Distribution and Retail Store		\$263	3.5 Billion lbs. sold @ 7.5 cents/lb from 95 Million Hogs
TOTAL	\$3.25-\$10.25	\$513.75-\$805.75	

- Costs for the non-integrated packer/processor will be subject to wide variances estimated from \$2-6 per head.
- Identification of product moved into the retail distribution system and then on to the store level by country of origin will be required. The costs are put at 7.5 cents per pound of covered pork product sold. This translates to a \$2.75 per head cost for product moving through retail distribution and sales at the retail store level.
- Total costs for the pork system to comply with COOL range from a low of \$3.25 per head to a high of \$10.25 per head for all butcher hogs sold. This will mean a total cost burden to the industry of approximately \$500-800 million.

Fish and Seafood

Table 3 provides a summary of expected COOL compliance costs for the fish and seafood industry. There will be multiple challenges for the fish and seafood supply chain in order to meet anticipated requirements for COOL. Because a large percentage of fish and seafood consumption in the US is of foreign origin, the current supply chain already has in place procedures for identifying and formalizing the information exchange to satisfy COOL. Commingling of US and imported product does occur for some processors and products but the degree of new segregation required will not be nearly as burdensome as is the case in the beef sector.

- A review of the supply chain and an assessment of current operating and product identification systems suggests that compliance costs at the product level for wild catch and fish farms will be relatively small; estimated at \$1 million/year.
- At the processor and fish wholesaler level, formalized tracking of invoices will need to occur and limited additional segregation of product will be required. Estimates suggest that at this segment of the chain, costs will be one-half cent per pound.
- Based on an estimated 2.9 billion pounds of fish and seafood being handled through the processing/wholesale segment of the chain, the cost will be \$15 million per year.

Table 3

Fish/Seafood COOL Cost Summary

	Cents/ Lb.	Segment Cost (Million \$)	Calculation Process
Producer: Wild Catch and Aquaculture		\$1.0	Minimal Cost for Wild Catch; Book Keeping Cost for 2100 Aquaculture Farms
Processor/Wholesaler	0.5	\$15.0	2.9 billion pounds
Retail Distribution	2-3	\$20-30	1.0 billion pounds
Retail Store	3-4	\$30-40	1.0 billion pounds
TOTAL COST	5-7.5	\$66-86	6.6-8.6 cents per pound sold

- Most of the costs for compliance with COOL will occur at the retail distribution facility and again at the retail store level. A thorough review of changes that will need to occur to scan all covered fish and seafood product in and out of the distribution center and to set up identification and book keeping processes to document the multiple products and multiple countries of origin indicated a major cost burden for the retailer.
- Estimates are that at the retail distribution center, a cost of 2-3 cents per pound will occur and another 3-4 cents per pound sold at the retail store level.
- Retail sales of fresh and frozen fish and seafood that would require COOL identification amounts to about 1 billion pounds per year so the cost burden at the retail level will be \$50-70 million.
- Total industry costs are expected to be \$66-86 million; well below the costs estimated for either the beef or pork industries but due primarily to the smaller volume of fish and seafood sold through the retail sector.

Produce

As with the fish/seafood supply chain, the produce industry currently incorporates multiple foreign origin products into US distribution. By the very nature of the production process, substantial volumes of US origin product are also currently identified as to their production location and if not, the process for doing so would be relatively simple. The costs for this identification would be primarily of a book keeping nature. For imported fruits and vegetables that are covered under the law, identification as to country of origin occurs as the product enters the US and since most of said product is segregated through the supply chain, costs will relate primarily to formalizing the audit trail on this product so that documentation at the retail level exists. Where COOL implementation appears to have its largest impact is at the retail distribution and store level of the supply chain. Systems are currently not in place to provide a rigorous segmentation and accounting of all of the product moving through to the produce case and costs of putting such a system in place and operating it will be large.

Table 4

Produce COOL Cost Summary

	Cents/Lb.	Segment Cost (Million \$)	Calculation Process
Producer/Grower	Small	\$20.0	Minimal Cost Mostly for Initial Identification and Book Keeping
Processor/Wholesaler	Small	\$34.0	Primarily Book Keeping
Retail Distribution	1-2	\$500-1000	50.0 billion pounds handled
Retail Store	2-4	\$1000-2000	50.0 billion pounds sold
TOTAL COST	3-6	\$1,554-3,054	

- Costs for COOL implementation at the producer/processor/wholesaler level of the produce supply chain are estimated at about \$50 million.

- As product enters retail distribution and requirements for specific identification and tracking of product occur over multiple products, costs increase to an estimated \$500-1,000 million.
- Segregation and identification of multiple products at the retail store level with accurate signage or package labeling will also be complex and time consuming with the cost at store level estimated to be \$1-2 billion.

Aggregate Food Industry Costs

- A summary of estimated costs across the four major supply chains analyzed result in an aggregate cost estimate for COOL implementation of **\$3.66 to \$5.6 billion**.
- The cattle/beef and produce supply chains will bear the brunt of the costs in terms of total dollars but costs for each segment are not insignificant.

Table 5

Food Industry COOL Cost Summary

Supply Chain	Segment Cost (million \$)
Cattle and Beef	\$1550-1725
Hogs/Pork	\$500-800
Fish/Seafood	\$60-90
Produce	\$1550-3000
TOTAL COST	\$3,660—5,615

Meat Industry Impacts

- Complexity of the beef supply chain and potential for foreign commingling of cattle at virtually every stage of the live animal segment of the supply chain suggests that to meet the requirements of COOL, **an individual animal identification system will be needed**.
- The COOL requirement will clearly create a **competitive cost advantage for the integrated segment** of the US pork industry.
- Higher costs for the cattle/beef supply chain relative to the pork chain creates a **competitive disadvantage for the beef industry**.
- Lower per pound costs for the **fish/seafood** industry relative to the red meats will create a **competitive advantage at retail** for this category.
- Significant implementation costs for COOL at retail relative to food service will create a **competitive advantage for the food service sector**.
- Given the exemption of poultry from the COOL requirement, the **red meat sectors will suffer competitive disadvantages** to the extent of the additional costs that occur because of COOL.
- Retailers and processors are concerned that some consumers may **alter their seafood consumption patterns** when they discover the origin of their seafood; this could be the largest cost/loss to the sector.

II. Study Objective

In the 2002 Farm Bill, a provision was included calling for the voluntary labeling of a defined set of “covered” products indicating Country of Origin for said products. This voluntary labeling program is to be followed by Mandatory Origin Labels for these products effective October 1, 2004. Much debate has already occurred regarding the requirements for implementing Country of Origin Labeling (COOL), and fragmented assessments of the cost to the US food industry to effectively implement COOL have been made public by various interested industry participants. USDA, through its Agricultural Marketing Service, issued an assessment of the cost associated with the “record keeping” requirements for implementation of this legislation. **But to date, an all-inclusive cost assessment of COOL has not been publicly tabled.**

The objective of this study is to provide a full food industry cost assessment for implementing COOL based on the preliminary guidelines for COOL as published by USDA in October 2002. Recognition should be made that at present, specific requirements have **NOT** been defined for COOL as it relates to the verification/audit requirements for retailers. Just how these audit requirements are defined at the retail/consumer contact level will impact supply chain data and information needs, and hence the costs of total supply chain compliance with the COOL legislation. Since there exists a high degree of uncertainty as to what the final rules and regulations will be, the cost assessment contained in this report (and particularly as it relates to the retail level) should be viewed as a highly plausible but most likely a “worst case” situation. Sparks has developed the cost assessment based on the premise that “the food supply chain, post-COOL implementation, will offer the same level of consumer choice that exists in today’s system”, with the only defining change being that the consumer will be able to identify the country of origin of products being offered in the retail store. In other words, supply chain status quo plus COOL identification at point of sale.

III. Defining the Issue

Much has been written about the COOL issue and much confusion and speculation has been generated. But we will refrain from entering into the debate as to whether the legislation is good or bad, needed or not needed. The fact remains that a law has been passed mandating certain requirements as it relates to COOL. The US agricultural and food industry needs to proceed on the expectation that the law will be implemented as written. The COOL legislation simply states that **consumers have the right** to be informed at the point of purchase where the covered products originated. The **retailer is required** under law to provide that information and to be able to “prove” that the information being disseminated to the consumer is true and accurate. The retailer is subject to fines of \$10,000 for failing to provide this information or for failing to have an audit trail that will provide third party verification as to the accuracy (i.e., origin) of the product. In effect, under the threat of penalty, the law requires the final participant in the supply chain (the retailer) to identify the origin of the product being sold; a product that the retailer has no control over until it is delivered to his facilities.

The COOL issue would seem to be rather straight forward in terms of supply chain requirements. For covered products, which are broadly defined as: non-processed, fresh or frozen beef, pork, and lamb; fresh or frozen ground beef, pork and lamb; non-processed fish and seafood; non-

processed fresh and frozen fruits and vegetables; and non-processed peanuts, the retailer **MUST** provide the consumer country of origin labeling at the point of purchase and be able to prove that the origin claims are true and accurate. To be able to make these claims and avoid prosecution, it would seem that a top to bottom supply chain **Source, Materials, Process Verification (SMPV) System**¹ would be an absolute requirement. Each supply chain bringing forward covered products will need to implement a system of verification as to the origin of the original raw material. Nothing less than this would seem to be adequate to provide absolute assurance to consumers that they are buying what the retailer says they are buying.

IV. Analytic Approach

As anybody who truly understands the complexity of the US food system can testify, developing the information, data and processes needed to identify covered products at their retail point of sale by their country of origin is a monumental task. Keeping track of all that information in a form that will allow for verification adds to the burden. Even more difficult is putting together an estimate of the costs to the multitude of participants in the supply chain in meeting the COOL requirements. After all, for the system to provide value to the consumer, all participants in the supply chain will need to do their part. Accomplishing this will result in costs to every segment of the food industry.

Sparks has developed supply chain schematics that generally reflect the flow of product from primary production to the end consumer. For each of these supply chains that are impacted by “covered products” as defined by the COOL law, key supply chain transactional points have been identified. At each primary transactional level of each supply chain, key requirements to satisfy the end requirement of COOL have been identified and a cost has been estimated as it relates to assuring compliance with the law. Since a SMPV system is crudely defined for each supply chain, the cost estimates by segment and supply chain reflect a combination of costs associated with original sourcing of the product; costs associated along the supply chain in gathering, storing and passing on that data to others in the supply chain; costs associated with segmenting product by its country of origin (both operational as well as capital costs) through the supply chain; and costs related to the actual identification of the covered product at the retail point of sale. Overriding the entire supply chain SMPV requirements will be the investment (hardware and software) needed to keep all the information; the costs associated with creating auditable information trails and the costs associated with training those in the supply chain that will be required to manage and monitor the SMPV system. Since many of the requirements of COOL are new and unique to the US food system, putting a cost estimate on them must be done without an experience base from which to draw.

V. Supply Chain Evaluations

The law, as passed, will put requirements on several separate and distinct product categories within the US food industry. The cattle/beef, hogs/pork, fish/seafood and produce (fruits/vegetables) categories are the key food sector supply chains that will be impacted by

¹ SMPV is a process of product tracking defined by Sparks in a study entitled “Linking the Food Chain: Sharing Information and Verifying Sources, Materials and Processes Across Traditional Boundaries”, December 2002.

COOL. In addition, the lamb industry faces COOL requirements, as does the peanut industry. While COOL is of importance to each of these industries just mentioned, Sparks' primary effort on estimating the cost of COOL is directed at the first four supply chains identified above, (livestock/meat, fish/seafood and fruits/vegetables).

A similar methodology was developed for each supply chain analyzed in this report. A reflection of the key components of the supply chain was developed and primary functional sectors of each chain were identified, ranging from basic animal production to slaughter/processing to retail store activities. For each step of the supply chain, primary COOL-related activities were identified, segment cost components were listed, an estimate of the process costs were made and key unknowns were identified which could impact the cost estimates.

The COOL cost estimates were based on proprietary information and data provided to Sparks by leading industry participants, along with supply chain analysis generated by Sparks supported by the experience base of the professional staff at Sparks. The COOL cost estimates, that have been developed for each segment of each supply chain, have also been verified by knowledgeable industry participants who were not contributors of proprietary information to the study. This was done to assure an objective review of both the estimation process and results.

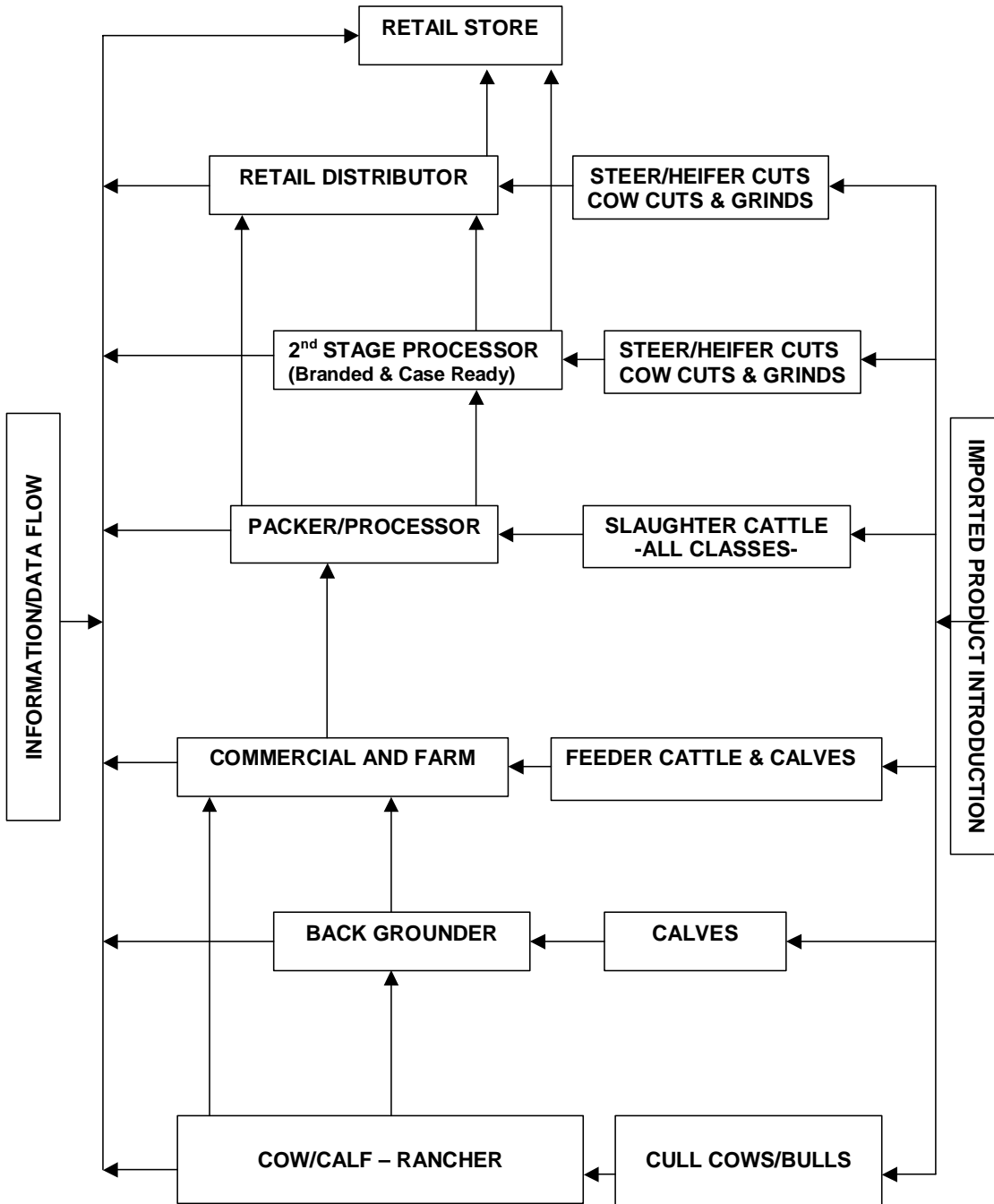
Cattle/Beef

The cattle and beef supply chain is complex, as exhibited in Figure 1. Meeting the COOL legislative requirement that stipulates that the retailer **must** provide point of sale identification of beef products by country of origin is a near impossible task as there are multiple points within the beef supply chain where live animals and/or beef products are commingled with animals or beef products from another country. How foreign animals entering the US as calves, feeder cattle or fed cattle can be segregated so that beef products from these animals can be identified at the retail meat case would seem to be a monumental, if not impossible, task unless mandatory identification of animals occurs.

Segregating animals or beef products of separate or multiple origins likely will be required at all levels of the beef supply chain. Costs associated with segregating and tracking beef products from birth to the meat case will not only be direct in nature but also indirect as certain costs will be manifested in decreases in production and processing efficiencies. For the beef supply chain, critical supply chain steps are identified; elements of COOL costs are identified and estimates are provided as to the cost on the system.

Figure 1

COOL PROCESS SCHEMATIC- BEEF



One element of supply chain cost that has not been directly assessed in this study is the potential for major capital investments by supply chain participants (especially packer/processors) to facilitate and manage product origin segregation of cattle and beef products as they move through the supply chain. Other submissions have been made by those representing the packer/processor sector suggesting that major re-configuration of packing plants will be needed to accomplish product segregation on the kill and fabrication lines. There can be no question that IF such plant re-configuration was needed, the costs to the industry would be huge. Estimates submitted by the American Meat Institute (AMI) that suggest for a large beef packing plant, the capital investment required would approximate \$50 million cannot be challenged as to its accuracy. But we are hesitant to suggest that such expenses are absolutely required to bring the supply chain into compliance with the labeling requirement.²

In the absence of plant re-configuration that would facilitate multiple designated processing lines to identity preserve product as to its country of origin, there will be added costs to accomplish this end requirement by other means. Batch killing and processing of cattle specifically sorted by common lineage will result in a reduction in line speeds and in overall plant efficiencies. Under all practical plant operating protocols, it would seem likely that additional cooler space will be required to segregate carcasses in the chill stage and prior to fabrication. Product flowing off the end of the fabrication line also will need to be segregated as to origin, resulting in expanded capacity requirements post-fabrication for maintaining identity of boxed beef prior to load out.

Since it is unlikely that retailers will accept co-mingled boxes into their distribution facilities and eventually, out to the store level, cases of beef will need to remain segregated throughout the distribution process (from the packer's coolers to the store's back room). This entire process magnifies the number of Stock Keeping Units (SKUs) that the distribution and retail segments of the supply chain will have to deal with. Individual cases of beef will need to carry origin identification on their bar codes to preserve the identity trail.

Bottom line, the technology exists to provide supply chain compliance with the labeling law. Processes and procedures can be developed and put into place to provide full verification of the labeling claims that will be put on the product. The question is not one of whether the US food industry can meet the requirements of COOL. It is a question of how long might this take and how much it is going to cost to get the job done. Of even greater interest is **who will bear that cost?**

Following are estimates by key supply chain component for the US beef industry.

² American Meat Institute submission to the USDA in response to Country-of-Origin Labeling: Notice of Request for Emergency Approval of a New Information Collection Service. February 21, 2003

STEP 1**RETAIL STORE****COOL-RELATED ACTIVITIES**

1. Information and data requirements – what do the USDA audit requirements entail? Contract, invoice support as documentation?
2. Product labeling and in-store Country of Origin Point of Sale (POS) materials
3. Data collection process, storage and availability – how detailed?
4. Meat Case Segmentation
 - a. Additional SKUs?
 - b. Case Ready Advantages?

PROCESS COST COMPONENTS

- Meat case or individual package labels
- Other POS Materials
- Case Segmentation
- Record Keeping & IT (hardware/software) changes
- Store Labor & Management
- Store Personnel Training
- Direct Audit

ESTIMATED PROCESS COSTS

The COOL labeling requirements faced by retailers cover the full range of covered products as defined in the law. The retailer's investment in expanded product tracking and product segmentation will cross over at least five supply chains. In order to identify costs pertinent to each supply chain, an aggregate estimate of per store costs for all covered products was needed, as many of these costs are common to all products. Aggregate costs experienced at the retail distribution center (as calculated in Step 2) were also put on a per store basis and then added to the store-specific costs. Based on relative product movement through the retail store by covered product category (i.e., beef, pork, fish, vegetables, etc.), an allocation of distribution and retail costs was made to each supply chain. Once this allocation was accomplished, the costs were summed up to a total retail sector burden by category and then calibrated to a per pound and per head calculation so that a total supply chain calculation could be made.

It is important to note that the cost estimates made for the retail distribution and retail store segment of the supply chain are based on a pilot project initiated with a retailer who is going through the process of determining “how to become compliant with the preliminary COOL guidelines”. As expected, the degree of complexity in dealing with COOL at the retail level crosses many functional areas of the distribution center and the retail store. The items impacted are listed above for the retail store and are specifically detailed for the distribution center in Step 2.

Based on an assessment of the requirements, it is estimated that the retail store level costs for the beef supply chain will approximate **7-9 cents per pound** of beef sold. Another **2-3 cents per pound** will occur at the retail distribution center. It is estimated that roughly **8 billion pounds** (on a retail weight basis) of beef are sold each year as fresh beef through retail outlets in the US. If the burden is, in fact, about **10 cents per pound** of product sold and about 35 million head of cattle move through the beef supply chain on an annual basis, the cost per head for the retail burden (distribution and store level) would be nearly **\$23 per head**. This is, admittedly, a huge cost and probably helps explain why retailers have not promoted voluntary country of origin labeling.

KEY UNKNOWNNS

1. Audit requirements at store level are still not fully defined.
2. Audit requirements at distributor level are also unknown. (How much information/data can be centralized and how will that impact store level requirements?)
3. Will retailers shy away from “foreign” products to avoid case segmentation?
4. Will retailers embrace “foreign” case ready and branded products?
5. What pricing differentials will develop for domestic versus foreign origin beef?

STEP 2

RETAIL DISTRIBUTOR

COOL-RELATED ACTIVITIES

- 1) Information and data requirements – what do the USDA auditors need?
 - Data at box level—bar codes
- 2) Data collection process, storage and availability – how detailed?
- 3) Product segmentation for identity preservation (IP)
 - Segmented warehouse slotting – reduces efficiency
 - Cross docking
 - Scan in/scan out all covered product by case

PROCESS COST COMPONENTS

- Record Keeping & IT
- Labor and Management
- Training
- Direct Audit
- Scanning Hardware/Software
- Segmentation of Product in Warehouse- more SKUs, more slots, reduced efficiency of space, etc.

ESTIMATED PROCESS COSTS

The costs that will be incurred at the retail distribution center will be driven by investment in technology to scan product in and out of the warehouse and to capture and store all pertinent information/data needed to prove country of origin of all product moving through the distribution center. Since the distribution center will be handling covered products from several potential origins, segmentation of the product will be required and the number of SKUs will be significantly larger than under the current system. While much of the process can be mechanized and tracking can be done electronically using bar code readers, there will be time associated with scanning all the product in and out of the facility. In addition, training of the workforce will be an ongoing requirement. Issues related to inventory management are key. The total cost estimated for the beef sector factors back to **2-3 cents per pound.**

KEY UNKNOWN:

- 1) Ability and/or desire to segment product in distribution for origin designation.
- 2) Audit requirements at distribution warehouse or HQ.
- 3) Issues/affects on cross docking.
- 4) Inventory Management and Control.

STEP 3

PACKER/PROCESSOR

COOL-RELATED ACTIVITIES

- 1) Information and data requirements – what the USDA audit requirements are is unknown.
- 2) Data collection process, storage and availability – how detailed depends on verification needs
 - Labor and hardware/software requirements
- 3) Product segmentation
 - Designated shifts- kill and fabrication
 - Designated cooler slots- capital and operational
 - Sorting capabilities on inbound cattle – scan ear tags at unload
- 4) Capital requirements for sorting pens, coolers and plant reconfiguration

PROCESS COST COMPONENTS

- Pre-harvest sorting/segmentation-capital and operational costs
- Post harvest segmentation- capital and operational costs
- Cost of designated shifts- efficiencies lost if split shifts occur
- Direct audits (2 man-days/audit/covered commodity group)
- Additional coolers or cooler slots- capital costs, inefficient handling
- Scanners, IT software/hardware, bar code transfer system
- Accounting/data storage and retrieval
- Training of personnel- general awareness of requirements, repetitive process due to employee turnover

ESTIMATED PROCESS COSTS

Costs related to segregating animals upon plant arrival, through the slaughter and processing steps and into boxed beef staged to ship to retail and food service customers, along with systems and processes needed to provide detailed documentation of the process flow, are estimated to range from **\$15-18/head per head**. This assumes that the animals are properly identified as to country of origin upon arrival at the plant. Since the final destination of the product by item (retail, food service or export) will seldom be determined until the product is in the box, all boxed product will need to be origin-identified in the box prior to leaving the packing facility. It should be noted that some product will move to a second stage processor prior to moving either to retail or food service. No accounting for the added costs for this expanded activity is included in this estimate.

KEY UNKNOWNNS

- 1) Will packers be able or willing to kill/fabricate cattle of more than one origin?
- 2) Will packers be able or willing to segment beef production by country of origin?
- 3) Will packers designate plants as “retail” or “food service” only?
- 4) Will packers have dedicated shifts or days for specific slaughter by origin?
- 5) Audit requirements?
- 6) What pricing differentials will develop?

STEP 4

FEEDLOT

COOL-RELATED ACTIVITIES

- 1) Information and data requirements – what the USDA auditors need is still uncertain.
- 2) Data collection process, storage and availability – how detailed depends on verification needs.
 - Labor and hardware/software requirements
- 3) Animal segmentation by country of origin
 - Designated feeding pens by origin
 - Scan cattle in for sort and identification

PROCESS COST COMPONENTS

- Individual animal ID – read or install ear tags to identify animal by origin
- Sort for segregated feeding (by pen or facility)
- Loss of feed pen efficiency
- Scanning hardware, IT system, data storage/retrieval, audits
- Training personnel

ESTIMATED PROCESS COSTS

As cattle enter the feedlot component of the supply chain, there will be a need to identify those animals that have not already been origin tagged. Upon discharge to the feedlot, scanning the cattle or tagging for origin will need to be done. Those of varying origins will need to be sorted and segmented through the feeding process. Estimates of the costs associated with purchase of scanners, associated labor needed for feeding segregation, data storage, retrieval and associated Information Technology (IT) systems needed to properly track cattle in and out will add significant costs to the feedlot operation. Direct costs are put at **\$1.75 per head** and labor costs for each animal over the feeding period are estimated at **\$2.00-\$4.00 per head** for a feedlot sector cost of **\$3.75-\$5.75 per head**. This does not include any capital costs but it does include a slight cost associated with under-utilization of pen space and hence lower occupancy levels.

KEY UNKNOWNNS

- 1) Will feedlots segregate domestic/imported cattle by facility or pen? Likely required.
- 2) Will feedlot require animal ID (including COOL information)? Probably yes.
- 3) Will feedlots alter their programs for sourcing feeder cattle?
- 4) What pricing differentials will develop?

STEP 5**COW/CALF RANCHER
BACK GROUNDER****COOL-RELATED ACTIVITIES**

- 1) Information and data requirements – what the USDA auditors require is still uncertain.
- 2) Data collection process, storage and retrieval – how detailed depends on verification needs
 - Animal ID tags
 - Scanners- at farm/ranch level or auction markets
 - Accounting hardware/software requirements if any
- 3) Alternative to individual animal ID
- 4) U.S. produced calves – Domestic Passport?
- 5) Imported calves and feeders– Foreign Passport?

PROCESS COST COMPONENTS

- Animal ID tags/chips
- Data input/record keeping
- Scanners – hardware and software if applicable

ESTIMATED PROCESS COSTS

In order for retailers to be able to identify meat products at the retail store level for country of origin, a record on every animal being born or entering the country must be initiated. Creating an electronic passport for each animal will require more up-front cost but will save significant time and effort through the supply chain. Technology exists to implement a system for each domestic and foreign animal to be assigned an ID and for the information contained on the ear tag to be expanded as the animal moves through its production process. At the time of slaughter, this information can be transferred to a bar code on the boxed beef so that country of origin will follow beef products right to the retail meat case. The cost associated with starting the passport trail through several sales transactions up to delivery of the animal to the feedlot for finishing is estimated to cost **\$4.88 per head**. This assumes that the animal is tagged at the farm/ranch or at the first transaction level and that auction markets, commission agents, back grounding operations, etc., have the scanner technology to read and write information on to the electronic ear tag.

KEY UNKNOWNNS

- 1) Will producers accept mandatory animal ID? Will they have a choice?
- 2) Will USDA require animal ID on imported cattle only? If they don't have import ID, do they default to U.S. origin?
- 3) Is there any other way of assuring COOL at retail without a full supply chain SMVP System?

Hogs/Pork

The US hogs and pork supply chain is a highly complex arrangement of production, processing and distribution activities, culminating in the presentation of pork products to the consumer through retail outlets, food service establishments and export markets. Figure 2 provides a highly simplified schematic of the pork supply chain and identifies key segments of the supply chain, product flows and information transfer points. One factor that differentiates the hogs/pork sector from the beef sector as it relates to COOL is the fact that a large percentage of the hog carcass moves into some form of further processing prior to presentation at the retail store. Since processed products are exempt from the country of origin labeling law, hams, bellies (bacon) and many sausage products will not need to be origin identified at retail. This reduces the volume of covered products that need to be origin identified.

Another distinguishing feature of the hogs/pork sector relative to the beef sector is the level of supply chain concentration and integration. Because of the nature of concentration and integration in the industry, a large number of hogs moving into slaughter and processing will be able to do so without the demands of individual animal identification. It is possible that entire production systems can have their production base fully certified as to country of origin, allowing this certification to provide origin verification for audit purposes. Most of these benefits will accrue to the integrated firms as they can avoid any requirement to segregate product at the plant. Only a portion of the non-integrated production base will likely be treated in the same manner.

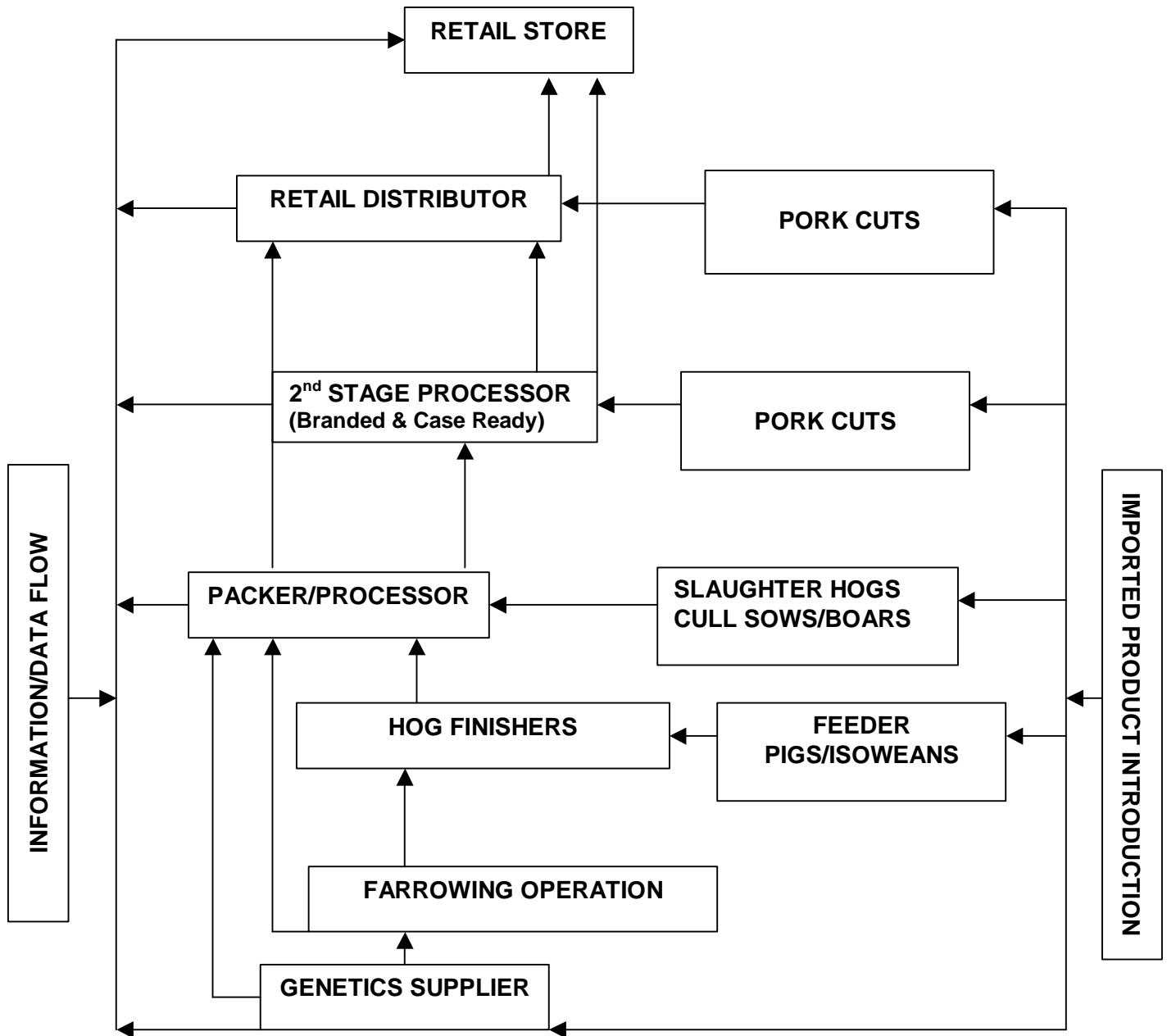
Issues for independent producers/packers occur primarily at the processing level as packers source hogs from multiple producers and in a multitude of ways. The broader the supplier base a packer has, the more likely it will be that the packer will insist on some form of animal identification. There will be cases where small/medium or large-scale hog production systems will be able to meet the verification requirement as to origin without individual animal identification. The accounting costs will be more burdensome than for the integrated operation but the full burden of individual animal ID may be averted. While a case can be made for exempting large groups of hogs from individual identification, there will still be a percentage of hogs where some form of ear tag ID system will be the preferred method of identifying and segregating the hogs. At minimum, it is expected that all 6 million breeding stock in the US will need to be individually identified as to country of origin.

For the non-integrated packer, his segmentation issues parallel those identified for the beef sector. When a packer takes delivery of hogs from multiple producers with multiple origin designations, he will need to sort those hogs upon arrival at the plant and keep them segregated according to origin right through the slaughter and fabrication process. Time and costs associated with this segmentation of animals and products rapidly increase the costs of tracking and origin identifying for this component of the production base. The requirement will be for boxes of fresh pork leaving the plant to be bar code identified and sorted by pallet as the product moves into retail distribution. Even though a portion of the product will move into other exempt distribution channels (export, food service, etc.), such end product destination of the product will not be known before the product is in the box. So the origin requirement will exist for all hogs and all fresh pork to the point of product discharge from the packing plant.

Following the pork supply chain schematic on the next page, a full assessment of activities and costs for the pork industry are provided.

Figure 2

COOL PROCESS SCHEMATIC-PORK



STEP 1

RETAIL STORE

COOL-RELATED ACTIVITIES

1. Information and data requirements – what do the USDA auditors need? Contract support as documentation?
2. Product labeling and in-store Country of Origin POS materials
3. Data collection process, storage and availability – how detailed?
4. Meat Case Segmentation
 - Additional SKUs?
 - Case Ready Advantages?

PROCESS COST COMPONENTS

- Meat case or individual package labels
- Other POS Materials
- Case Segmentation
- Record Keeping & IT (hardware/software) changes
- Store Labor & Management
- Store Personnel Training
- Direct Audit

ESTIMATED PROCESS COSTS

The COOL labeling requirements faced by retailers cover the full range of covered products as defined in the law. The retailer's investment in expanded product tracking and product segmentation will cross at least five supply chains. In order to identify costs pertinent to each supply chain, an aggregate estimate of per store costs for all covered products was needed, as many of these costs are common to all products. Aggregate costs experienced at the retail distribution center (as calculated in Step 2) were also put on a per store basis and then added to the store-specific costs. Based on relative product movement through the retail store by covered product category (i.e., beef, pork, fish, vegetables, etc.), an allocation of distribution and retail costs was made to each supply chain. Once this allocation was accomplished, the costs were summed up to a total retail sector burden by category and then calibrated to a per pound and per head calculation so that a total supply chain calculation could be made.

It is important to note that the cost estimates made for the retail distribution and retail store segment of the supply chain are based on a pilot project initiated with a retailer who is going through the process of determining how to become compliant with the preliminary COOL guidelines. As expected, the degree of complexity in dealing with COOL at the retail level crosses many functional areas of the distribution center and the retail store. The items impacted are listed above for the retail store and are specifically detailed for the distribution center in Step 2.

Based on an assessment of the requirements, it is estimated that the retail store level costs for the pork supply chain will approximate **5.5 cents per pound**. Another **2-3 cents per pound** will occur at the retail distribution center. It is estimated that roughly **4 billion pounds** (on a retail weight basis) of covered pork products are sold as fresh pork through retail outlets in the US. If the burden is, in fact, **7.5 cents per pound** of product sold and about 95 million head of hogs move through the pork supply chain on an annual basis, the cost per head for the retail burden (distribution and store level) would be roughly **\$3 per head**. This is, admittedly, a huge cost and probably helps explain why retailers have not promoted voluntary country of origin labeling of pork.

KEY UNKNOWNNS

1. Audit requirements at store level are still not fully defined.
2. Audit requirements at distributor level are also unknown. (How much information/data can be centralized and how will that impact store level requirements?)
3. Will retailers shy away from “foreign” products to avoid case segmentation?
4. Will retailers embrace “foreign” case ready and branded products?
5. What pricing differentials will develop?

STEP 2

RETAIL DISTRIBUTOR

COOL-RELATED ACTIVITIES

- 1) Information and data requirements – what do the USDA auditors need?
 - Data at box level—bar codes
- 2) Data collection process, storage and availability – how detailed?
- 3) Product segmentation for identity preservation (IP)
 - Segmented warehouse slotting – reduces efficiency
 - Cross docking
 - Scan in/Scan out all covered product by case

PROCESS COST COMPONENTS

- Record Keeping & IT
- Labor and Management
- Training
- Direct Audit
- Scanning Hardware
- Segmentation of Product in Warehouse- more SKU's, more slots, etc.

ESTIMATED PROCESS COSTS

The costs that will be incurred at the retail distribution center will center around investment in technology to scan product in and out of the warehouse and to capture and store all pertinent information/data needed to prove country of origin of all product moving through the distribution center. Since the distribution center will be handling covered products from several potential origins, segmentation of the product will be required and the number of SKUs will be significantly larger than under the current system. While much of the process can be mechanized and tracking can be done electronically using bar code readers, there will be time associated with scanning all the covered product in and out of the facility and training of the workforce will be ongoing. Issues related to inventory management are key. The total cost estimated for the pork sector factors back to **2-3 cents per pound** of fresh covered pork sold.

KEY UNKNOWN:

- 1) Ability and/or desire to segment product in distribution for origin designation.
- 2) Audit requirements at distribution warehouse or HQ.
- 3) Issues/effects on cross docking.
- 4) Inventory Management and Control.

STEP 3**NON-INTEGRATED
PACKER/PROCESSOR****COOL-RELATED ACTIVITIES**

1. Information and data requirements – what the USDA auditors need is still uncertain.
2. Data collection process, storage and availability – how detailed depends on verification needs
 - Labor and hardware/software requirements
3. Product segmentation
 - Designated shifts- kill and fabrication
 - Designated cooler slots- capital and operational
 - Sorting capabilities on inbound hogs – scan ear tags at unload
4. Capital requirements for sorting pens, coolers and plant reconfiguration

PROCESS COST COMPONENTS

- Pre-harvest sorting/segmentation-capital and operational costs
- Post harvest segmentation- capital and operational costs
- Cost of designated shifts- efficiencies lost if split shifts occur
- Direct Audits (2 man-days/audit/covered commodity group)
- Additional Coolers or cooler slots- capital costs, inefficient handling
- Scanners, IT software/hardware, bar code transfer system
- Accounting/data storage and retrieval
- Training of personnel- general awareness of requirements, repetitive process due to employee turnover

ESTIMATED PROCESS COSTS

Due to the nature of the mixed production systems that supply hogs to the non-integrated packer, the information, segmentation and tracking issues for packers in this category will be substantially larger than will be the burden for the integrated packer. It will be easier and cheaper to provide verification from a single source production system than from one that might involve several hundred producers offering hogs of several different origins. Once segmentation of the live hogs as they are off loaded occurs, the costs to the packer increase dramatically. While a huge capital investment to reconfigure existing plants may or may not be needed, at a minimum there are sorting, scanning, cooler, product slotting and information system investments that will be required. But efficiencies will be reduced as hog slaughter and fabrication lines are likely to be broken to switch from one origin designation to another. It is estimated that the costs will vary widely for the non-integrated packer depending on the

actual make-up of the hog supply base. An added cost ranging from **\$2.00 per hog** on the low side to **\$6.00 per hog** on the high side is estimated.

There are multiple permutations of production flows and slaughter arrangements for the non-integrated component of the US hog production system. In aggregate, it is possible that total production and slaughter/processing costs could range from about **\$2.50 per hog** to as much as **\$7.50 per hog**. Since most independent hog producers will be faced with the higher costs, it would seem that implementation of the COOL regulations will create a distinct cost and hence, competitive advantage for the large, integrated production systems. This would seem at odds to what the COOL legislation was purportedly designed to achieve.

KEY UNKNOWNNS

1. Will packers be able or willing to kill/fabricate hogs of more than one origin?
2. Will packers be able or willing to segment pork production by country of origin?
3. Will packers designate plants as "US" or "Canadian" origin only?
4. Will packers have dedicated shifts or days for specific slaughter by origin?
5. Audit requirements?
6. What pricing differentials will develop?

STEP 4

NON-INTEGRATED HOG PRODUCTION SYSTEM, FARROW/WEAN/FINISH

COOL-RELATED ACTIVITIES

1. Information and data requirements – what do the USDA auditors need?
2. Data collection process, storage and availability – how detailed?
3. Live animal segmentation issues-how much co-mingling of hogs occurs?
4. Requirements between sow operations, nurseries and hog finishing operations.
5. Canadian origin designated feeding operations and/or barns.

PROCESS COST COMPONENTS

- Segregated feeding (by pen or facility)
- Individual animal ID or other origin documentation
- Scanning hardware, software and data entry/retrieval for ID system
- Labor to manage segregation
- Training Personnel

ESTIMATED PROCESS COSTS

For that portion of the hog production system where the potential exists to commingle US-origin hog production with Canadian-origin hogs, a system will be needed to identify and segregate hogs as they flow from sow farrowing barns through nurseries and out through the finishing phase of production. For closed independent hog production systems that are not integrated with a packer but do have contractual arrangements that replicate the integrated system, it is likely that individual animal identification, except for breeding stock, will not be required until the hogs reach the slaughter plant and even then, maybe not at all. The live animal verification/documentation process and record keeping costs for this grouping of hogs may be similar to slightly higher than for the integrated operation but will likely range from **\$.50-.75 per hog**. Breeding stock will need to be individually identified as their marketing is more erratic, and the cull animals often travel large distances before being slaughtered.

For hog operations that buy or sell feeder pigs and ship the finished hogs to several packers, it is likely that packers will require individual animal identification for such hogs. Packers will require this as hog deliveries will most likely fall into three origin categories: (1) US-born and raised hogs; (2) Canadian-born but US-raised hogs; and (3) Canadian-born and raised hogs. Since the products flowing from these three primary production alternatives will need to be origin identified out to the retail meat case, the

COOL system will need to provide the retailer assurance of the actual origin of the hogs. This would seem to suggest an individual ID on this grouping of animals.

Based on the added identification burden that will be faced by hogs flowing through the production phase requiring individual ID, the estimated costs for the live animal phase could be **\$1.50-2.00 per hog**. A blending of the two live animal product flows described above implies that on average, the animal production phase for non-integrated producers could be **\$1.00-1.25 per head** ranging from **\$.50-2.00 per head**. While these costs will exceed those for the integrated hog operation up to the front door of the packing plant, the real cost increases occur once the hogs are discharged at the kill facility.

KEY UNKNOWNNS

1. Will hog finishing operation segregate domestic/imported hogs by facility or pen?
2. Will finishing operation require animal ID (including COOL information) or will batch identification be sufficient?
3. Will hog finishing operation alter their programs for sourcing feeder pigs and isoweans?
4. What pricing differentials will develop?

STEP 5

INTEGRATED PRODUCTION SYSTEM

<p>FARROW TO FINISH PRODUCTION, DEDICATED CONTRACT FINISHING AND PACKING/PROCESSING</p>
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COOL-RELATED ACTIVITIES

1. Information and data requirements – what do the USDA auditors need?
 - Production system certification
 - Contracts and auditable verification
2. Individual animal ID- **LIKELY NOT** Required
3. Data collection process, storage and availability – how detailed?

PROCESS COST COMPONENTS

- Production system certification
- Contract Certification for growers
- Information input and retrieval
- Information transfer at plant to bar codes on boxes
- Audit

ESTIMATED PROCESS COSTS

The animal identification and tracking burden for integrated hog production and slaughter operations will be much different than for non-integrated systems, which will need to provide segmentation from foreign born or raised hogs. In an integrated system where the packer can fully certify the entire closed production system to contain only US-origin hogs, the cost of creating an audit trail from birth-to-box will be minimal as it only requires developing a third party verification process for the hogs. Fresh pork product leaving the packing plant will still need to be properly identified as to country of origin (US). But most of the costs of individual animal ID and live animal and pork product segregation pre-and post-harvest will not occur. But, breeding stock will still need to be individually identified, since culls are often sold outside the integrated system and to buyers from other parts of the country. It is estimated that the per head cost for COOL compliance on certified integrated operations from animal birth through back door packing plant shipments will be **\$.50 per hog**.

KEY UNKNOWNNS

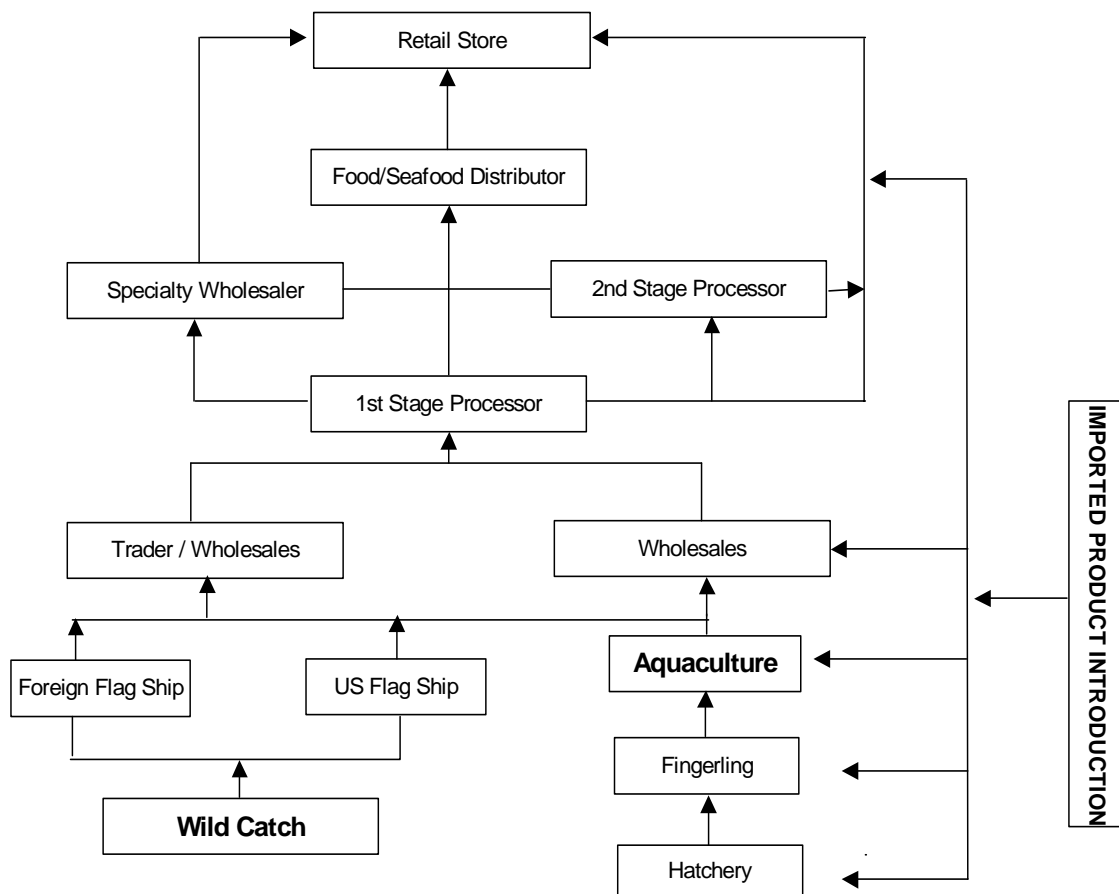
1. Will production certification and certified grower contracts suffice?
2. Will US origin plants for certified production systems face segmentation of product?
3. Is there any other way of assuring COOL at retail without a full supply chain SMVP System?

Fish/Seafood Supply Chain

The seafood supply chain has three distinctive and relevant channels of production. Domestic landings of wild caught fish account for 44% of the domestic edible supply while domestic aquaculture represents about 5% of the domestic edible supply. Imports of wild-caught or farm-raised fish make up the remaining 51% of the domestic edible supply and these imports can include fish caught by a US flagship. Figure 3 provides a basic flow chart identifying the movement of fish and seafood from the point of production/harvest to the retail food store. As with the beef and pork supply chains, the fish/seafood supply chain is complex and the issues related to complying with the COOL requirements are equally onerous.

Figure 3

COOL PROCESS SCHEMATIC - SEAFOOD



Meeting the COOL legislative requirement for fish/seafood stipulates the following:

- For farm-raised fish and shellfish, the product must be fish or shellfish that is hatched, raised, harvested, and processed in the United States.
- For wild fish and shellfish, it must be either harvested in the waters of the United States or by a US flagged vessel and then processed in the United States or aboard a US flagged vessel.
- In addition, the label must distinguish between farm-raised and wild fish products.
- All fresh and frozen fish and shellfish items are covered by COOL guidelines. All cooked and canned fish products, including such items as canned tuna and canned sardines, and restructured fish products, such as fish sticks and surimi, are excluded. Similarly, processed products where the fish or shellfish is an ingredient, such as sushi, crab salad and clam chowder are excluded.

Implementation of COOL related activities for the seafood industry will be complex and costly but potentially not as troublesome as for the beef and pork sectors. Currently, most seafood marketed to the retail sector is packaged and labeled by the processor/distributor (1st stage processing). Also, there is not much commingling of imported and domestically caught/produced fish because most imported fish is packaged. This reduced level of foreign origin/US origin commingling will simplify the segmentation requirement through the processing and distribution segments of the chain, which in turn should lower the costs on a relative basis. The key COOL related activities and cost components for the fish/seafood category are summarized below.

Retail Distribution/Retail Store

Seafood retailers will endure labeling, segmentation and record-keeping costs at both the retail distribution center as well as at the retail store level. Currently, retailers receive boxes of whole fish or fillets into their distribution facility that may already have country of origin information. This information isn't specifically captured and tracked as to country of origin so it is likely that a system of scanning fish and seafood products into and out of the distribution facility will be required in order to put in place a verifiable audit trail for compliance purposes. In order to comply, the retailer will need to add COOL information to the product label in the store, and in some cases segment the display counter to distinguish between domestic and imported fish. It is uncertain at this time as to whether additional cold storage and expanded slotting requirements will be needed in the distribution facility. They may not unless consumers develop a distinct demand based on the origin of seafood. If this occurs, than additional SKU's may be required.

On a per pound basis through the retail distribution and retail store segment of the supply chain, COOL costs are likely to be similar to slightly lower than those for beef and pork even though seafood has a greater variety of species and a lower volume of sales. But, case-ready product is not as popular in the seafood sector; and this could place a larger burden on the retailer than is currently anticipated.

Compliance Costs

The portion of edible seafood supply that would require labeling at the retail store is estimated at approximately 1.0 billion pounds, which is equivalent to about 33% of the total US consumption of fresh/frozen fish and seafood. In arriving at this volume estimate, adjustments were made to discount

consumption volumes for processed seafood (e.g., canned tuna) and foodservice (mainly restaurant) demand, which accounts for nearly two-thirds of total US fish/seafood consumption. Retail distribution costs are estimated at 2-3 cents per pound to cover all activities that will need to occur at the distribution facility. At the retail store level, another 3-4 cents per pound of product sold will occur and this could prove to be conservative depending upon the range of product offerings in the store. At the retail distribution/retail store level of the supply chain, compliance costs for fish and seafood are estimated at 5-7 cents per pound of product sold and assuming 1 billion pounds of product sold in this covered product category, the total industry cost for this segment of the supply chain would be **\$50-70 million**. This estimate includes a combination of batch labeling, individual product labeling, store display labeling and all the activities and their associated costs for product segregation and tracking in the distribution facility and on out to the retail store case. It also assumes that seafood wholesaler/distributors provide adequate and verifiable country of origin information to the retailers.

Processor/Wholesaler

There are about one thousand processors and three thousand wholesalers in the seafood/fish segment of the US supply chain. The largest processors are typically forward integrated from processing to distribution and tend to supply most of the retail market. Small processors typically deliver to food service institutions or small/local retailers.

Compliance of COOL legislation will not be overly difficult for this segment of the supply chain although some additional costs are certain to occur. Large processors already have origin documentation of imported fish (US Customs invoice and label on the shipping box). Domestic fish typically is delivered to the processor in large containers (about 1,000 pounds each) and then processed and boxed into smaller containers. The processors will need to collect documentation from the producer, reconfigure its labels or boxes to note that the fish is a US product, and store the necessary documentation so that other parties in the supply chain can verify the origin information and pass it up the supply chain. Overall, processors will need to connect mostly existing pieces of information into a reporting system (paper or electronic).

It is important to note that large processors already have some type of scanning or tracking technology in place, thus implementation of COOL will not be excessively costly.

Compliance Costs

At the processor/wholesaler level, labeling will be required for approximately 2.9 billion pounds of fresh and frozen fish and seafood. Once again, adjustments were made to discount for processed seafood (e.g., canned tuna) but not for foodservice demand because end point destination of the covered products (retail or food service) will likely be unknown at this point in time so full accounting of all volumes will be needed. Seafood wholesalers that supply both the food service and retail sectors are not likely to segregate retail products for COOL compliance; thus, origin compliance will apply to the larger volume for wholesalers than retailers (2.9 vs. 1.0 billion pounds).

The overall cost of implementing a COOL reporting system and maintaining/storing country of origin information for this segment of the supply chain is estimated to be **\$15 million** or about 0.5 cents per pound. As noted earlier, wholesalers, especially the larger ones, already have a process to identify

several attributes of each fish shipment and will only need to pass incremental origin information to the retailer. They will need to keep a auditable record, however, which adds cost to the system.

Producer (Wild Catch and Aquaculture)

For wild-catch fish, the documentation required is minimal; the flag of the fishing vessel indicates the origin of the fish. Processors and wholesalers will only need to verify the countries that issue the vessel's fishing license. So, there is no apparent hurdle with compliance.

If a foreign flagged vessel harvests fish in US waters, then it will need to show to the processor/wholesaler documentation, (i.e., a fishing license), to qualify the fish for US origin.

However, aquaculture producers need to provide documentation that the fish were hatched and harvested in the US. This will require producers to implement a record-keeping system and maintain/store the necessary documentation.

Compliance Costs

Most fishing vessels and fish farms will need to comply with COOL. At the production stage, it is difficult to segregate foodservice from retail. Currently, the documentation that is passed on from the fishing vessel to the processor/wholesaler already has country-of-origin information, thus there will not be an apparent added cost to fisherman/fishing vessels. (Small intermediaries may have to maintain additional documentation to ensure large wholesalers the origin of the fish.)

The cost for aquaculture producers (2,100 food fish farms in 1997) is estimated to be **\$1.1 million**. This cost is mostly for record-keeping purposes.

Industry Cost Evaluation

The combined cost to the seafood industry is estimated to range from **\$66-86 million**. Table 6 below provides a summary of these costs by supply chain segment. Based on per capita fresh and frozen fish and seafood consumption in the US of 10.3 pounds of which approximately one third is sold through retail, the cost per pound for retail sales are estimated to be 6.6 to 8.6 cents (based on US per capita consumption of fresh and frozen fish was 10.5 pounds/person).

Table 6

Fish/Seafood COOL Cost Summary

	Cents/ Lb.	Segment Cost (Million \$)	Calculation Process
Producer: Wild Catch and Aquaculture		\$1.0	Minimal Cost for Wild Catch; Book Keeping Cost for 2100 Aquaculture Farms
Processor/Wholesaler	0.5	\$15.0	2.9 billion pounds
Retail Distribution	2-3	\$20-30	1.0 billion pounds

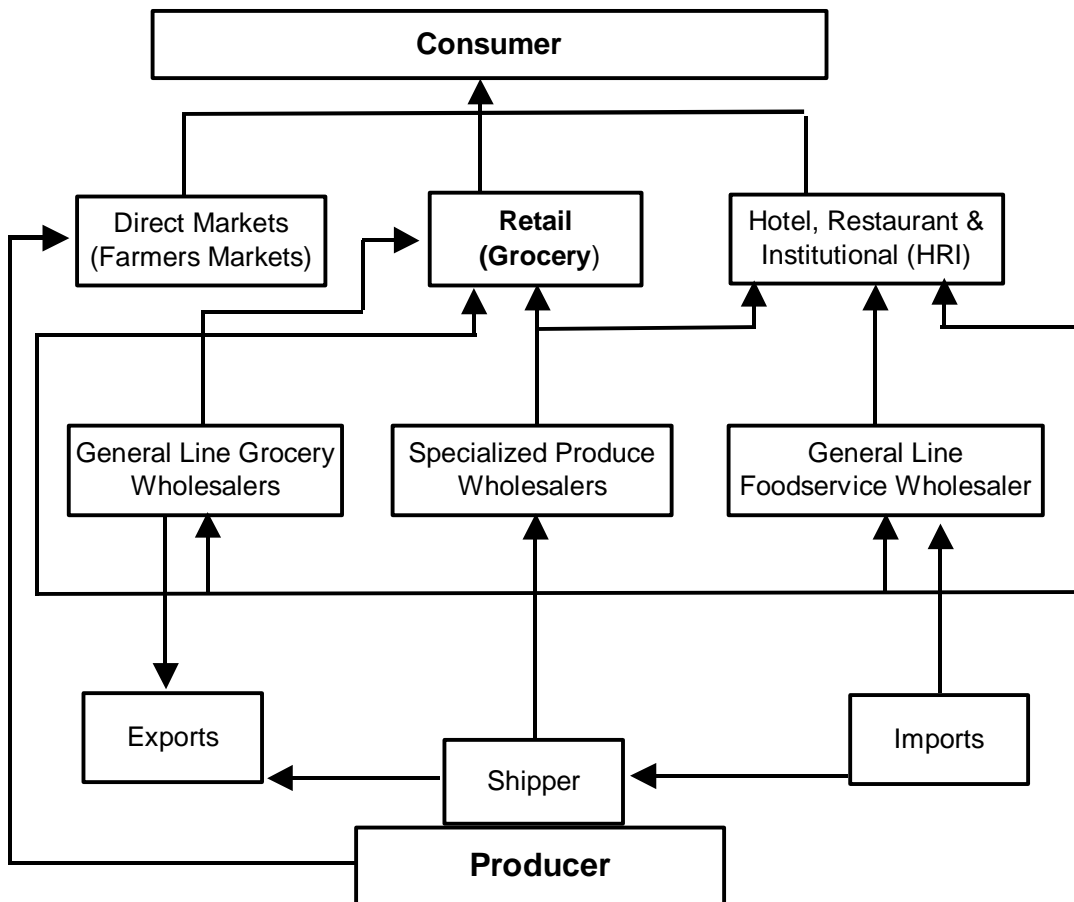
Retail Store	3-4	\$30-40	1.0 billion pounds
TOTAL COST	5-7.5	\$66-86	6.6-8.6 cents per pound sold

Produce Supply Chain

The US consumer eats over 700lbs. per capita (farm weight) of produce on an annual basis comprised of 280 lbs. of fruits and 428 lbs. of vegetables. Fresh produce constitutes about 47% or 328 lbs. of consumption; frozen makes up another 11-12% of consumption or about 84 lbs. while the remaining consists of canned, dried and processed products. It is estimated that roughly half of all produce is bought from retail stores while the remaining is consumed in food service establishments. The flow chart in Figure 4 provides a simple depiction of the flow of produce from the primary producer to the consumer.

Figure 4

COOL PROCESS SCHEMATIC - PRODUCE



The COOL legislative requirements for fruits and vegetables stipulates the following:

- The Perishable Agricultural Commodities Act (PACA) defines perishable agricultural commodities as fresh fruits and vegetables of every kind and character, whether frozen or packed in ice. Therefore, frozen fruits and vegetables (e.g., a package of frozen strawberries, or frozen French fried potatoes made from sliced potatoes) are covered commodities and fall under the country of origin labeling guidelines.
- To maintain consistency with PACA, a frozen fruit or vegetable will be a covered commodity so long as its “kind or character” has not been altered. Therefore, for all perishable agricultural commodities, an “ingredient in a processed food item” is defined to mean an otherwise covered commodity that is a constituent in a food item where the identity of the food item is different from that of the covered commodity (e.g., a frozen prepared pie that includes frozen sliced apples) or is included in a package with significant other foods (e.g., a frozen entree consisting of a pre-cooked meat item and frozen vegetables). Alternatively, when a perishable agricultural commodity is processed (i.e., frozen so as to remain subject to the PACA) and packaged with only preservatives, seasoning, sweeteners or other minor ingredients, the covered commodity would fall under the voluntary country of origin labeling guidelines.

The produce supply chain has the following characteristics that will enable COOL implementation to be a somewhat less troublesome and costly process than for other agricultural sectors; at least up to the point of retail distribution.

- At the retail counter, a significant share of vegetables and especially fruits already display the country of origin individually (e.g., bananas, melons) or in a batch (e.g., apples, citrus). Thus, COOL identification and costs are, in some cases already accounted for at the retail level.
- Prepackaged produce (e.g., strawberries, lettuce, mushrooms, potatoes) in many cases do indicate an origin of the products. If not, the country of origin label can be attached to the existing label/package.
- Imported and most domestic produce is packaged in cartons (batches) that display country of origin. A bill of landing, which typically accompanies produce shipments, also provides country of origin information.
- Because the production of fresh produce is highly integrated with the harvesting, packing and shipping systems, COOL implementation for many primary producers will not be problematic and the potential for commingling of US and foreign origin products is relatively minor.

Compliance will be most troublesome for processed produce that is packaged with only preservatives, seasonings, sweeteners or other minor ingredients and hence, retains its covered product status. Such products will require some level of segregation in the processing facility or specifications that prohibit the use of imported product in blended types of processing (bagged mixed salads or mixed frozen vegetables).

Retail Distribution/Retail Store

The magnitude of costs at the retail distribution and retail store level will depend on factors including the extent to which current labeling practices will need to change for COOL compliance. At the retail distribution facility, there has been a proliferation of product categories in recent years that include more and more specialized fruits and vegetables from foreign countries on a rather continuous basis. In addition, the large seasonal swings in the supplier base that includes locally produced product (when available) and foreign produced substitutes (when local is not in season) adds another layer of complexity to the process of accurately identifying and tracking multiple product categories on an ongoing basis. It is expected that this complexity will require full scale scanning in and scanning out of all produce products to both capture the origin identity of the product and then to make sure that this identity is preserved out to the retail store level.

With the COOL requirement, retailers will most likely need to increase their display counters to segregate produce, or at minimum, to just provide a reasonable method of informing consumers about the origin of the product. For example, avocados from California and Mexico currently are mixed in the same display basket, but in most cases, each has a sticker identifying country of origin. The store will need to monitor and account for these origin differences to be fully in compliance with the guidelines as they are currently written.

The burden of origin of labeling compliance, for most packaged produce, will already have been absorbed by the supply chain prior to this products introduction to the retail distribution facility. Most of these products are already identified, individually or by batches, by the country of origin. The costs that retailers are likely to incur are related to implementing a formal tracking and record-keeping system and in some cases, labeling some produce/display counters.

Compliance Costs

The volume of fresh and frozen fruits and vegetables that qualify as covered products at the retail level are estimated at roughly 60 billion pounds (farm weight equivalent) and probably closer to 50 billion pounds on a retail weight basis. Based on assessments of the costs that will be incurred in the retail distribution facility of 1-2 cents per pound and another 2-4 cents per pound at the retail store level, the per pound compliance cost for this segment of the supply chain is enormous ranging from 3 to 6 cents per pound. Based on estimated volume movements, calculations would suggest a cost ranging from **\$1.5 to \$3.0 billion** given the massive quantity of produce that transacts through the retail food sector.

Wholesaler/Distributor

There are about 6,000 wholesalers and 600 broker/agents³ for fruits and vegetables. Some fresh produce sales occur directly between producer and consumer via farm stands and stores, pick-your-own operations, roadside stands or farmers' markets. (Direct markets constitute only about 1.5% of the combined retail and foodservice value for produce.)

³ The US Census of Wholesale Trade (1997) found 6,121 wholesaler and 689 agents of fruits and vegetables. Relative to the previous census in 1992, the number of these intermediaries has declined.

Wholesalers buy produce, in bulk or packaged, from growers, shippers and importers. There are three general types of wholesalers: (i) general line grocery wholesalers (e.g., Supervalu), (ii) general line foodservice wholesalers (e.g., Sysco) and (iii) specialized produce wholesalers (e.g., Standard Produce). Specialized wholesalers handle approximately 70% of the produce value.

Compliance Costs

Only general line grocery and specialized produce wholesalers would need to identify country of origin to maintain proper records. The volume of fruits and vegetables that these wholesalers handle is estimated at 99 billion pounds (farm weight equivalent). Note that general line grocery wholesalers also deliver to foodservice establishments, but they are not likely to segregate produce for retail or foodservice only. This volume includes all fresh and frozen produce only marketed through retail channels. Compliance costs to provide documentation and origin labeling for the retail store customer base are estimated at around **\$34 million or about 66cts/ton.**

Producer

After being harvested, fresh produce is handled and packed either by a shipper or by the grower. For example, bulk lettuce is often washed and packaged in the field. Grapes are pre-cooled and shipped. Potatoes are stored, packed, shipped and often repacked near the points of harvest.

Compliance Costs

There are approximately 100,000 farms classified as either a fruit or vegetable farm. Under COOL, these producers have to provide documentation to the wholesaler or retailer that the produce is imported or of US origin. These processes are estimated to cost produce farmers approximately **\$20 million.**

Industry Cost Evaluation

Table 7 provides a summary of the costs associated with implementation of the proposed COOL requirements for the produce industry. Most of the costs of implementation will occur at the retail distribution and retail store basis as this is the segment of the supply chain where the burden of detailed tracking and segregation of product will need to take place.

Table 7
Produce COOL Cost Summary

	Cents/Lb.	Segment Cost (Million \$)	Calculation Process
Producer/Grower	Small	\$20.0	Minimal Cost Mostly for Initial Identification and Book Keeping
Processor/Wholesaler	Small	\$34.0	Primarily Book Keeping
Retail Distribution	1-2	\$500-1000	50.0 billion pounds handled
Retail Store	2-4	\$1000-2000	50.0 billion pounds sold
TOTAL COST	3-6	\$1,554-3,054	

- The combined cost to the produce industry is estimated to be **\$1.55 to \$3.05 billion** and we would point out that several industry contacts suggest that this is a very conservative estimate.
- Most of the cost for the produce industry will occur at the retail distribution and retail store level.