

***AGRIBUSINESS
IN THE
LOUISVILLE AREA ECONOMY***

a report for

***The Agribusiness Committee
Louisville Area Chamber of Commerce***

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by

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EXECUTIVE SUMMARY

Agribusiness is one of the most important parts of the Louisville area economy. Depending upon how broadly one defines the sector, agribusiness accounts for between ten and twenty percent of economic activity in the metro area. Narrowly defined, we estimate that Louisville area agribusiness accounts for over 35,000 jobs, \$1 billion in personal income, \$6 billion in output, and \$100 million in tax revenues for state and local governments. About sixty percent of the agribusiness activity in Louisville is generated by food, beverage, and tobacco processors.

There is no unique definition of agribusiness. For purposes of this study, we define agribusiness to include farming, landscaping, and other agricultural products and services; manufacturing of food, beverages, tobacco, textiles, apparel, wood, and paper products; wholesaling of farm supplies, farm products, and manufactured food and fiber products; hotel and restaurant activity due to agribusiness trade shows; and racing.

Some studies have included grocery stores, all restaurant activity, and lawn equipment, among others, as part of agribusiness. These activities seem to fit more naturally under other industrial categories. Restaurants, for example, purchase food from wholesalers and then add value by providing a service - cooking, serving, cleaning - to consumers. Similarly, groceries purchase food from wholesalers and then add value by breaking down, displaying, pricing, and re-packaging items for consumers. These retailing and service activities are far enough downstream from food and fiber production that they are typically thought of as a separate industry. They are more labor-intensive, less technical, more consumer-oriented, and have their own trade associations to address industry-specific issues.

We have primarily used our input-output model to estimate the amount of agribusiness activity in the Louisville metro area. The model provides estimates of sales, purchases, employment, and payroll for each of 500 local industries. It represents our economy by measuring how much each industry purchases from every other industry, as well as labor requirements, imports, and exports. The accompanying chart summarizes the model's estimates of wages, salaries, and proprietors' income paid by Louisville agribusiness firms - perhaps the best single

measure of the importance of an industry. We estimate that agribusiness workers and business owners earned around \$1.1 billion in 1994. This is ten percent of all the earnings by workers in the Louisville economy.

In this report, we present and analyze the latest data on agribusiness activity in the Louisville metropolitan area. We examine farm production around the metro and aggregate revenues and expenditures for crops and livestock categories. We list the various food and fiber processors among Louisville area manufacturers, and estimate their economic activity. We estimate the number of jobs, the amount of income, and the volume of tax revenue generated by the agribusiness sector in the Louisville area economy.

Among the most important and interesting findings of the study are:

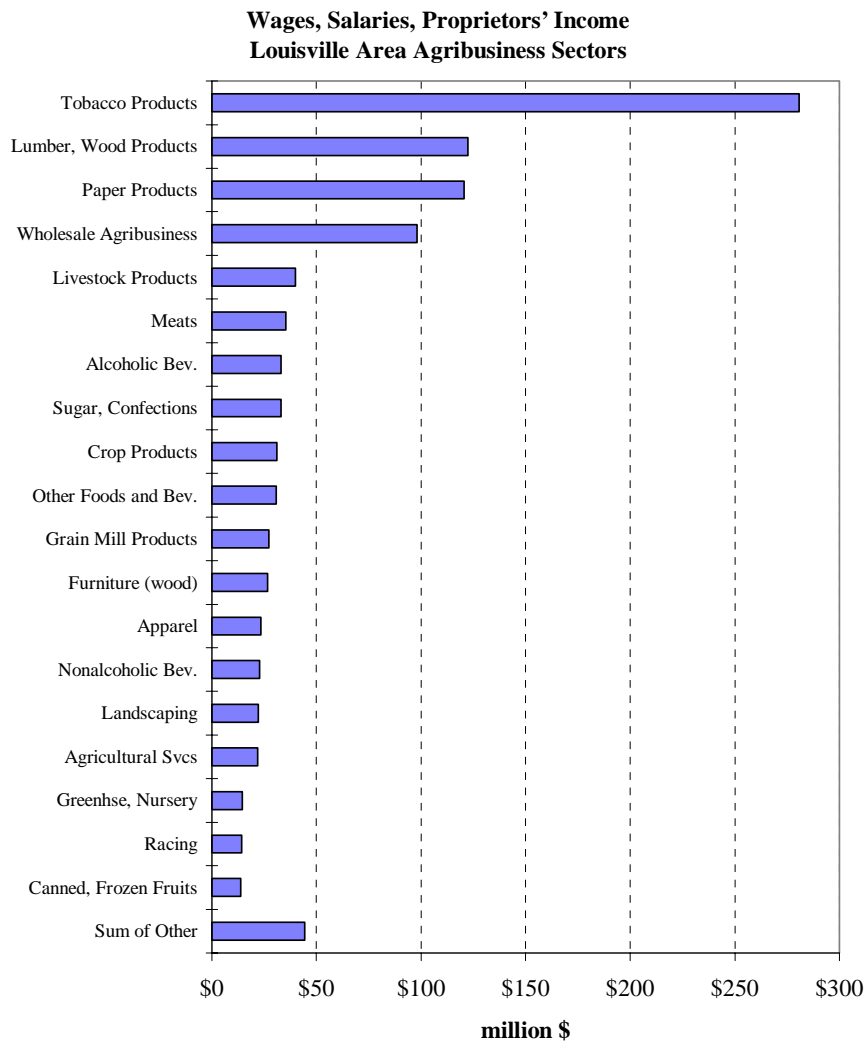
- Agribusiness, as defined fairly narrowly, directly accounts for around 8 percent of all jobs, 10 percent of payroll, and 14 percent of the value of output of firms in the Louisville metro economy. If the definition is expanded to include all the local upstream and downstream linkages, agribusiness's share of Louisville's economic activity rises to between 15 and 20 percent.
- There are over 300 firms in the area primarily engaged in the production of food and fiber products. These firms account for over one-fourth of all manufacturing payrolls in the Louisville metro area.
- All large metro areas have an agribusiness manufacturing presence, typically including basic meat, dairy, nonalcoholic beverages, bakeries, and other perishable foodstuffs that are best prepared near the ultimate consumers. The Louisville market has an above average presence in most of these agribusiness categories, as well as a relatively high concentration of tobacco, lumber and wood products, and alcoholic beverages.
- The largest manufacturing firms in Louisville's agribusiness complex are: Philip Morris, Brown Forman, The Apparel Group, Mother's Cookies, and Fischer Packing.

Executive Summary

- Agribusiness payrolls generate around \$100 million annually in income and sales taxes for state and local governments.
- Harrison County, Indiana has the largest concentration of full-time farmers in the Louisville Metropolitan Statistical Area (MSA). In fact, due to the flatter terrain and less urbanized land, the four Indiana counties (Clark, Floyd, Harrison, and Scott) together have approximately ten times the corn and soybean production as does the aggregate of the three Kentucky counties (Bullitt, Jefferson, and Oldham) of the Louisville MSA. Shelby County, Kentucky - dropped from the official MSA definition in 1992 - has fifty percent more farmers than does Harrison County.
- Including Shelby County, Louisville area farmers sell over \$225 million in crop and livestock products annually. Major farm revenue sources include grains, tobacco, greenhouse and nursery

products, cattle, calves, horses, dairy products, hogs and pigs. Shelby, Bullitt, Oldham, Harrison, and Clark counties lead the list of tobacco producers.

- Louisville area households spend around \$1 billion annually on food to be consumed at home, and over \$600 million on food away from home. They also purchase around \$144 million in alcoholic beverages, over \$100 million in tobacco products, and about \$650 million for clothing.
- Several paper products sectors turned up as potential targets for industry expansion in our scan of imported agribusiness products. Our input-output model estimates that about \$115 million of the \$300 million in local demand for paper products is met by firms outside our region. Paperboard shipping containers and coated paper products account for the largest unmet local demand.



Source: Louisville Area Input-Output Model; estimates refer to 1994.

DEFINITION OF AGRIBUSINESS

There is no unique definition of agribusiness. Most dictionaries and encyclopedias do not even have an entry for the term. A recent reference, the *Microsoft Bookshelf Encyclopedia 1995*, has this entry:

Agribusiness. Farming engaged in as a large-scale business operation embracing the production, processing, and distribution of agricultural products and the manufacturing of farm machinery, equipment and supplies.

The term itself has been around for at least thirty years, presumably coined in a 1957 book, *A Concept of Agribusiness*, by Professors John Davis and Raymond Goldberg of the Harvard Business School. They used the term agribusiness to convey “all the business that supports the delivery of food, clothing and shoes, tobacco, flowers, and agricultural exports to their final consumers”.

While everyone has a similar rough notion of what is encompassed by agribusiness, few seem to agree on the details. We have examined recent agribusiness studies for the US, Cincinnati and the State of Virginia. While all careful and interesting studies, they each include different sets of activity under the rubric agribusiness. The Cincinnati study, for example, includes the entire local production of conveyors as part of agribusiness while the US study counts only the 3 percent of conveyor production required to support US food and fiber demand. The Virginia study excludes the entire wood products industry, though it includes vineyards, aquaculture and Christmas trees.

Given the well-known problems of classifying economic activity into industrial categories, the breadth of activities related to food and fiber production and consumption, as well as differences in foci among study sponsors, it is unsurprising that no consistent definition has emerged. All that one can expect is that for each study the scope be clearly defined and the data be clearly presented. Then users of the study can add and subtract components to fit their needs and definitions. The benefit of these studies, then, is largely to organize economic information for business communication, public education, and economic policy.

In the Louisville study, we are primarily interested in two things. First, we want to measure the volume of economic activity in some way related to the food and fiber sector in the Louisville economy. This allows us to make credible detailed statements about the size and importance of agribusiness, thereby galvanizing the energy of business and civic leaders to improve the climate for growth in this sector. Second, we want to measure and understand the linkages of agribusiness to the rest of the economy. This helps us determine which sectors generate the most bang for the buck in our economic development efforts locally.

We have an excellent tool available to dissect the Louisville economy into its agribusiness and non-agribusiness components, as well as for performing target industry analysis. The Louisville metro area input-output model provides estimates of how much each of 513 industrial sectors produce, purchase from each other, sell to local households, and export to other regions. The tool has limitations, however, as the subsequent discussion will show. Primarily, the limitations have to do with industrial definitions. Firms classified as producing wooden chairs, for example, may also produce metal and plastic chairs. Alternatively, movie theaters sell food. There is no way to fully resolve these measurement problems. We have waded into the data, organized and presented it as clearly as possible, and have tried to make good judgments about classifying economic activity into the agribusiness sector.

Most of the sectors included in our definition of agribusiness would pass anyone’s common sense test. Industries like feed grain production, meat packing, milk production, and fertilizer production are close to the center of conventional farming and food preparation activities. Other industries, like plywood, textiles, and cardboard boxes, have a strong agribusiness flavor though are not considered as central as the first group by most people. Still other activities, like agriculture-related trade shows and horse racing, are inexorably linked to farming, though they are counted officially in recreational services, hotel, and restaurant industries - not in the central agribusiness sectors. Finally, downstream operations like food transportation, warehousing, and retail

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groceries are important parts of the food and fiber network, though each layer adds a value that is more accurately counted as part of its own industry.

We have chosen to include in our agribusiness definition all of the economic activity of the main food and fiber production industries and a share of the activity of the related industries. We estimate the agribusiness component of industries, like restaurants, trade shows, and wholesaling, and include these as part of agribusiness. Then we estimate how agribusiness is related to the rest of the economy. A listing of component industries, their Standard Industrial Classification (SIC) codes, and their economic activity is provided in Appendix A.

The long table included in Appendix A lists about 500 industrial sectors. These are the industrial categories used by the US Bureau of Economic Analysis (BEA) in building the national input-output tables - the primary tool for studies like this. The first column lists the sector number for our Louisville area version of the national input-output model. The second column lists the BEA code number for each sector. And the fourth column lists the Standard Industrial Classification (SIC) codes for the detailed industries included in each sector.

In the fifth column we have duplicated USDA's estimates of the proportion of each sector's output that is required to meet the national demand for food and fiber. (Measuring the Economywide Effects of the Farm Sector, 1995) The reader will have to consult the USDA bulletin to fully understand the methodology and the interpretation. We include them here to illuminate the degree of integration among industries required to produce and deliver food, clothing, and tobacco products for consumers. Note, for example, that only 82 percent of dairy output nationally is used to satisfy food and fiber demand. The other 18 percent of dairy production is required for "adhesives, drugs, and paints". On the other hand, 72 percent of sector 410202, crowns and closures, is used to satisfy food and fiber demand. This is the sector that makes bottle caps and other container closures required by beverage and food processors.

The final column of the table in Appendix A denotes which sectors we have included under agribusiness for purposes of this study. Rather than use the USDA approach, we have chosen in most cases to assume either all or none of an industrial sector. The entire industry is counted under agribusiness if it is primarily involved in producing or

processing raw food and fiber products, or if it primarily sells its output to farmers or food and fiber-related manufacturers.

In a few important cases, we have attempted to separate a sector's output into its agribusiness and other component. Input-output models include only two categories for Wholesale Trade: durables (432) and nondurables (433). Much greater detail is available from the 1992 Census of Wholesale Trade, and several subsectors are clearly related to agribusiness. Lumber and wood products account for approximately six percent of the value of wholesale durable goods in Louisville. And paper products, apparel, groceries, farm raw materials, and farm supplies account for about 36 percent of the value of wholesale nondurable goods in the Louisville. We have used these shares to allocate wholesale trade activity into its agribusiness and other components.

Louisville's Kentucky Fair and Exposition Center (KFEC) each year hosts several of the largest agriculture-related trade shows in the US. The KFEC has the sixth largest indoor exhibit area in the country. The exhibit space is of high quality, is reasonably priced, and has ample surface parking. Louisville's central location and easy access is another asset. Louisville is served by three interstate highways, and the KFEC is located adjacent to Louisville's airport. Furthermore, the Louisville area has around 12,000 hotel rooms, most modestly priced. For all of these reasons, large, space-intensive trade shows have long been an export industry for the Louisville economy.

A fairly detailed economic analysis of KFEC events in 1992 was performed for the Kentucky State Fair Board. (The Economic Impact of 1992 Events at The Kentucky Fair and Exposition Center and Commonwealth Convention Center). At least eight of the fifty trade shows hosted by KFEC in 1992 might be properly classified as agriculture-related. Moreover, three of the largest and most important trade shows are farm-related. The National Farm Machinery Show, held each February, attracts around 20,000 nonresident attendees and 7,000 exhibitors. The North American Livestock Expo, held in December, attracts around 25,000 nonresident attendees and 7,500 exhibitors. The Arabian Horse Show, held every other October, attracts around 9,500 nonresident attendees. These three events alone account for perhaps one-half of

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the hotel room, restaurant, and other hospitality-related revenues from trade shows in the Louisville market each year.

Incorporating the agribusiness trade show activity into our economic estimates is not a straightforward task. There is no SIC code for trade shows, and hence no economic census estimates of the volume of sales, payroll or employment related to the shows. Rather, one must try to track the attendee and exhibitor spending associated with the trade shows and break it out of official estimates of other industries, like hotels and restaurants.

We have made an estimate of the fraction of hotel (448) and restaurant (469) activity in Louisville that is attributable to agribusiness trade shows. We rely upon the 1992 study of the economic impact of the Kentucky Fair and Exposition Center. The study estimated that eight agribusiness trade shows generated \$10.8 million in hotel sales and \$13.2 million in restaurant sales that year. This amounts to 7.7% of the \$141 million in hotel sales and 1.5% of the \$868 million in restaurant sales in the Louisville market in 1992.

We counted the entire racing industry (478) as part of agribusiness even though the sector includes automobile, as well as horseback, racing in the Louisville economy. The 1992 Census of Service Industries lists 12 racing establishments (SIC 7948)

in the Louisville area, but does not provide breakouts for horse and auto racing. We assume that most of economic activity in this sector is generated by Churchill Downs.

The reader may wonder where certain familiar farm-related activities are included under our definition. For example, the Louisville area has several dozen stores that sell fertilizers, pesticides, feed, seed, and other farm inputs, as well as rents spraying and other equipment to local farmers. The sales by these stores are counted under wholesale trade (SIC 5191) even though we normally think of them as retail stores. In our study, these sales are captured under the agribusiness portion of wholesale trade. Nationally, there were \$54 billion in sales of wholesale farm supplies in 1992. Half were through "farm dealers", half were through "wholesale distributors. There is no retail classification for farm supplies. However, if a "farm store" also sells general lawn and garden supplies and equipment, and if those sales are greater than sales of farm supplies, the activity is counted under "Retail Nurseries, Lawn and Garden Supply Store" (SIC 526).

Firms, such as the Kentucky Artificial Breeders Association, that buy and sell specialty agricultural products are counted under "Agricultural Services", SIC 07.

Agribusiness Trade Shows & Conventions in Louisville Market, 1992

	Nonresident Exhibitors and Attendees	Hotel Expenditures	Restaurant Expenditures
National Farm Machinery Show	26,881	\$3,328,503	\$4,115,481
Kentucky National Beef Exp	900	\$92,254	\$55,116
Sysco Food Expo	425	\$23,386	\$26,027
Kentucky National Dairy Show	220	\$15,116	\$20,209
International Polled Herefords	600	\$55,095	\$36,744
State Fair 4-H Horse Show	2,000	\$220,379	\$306,200
Kentucky Grocers	1,200	\$89,034	\$110,232
World Championship Horse Show (State Fair)	7,438	\$1,499,775	\$1,822,012
State Fair Quarter Horse Show	3,150	\$272,210	\$385,812
Simmental Breeders	700	\$75,470	\$42,868
All American Angus Breeders Show	1,098	\$159,293	\$201,725
Kentucky Restaurant Association	175	\$10,550	\$16,076
Clark Food Show	220	\$15,293	\$13,473
Dairy Mart	160	\$11,324	\$9,798
Arabian Horse Show	9,500	\$1,616,100	\$2,036,230
North American International Livestock Expo	32,500	\$3,333,934	\$3,980,600
Total	87,167	\$10,817,716	\$13,178,603

Source: "The Economic Impact of 1992 Events at The Kentucky Fair and Exposition Center and Commonwealth Convention Center", for Kentucky State Fair Board, by University of Louisville, Paul Coomes and Bruce Gale, August 1993.

SUMMARY OF ESTIMATES OF LOUISVILLE AREA AGRIBUSINESS ACTIVITY

Summary of Estimates

We have used our Louisville area input-output model to produce estimates of agribusiness activity in the local economy. The model has great detail, providing estimates for each of 500 local industries. It describes how much each industry must buy from all other industries to meet the local and export demand for their product or service. It computes the jobs required for each industry, as well as the payroll generated for local workers. We have summarized the estimates in the accompanying table and have provided details in Appendix B.

Highlights from our input-output analysis include:

- Agribusiness directly accounts for over 35,000 jobs in the Louisville area economy, nearly eight percent of all jobs.
- Agribusiness in Louisville directly generates over \$1 billion in earnings to area workers and proprietors, nearly ten percent of the MSA total.
- Tobacco processing is the single largest industrial category, accounting for about one-fourth of local agribusiness payroll, one-fifth of agribusiness jobs, and (due partly to the high excise taxes) about one-half of the total value of product shipments.
- Agricultural services, landscaping, greenhouses, and nurseries together account for more area jobs than traditional farming activities. However, livestock and crop production generate more sales and income for farm owners and workers than the more urban horticultural activities.
- Louisville's meat processing industry is the largest single employment category in the food and beverage sector. It is followed by baked goods,

alcoholic beverages, and nonalcoholic beverages. In terms of the value of shipments, alcoholic beverages is the largest category.

- The lumber and wood products category is a relatively prominent source of local jobs and income. The Louisville area includes many small producers of veneer, plywood, cabinets, flooring, furniture, barrels, and pallets. The industry employs over 4,700 persons and generates over \$120 million in annual payroll.
- The paper products industry in Louisville includes major producers of cardboard boxes, paper bags, and other paper-based containers. The industry has nearly 2,800 local employees and a combined annual payroll of over \$120 million.
- Since the loss of the large International Harvester plant fifteen years ago, Louisville has not been a major center for the production of farm machinery. And, according to our input-output model and other sources, only minor amounts of fertilizer are produced. Based on the data we have been able to examine, it appears that our area plays a minor role in supplying physical inputs to agriculture. Louisville area firms do supply around \$30 million worth of finance, insurance, and other business services to area farmers, however.

Of the 500 industries accounted for in our model, 138 are directly related to food and fiber production. These include 22 agricultural industries, 44 food and beverage categories, 4 tobacco products, 10 textile and 15 apparel categories, 14 lumber and wood products, 11 paper products, and 18 other manufacturing classifications. We have aggregated over general categories and organized the summary information in the accompanying table. The estimates refer to the year 1994.

Summary of Estimates of Louisville Area Agribusiness Activity

The summary table provides estimates of direct agribusiness activity - by those industries that directly produce or process food and fiber, or that supply machinery or fertilizer to farms. This is only a fraction of the economic activity related in some way

to the consumption of food and fiber products. We have used our input-output model to also measure the indirect agribusiness activity - sales by firms up-stream or downstream from agribusiness proper.

Summary of Estimates of Direct Agribusiness Activity Louisville MSA Economy

	Employment	Wage, Salary, and Proprietor Payments to L'ville Residents	Total Value-Added by L'ville Firms	Total Value of Output
Agriculture				
<i>million dollars</i>				
Livestock Products	1,557	\$39.9	\$42.2	\$227.0
Crop Products	436	\$31.1	\$38.7	\$78.9
Forestry, Fishing, Hunting	543	\$0.1	\$1.2	\$2.0
Greenhouse and Nursery Products	628	\$14.6	\$15.4	\$30.6
Agricultural Services	1,934	\$21.9	\$23.1	\$53.1
Landscaping	1,768	\$22.3	\$23.5	\$34.7
Subtotal: Agriculture	6,867	\$129.9	\$144.2	\$426.3
Manufacturing				
Meats	2,062	\$35.5	\$37.5	\$347.9
Dairy	292	\$6.8	\$9.0	\$43.6
Canned and Frozen Fruits	641	\$13.7	\$19.1	\$58.3
Grain Mill Products	997	\$27.2	\$34.3	\$106.3
Sugar and Confections	1,443	\$33.0	\$37.4	\$75.7
Beverages: alcoholic	1,127	\$33.1	\$303.8	\$418.6
Beverages: nonalcoholic	1,017	\$22.9	\$24.2	\$77.5
Oils and Extracts	198	\$5.6	\$10.5	\$70.6
Other Foods and Beverages	1,423	\$30.9	\$42.5	\$119.1
Subtotal: Food and Beverages	9,199	\$208.6	\$518.3	\$1,317.7
Tobacco	4,361	\$280.7	\$1,416.8	\$2,339.1
Textiles	139	\$8.7	\$21.0	\$85.1
Apparel	1,551	\$23.5	\$27.1	\$79.0
Lumber and Wood	4,714	\$122.4	\$181.8	\$493.0
Furniture (wood)	1,326	\$26.6	\$29.8	\$72.7
Paper Products	2,778	\$120.5	\$236.6	\$722.6
Fertilizers	148	\$4.4	\$9.6	\$34.1
Leather	64	\$1.7	\$2.5	\$7.9
Farm Machinery, Equipment	157	\$5.6	\$8.8	\$18.8
Subtotal: Agribusiness Manufacturing	24,436	\$802.6	\$2,452.3	\$5,170.0
Share of All Louisville Manufacturing	30.1%	26.5%	41.0%	31.1%
Wholesale Trade of Farm Supplies, Food and Fiber Products	2,111	\$98.1	\$246.4	\$420.2
Retail: Agribusiness Trade Show Portion of Restaurants, Hotels	302	\$11.6	\$18.0	\$27.3
Racing	1,359	\$14.3	\$20.9	\$33.9
Total: Agribusiness	35,076	\$1,056.4	\$2,881.8	\$6,077.8
All MSA Industries	465,671	\$10,723.4	\$23,540.0	\$44,851.6
Agribusiness's share of MSA activity	7.5%	9.9%	12.2%	13.6%

Estimates from Louisville area input-output model: PCIO, Version 6.02.

Summary of Estimates of Louisville Area Agribusiness Activity

The estimates of indirect sales are provided in Appendix B, entitled Input-Output Transactions, Louisville Metro Economy, 1994. One can read across a row to determine how much each sector sells to any other sector. Read down a column to determine how much a sector buys from other sectors.

“Upstream” refers to the goods and services *purchased by* agribusiness firms, the raw materials that agribusiness firms add value to. Estimates of agribusiness purchases are provided in the first eleven columns of the table. Agribusiness firms purchase over \$866 million of goods and services from other Louisville area firms. For example, agribusiness producers purchase around \$54 million in trucking and other transportation services, and around \$100 million in banking, insurance and real estate products.

“Downstream” refers to the *sales of* agribusiness products to firms in other industries, firms that add further value before the products are ultimately consumed by households in Louisville and around the world. Estimates of agribusiness sales to other local firms are provided in the first eleven rows of the table. Agribusiness firms sell around \$380 million in products to other Louisville area firms. For example, restaurants and other local retailers in Louisville purchase around \$80 million in food, beverages, paper and other products from Louisville agribusiness firms.

As another check of our local estimates, we computed an alternative set of estimates of agribusiness activity in Louisville using a variant of a method suggested by USDA. This method, recommended by USDA for quick estimates of local agribusiness activity, includes industrial categories “that have 50 percent or more of their national workforce employed in providing goods and services necessary to satisfy domestic final demands of agricultural products. Industries that employ 32-50 percent of their national workforce in such endeav-

ors are classified as indirect agribusiness”. Our estimates are found in Appendix C. The method generates an estimate of direct agribusiness in Louisville that is lower than those in the table above. However, because groceries, restaurants and many other retail categories are counted in “peripherally related industries”, the USDA method yields much higher estimates in its broader definition of agribusiness.

Tax Revenues from Agribusiness Payrolls

The agribusiness sector is an important part of the Louisville and Kentucky tax base. Farmers and food and fiber manufacturers pay income taxes on their profits, and property taxes on their real estate and tangible personal property. Workers and owners pay state and local income taxes on their earnings, sales taxes on their purchases, as well as property taxes on their homes, cars, and other assets. While we do not have data on the property owned by firms and persons associated with agribusiness activities, we can estimate the income-based taxes induced from their payrolls.

The annual direct agribusiness payroll of \$1.1 billion can be expected to directly generate over \$100 million in income and sales taxes for state and local governments. Using historical ratios of tax receipts to payrolls, we can provide some rough estimates of the annual tax revenues.

This figure should be considered a minimum starting point in the estimation of tax revenues generated from agribusiness activity. The calculation excludes the following prominent taxes: Kentucky corporate income taxes, Jefferson County net profits tax, Kentucky gasoline and other fuel sales taxes, Kentucky and local insurance premiums sales taxes, all state and local property taxes, as well as excise

Estimate of Taxes Generated by Agribusiness Activity in Louisville (\$ Million)

Local Government Occupational Taxes in Jefferson County	\$12
Jefferson County Public School Occupational Taxes	\$6
Transit Authority of River City Occupational Taxes	\$2
Kentucky State Individual Income Taxes	\$39
Kentucky State Sales Tax	\$36
Indiana State Individual Income Taxes	\$6
Indiana State Sales Taxes	\$3
Total	\$104

Summary of Estimates of Louisville Area Agribusiness Activity

taxes on tobacco and alcohol products. Our calculations also exclude the tax impact of any spin-off economic activity.

Demand for Food and Fiber Products by Louisville Area Households

Good national data are available on the consumption patterns of households. Detailed surveys of consumer expenditures are performed regularly, and national and regional consumer profiles are published. Given that Louisville residents have the same

average income as that for the US, and that we are located in the middle of the country, it is likely that area households have approximately the same consumption patterns as the average US household. Recent estimates are provided in the table below.

By this method, we estimate that Louisville area households purchase over \$1 billion in food and nonalcoholic beverages for home consumption annually. Counting restaurant meals, tobacco, alcohol, and apparel, area households spend around \$2.5 billion. These figures are estimates of retail sales, and hence reflect the full cost of production, processing, distribution, service, and marketing of food and fiber products for Louisville area households.

Food, Beverage, Tobacco, and Apparel Expenditures, 1992

	Average Food Expenditure per US Consumer Unit	Estimated Total Expenditure by Louisville Consumers
Cereals and Cereal Products	\$141	\$53,368,500
Bakery Products	\$270	\$102,195,000
Beef	\$210	\$79,485,000
Pork	\$156	\$59,046,000
Other Meats	\$94	\$35,579,000
Poultry	\$123	\$46,555,500
Fish and Seafood	\$77	\$29,144,500
Eggs	\$28	\$10,598,000
Fresh Milk and Cream	\$134	\$50,719,000
Other Dairy Products	\$168	\$63,588,000
Fresh Fruits	\$127	\$48,069,500
Fresh Vegetables	\$127	\$48,069,500
Processed Fruits	\$100	\$37,850,000
Processed Vegetables	\$74	\$28,009,000
Other Food and Beverages at Home	\$814	\$308,099,000
All Food at Home	\$2,643	\$1,000,375,500
Food Away from Home	\$1,631	\$617,333,500
Alcoholic Beverages	\$301	\$113,928,500
Tobacco Products	\$275	\$104,087,500
Apparel	\$1,710	\$647,235,000
Food, Beverages, Tobacco, Apparel	\$6,560	\$2,482,960,000

Source of US data: US Department of Commerce. "Statistical Abstract of the United States, 1994-95".

A consumer unit is defined as a person or persons sharing financial responsibility, e.g. a family. There were 100,019,000 consumer units, 253,667,000 residents, and 93,347,000 households in the US in 1992.

Calculations assume Louisville consumption per household is the same as the US; assume 378,500 Louisville area consumer units.

Industrial Targets for Expansion

A key question in economic development is “On which firms in what industries should we be focusing our recruitment efforts?”. Are there mobile and/or expanding firms around the US that could operate profitably in the Louisville area, provide new business for existing firms, and also fit in with community’s objectives like raising average annual earnings of area workers, or reinforcement of the local tax base? A study aimed at finding the most attractive firms for recruitment is called a target industry analysis.

There is no unique way to perform a target industry analysis. Indeed, a pure free market approach would suggest that such analysis is futile. All firms that find Louisville to be the most profitable area to operate are already here. Those that are not here have good market-based reasons for locating elsewhere. After all, who more than a firm’s owners has the most incentive to discover the most profitable location for their facilities? However, in a world where information is imperfect, where many communities may be close substitutes, and where tax laws, incentives and local business climates are changing, there may be opportunities for successful targeted industrial recruitment.

A natural target industry method suggests itself when an input-output model of an area’s economy is available. The method involves an examination of the volume of imported goods or services into the area’s economy, sector by sector, to determine local demands unmet by local supply. Local demand includes both household and industrial needs. We ranked all 500 sectors of our input-output model by the estimated volume of imports in 1994. The largest volume of imported agribusiness products are in the sectors listed in the next table.

There are good reasons why Louisville area firms and households import products from many of these sectors. The largest agribusiness import, \$282 million, is from the paper mill industry. The fourth largest import, \$191 million, is from paperboard mills. Due to their odor, these mills usually locate in sparsely populated areas. For example, there is a large paper mill down river in Hawesville, Kentucky. These plants require an ample water supply and cheap electricity, both available in the Louisville market. Yet, for environmental reasons, it is unlikely that our area will ever site a paper mill.

Other sectors with a large volume of imports that are unlikely candidates for industrial targeting include many for which our area could never hope to be competitive. Land-intensive industries, like meat animals, feed grains, logging, and dairy farms cannot compete for real estate in an urbanized area, and are most economically suited to the plains and mountain states. Similarly, most fruits and vegetables are grown hundreds of miles to the south and thousands of miles to the west. Their agricultural operations attract downstream processors, e.g., orange juice, frozen fruits, canned vegetables. A parallel story can be told for the fish industry.

Several textile and apparel sectors also made the list. Historically, Louisville has not been the home of many firms in these industries. Many textile and apparel products are imported from abroad. In the US, most factories are located in the south (Georgia, Carolinas) where wage rates are much lower than in Louisville and the more industrialized midwest.

There are other sectors in the list that cannot be eliminated so easily from consideration, however, and may deserve further investigation as target industry candidates. Three paper products sectors pass the above common sense test: coated paper products, paperboard containers, and sanitary paper products. Louisville is major manufacturer of consumer products and many of these products are shipped in corrugated boxes. Our area already has a number of paperboard container manufacturers. Our input-output model suggests that there is room for expansion in this industry.

Summary of Estimates of Louisville Area Agribusiness Activity

Target Industry Analysis Using Input-Output Model

Agribusiness Sectors Ranked by Volume of Imports (mil \$ of excess local demand)

Row	Sector	Sum of Final Demand in L'ville	Total Shipments out of L'ville	Total Import Purchases from Other Regions	Total Output of Industry in L'ville
168	PAPER MILLS, EXC. BUILDG PAPER	\$281.85	\$0.00	(\$281.85)	\$0.00
3	MEAT ANIMALS	\$270.20	\$60.74	(\$269.93)	\$61.01
131	APPAREL FROM PURCHASED MATLS.	\$223.36	\$35.11	(\$216.31)	\$42.16
169	PAPERBOARD MILLS	\$190.82	\$0.00	(\$190.82)	\$0.00
114	TOBACCO STEM & REDRYING	\$112.02	\$0.07	(\$112.02)	\$0.07
7	FEED GRAINS	\$79.17	\$42.41	(\$76.31)	\$45.27
140	LOGGING	\$82.31	(\$17.98)	(\$55.30)	\$9.03
172	PAPER COATED & LAMINATED	\$58.82	(\$2.51)	(\$50.32)	\$5.99
177	PAPERBOARD CONTAINERS & BOXES	\$216.49	\$307.74	(\$40.97)	\$483.26
10	FRUITS	\$40.67	\$2.00	(\$40.67)	\$2.00
68	SAUSAGES & OTH PREP MEATS	\$50.09	\$0.44	(\$40.54)	\$9.99
1	DAIRY FARM PRODUCTS	\$36.86	\$27.40	(\$36.20)	\$28.06
90	BREAD, CAKE, & RELATED PRODS.	\$58.43	(\$4.28)	(\$36.12)	\$18.03
115	BRDWOV FABRICS & FINISHING	\$64.28	\$55.59	(\$34.80)	\$85.07
146	VENEER & PLYWOOD	\$71.36	\$164.94	(\$34.66)	\$201.64
96	MALT LIQUORS	\$35.37	(\$0.46)	(\$34.28)	\$0.63
222	SHOES, EXCEPT RUBBER	\$33.19	\$0.00	(\$33.19)	\$0.00
67	MEAT PACKING PLANTS	\$136.54	\$214.08	(\$31.49)	\$319.13
71	CHEESE, NATURAL & PROCESSED	\$31.35	\$0.00	(\$31.35)	\$0.00
81	FROZEN FRUITS, JUICES, & VEGS.	\$31.11	\$0.00	(\$31.11)	\$0.00
77	CANNED FRUITS & VEGETABLES	\$26.84	\$0.00	(\$26.84)	\$0.00
171	SANITARY PAPER PRODUCTS	\$26.03	\$0.00	(\$26.03)	\$0.00
127	KNIT OUTERWEAR MILLS	\$21.23	\$0.00	(\$21.23)	\$0.00
83	FLOUR & OTHER GRAIN MILL PROD.	\$21.19	(\$1.05)	(\$19.36)	\$0.78
141	SAWMILLS & PLANING MILLS, GENL	\$61.78	(\$8.71)	(\$19.23)	\$33.84
80	FISH, FRESH OR FROZEN, PACKGD.	\$18.70	\$0.00	(\$18.70)	\$0.00
73	ICE CREAM AND FROZEN DESSERTS	\$18.11	\$0.11	(\$18.10)	\$0.12

Source: Louisville Area Input-Output Model, PCIO Version 6.02, Regional Science Research Institute.

FARMING IN THE LOUISVILLE METROPOLITAN AREA

Farming is an important part of the Louisville economy. While farming directly employs only around 1,600 full-time operators, agricultural activity brings in new dollars to the area economy, thus supporting many other workers. Farmers in the Louisville economy sell over \$200 million per year in livestock and crop products. The top grossing products are hogs, tobacco, racehorses (including stud fees), corn, and soybeans.

In this section we summarize farming activity product by product, county by county. Estimates are also included for Shelby County, even though it is not now officially part of the Louisville MSA. Shelby is a major farm county, and is linked topographically and economically to adjacent counties.

We rely upon estimates from the Kentucky and Indiana Crop and Livestock Reporting Service offices, as well as the 1992 Census of Agriculture. Data on the number of farm operators from the last three censuses of agriculture are provided in the accompanying table.

**Number of Full-Time Farm Operators
in Louisville Area**

	1982	1987	1992
Bullitt County, KY	275	221	230
Clark County, IN	324	290	288
Floyd County, IN	152	125	112
Harrison County, IN	584	567	474
Jefferson County, KY	236	215	205
Oldham County, KY	190	227	188
Scott County, IN	147	138	145
Louisville MSA	1,908	1,783	1,642
Shelby County	820	722	743
Eight County Louisville Area	2,728	2,505	2,385
State of Kentucky	49,062	41,451	40,175
State of Indiana	40,189	36,654	31,547

Source: US Department of Commerce, "Census of Agriculture".

Crops in the Louisville Area

Major crops in the Louisville MSA include corn, soybeans, tobacco, wheat, and hay. Minor crops include fruits and vegetables, nursery stock, and hardwood timber. While not ordinarily considered a crop, pasture makes up a large percentage of the farmland acres as well.

Physical Features

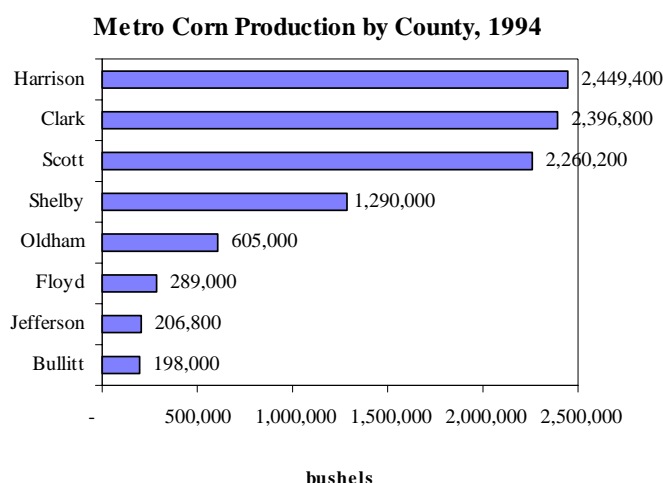
The physical geography and climate typically determine the crops that can feasibly be grown in an area and the Louisville metro area is no exception. The Louisville area has hot humid summers and cool wet winters. Summertime rain typically comes from fast moving isolated thunderstorms and cold fronts while winter precipitation comes from slow-moving, almost stationary fronts that linger in the area for days and drop rain, sleet and snow. It is this rainfall pattern and geography that have kept the region from joining the other midwestern states as a major grain producing area.

The geography of the Louisville area can best be described as rolling. The rolling terrain presents a few obstacles to farming because of soil erosion risks and it often limits the natural size of fields. This prevents the widespread use of large efficient tractors, combines and other equipment as well as irrigation systems that can cover hundreds of acres. Timely rainfall is crucial for crop development and when it is not available irrigation is used to supplement nature. Quantities of water practical for irrigation are not available at the land's surface but is found underground at depths often over 1000 feet. Pumping water from those depths is very expensive and is the reason large scale irrigation is not found in the Louisville area. In addition, the Louisville area underground water is typically full of dissolved minerals that will have long term effects upon the soil composition.

Farming in the Louisville Metropolitan Area

Corn

More acres are devoted to corn than any other crop in the area. Clark, Harrison, Scott, and Shelby counties are the major producers of corn in the area with Harrison County planting the largest number of acres, typically 20 to 23 thousand. Jefferson County is the smallest producer of corn in the area, usually planting about 2,200 acres. Yields in the Louisville area typically run from 100 to 130 bushels per acre with a bushel weighing about 56 pounds. Almost 93,000 acres were dedicated to raising corn in 1993. Production was 9.7 million bushels, for an average of 104 bushels per acre.



Locally produced corn has several uses. Most of the corn is “shelled”, that is the kernels are removed from the cob and enough moisture removed from the kernels to prevent spoilage during storage. The drying of corn and other grains requires high volumes of electricity and propane. The shelled corn is ground and mixed with other ingredients either on the farm or at a feed mill to create livestock feed. This ground feed is usually fed to cattle, hogs, and horses. Some corn is still harvested with the kernels left on the ear and it is usually stored on farms as

opposed to commercial feed mills and elevators. Ear corn is almost always ground with the kernels and cobs to make livestock feed.

Another use of corn is to chop the entire corn plant into small pieces and blow them into a silo where it ferments. This “silage” is then fed to cattle. Filling silos was more common in years past because silage is usually fed to dairy cattle and there has been a dramatic decrease in the number of dairy cattle following the federal government’s dairy cow buyout programs of the 1980s.

Some commercially grown popcorn is found in southern Indiana. According to the Indiana Industrial Directory there are three companies that package and distribute the popcorn.

The local distillery industry is a buyer of high quality shelled corn. After the mash has been cooked and the alcohol been boiled off the mash is then dried and sold back to the feed makers as “distillers dried grains” which is a high protein livestock feed ingredient. Protein content averages about 25 percent. Some local corn probably finds it’s way into the corn oil production cycle as well. Liquid corn oil and margarine are the end products here. We do not believe that corn oil is manufactured in the Louisville metropolitan area.

Growing corn requires the use of all three major fertilizer elements: nitrogen, potassium, and phosphorus. None of the mineral forms of these elements are found locally in large enough quantities for fertilizer use so they are all imported

Corn Acreage and Production, 1994

County	Planted Acres	Harvested Acres	Total Production (bushels)	Average Yield
Bullitt	3,000	2,200	198,000	90.0
Clark	20,700	19,400	2,396,800	123.5
Floyd	2,600	2,500	289,000	115.6
Harrison	21,800	21,300	2,449,400	115.0
Jefferson	2,400	2,200	206,800	94.0
Oldham	6,000	5,000	605,000	121.0
Scott	18,200	17,000	2,260,200	133.0
Louisville MSA Total	74,700	69,600	8,405,200	120.8
Shelby	18,000	12,900	1,290,000	100.0
Eight County Louisville Area	92,700	82,500	9,695,200	117.5
Indiana	6,100,000	5,960,000	858,240,000	144.0
Kentucky	1,350,000	1,220,000	156,160,000	128.0

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1993-1994.

Farming in the Louisville Metropolitan Area

into the area. For example, ammonium nitrate is produced from natural gas in Louisiana and Texas, and phosphate is mined in central Florida. Essentially all fertilizer is shipped here by rail or barge. A few of the major suppliers of fertilizer are US Steel and Cargill. Sulfur is a minor element that can be important for growing corn. Minor elements are typically applied at the rate of a few pounds per acre while the major elements may have hundreds of pounds each applied per acre. Corn requires the correct soil pH and pH is adjusted with locally produced crushed limestone. Agriculture grade lime is typically hauled from local quarries by the trucks that actually spread the lime on fields.

Herbicides and insecticides are also typically used in the production of corn. Dow Chemicals, Monsanto, and Ciba-Geigy are a few of the companies that manufacture and sell agricultural chemicals to area farmers. Almost all corn grown in the area is hybrid, that is a cross between two or more varieties. Seed companies such as Pioneer, Dekalb, and Garst raise the seed in the upper midwestern U.S. and sell these hybrid seed in areas that are adapted to the different varieties.

The limiting input in the local production of corn is not soil fertility but timely rainfall. Maps that describe the nations climate show that about 60 miles north of the Ohio River the climate changes to one where the majority of the rainfall occurs during the growing season. The Louisville MSA, located south of that line, tends to receive its rain during the winter and early spring. Corn is a crop that can suffer dramatic decreases in yields from a lack of rain. During the tasseling and silking stage of corn growth rainfall is crucial to complete the pollination process. Without a significant rain during this period the ears won't fill with kernels and the kernels that do fill will be small in size. Yield damage of 50 to 80 percent is not uncommon if rain doesn't occur during this time. Local corn yields are typically 25 percent below the rest of the midwestern US, mainly due to the lack of timely rainfall. Also, insects rather than disease seem to have more of a deleterious economic effect on the local corn industry.

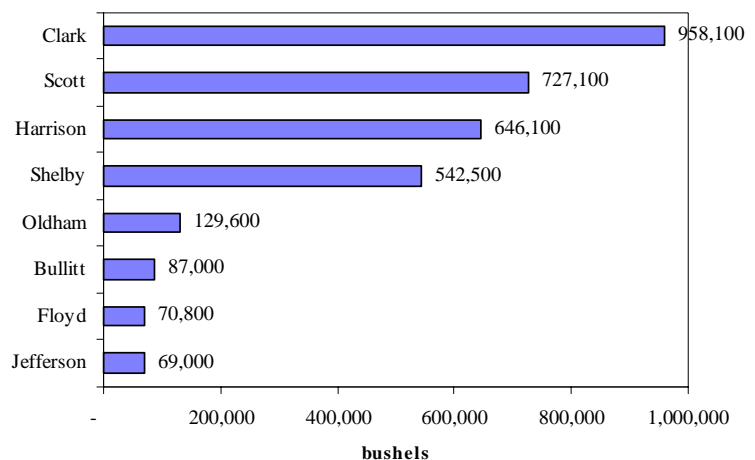
Soybeans

Soybeans rank second to corn in the number of acres grown in the area. Almost all soybeans are sold to grain buyers who put the soybeans into the feed and soybean oil production process. Some farmers do feed soybeans directly to livestock but they are a minority.

Soybeans are a versatile crop. They can be planted to take advantage of the entire growing season or they can be planted into ground that has grown winter wheat. This process is known as double cropping and permits two crops to be grown on a field in one year. Yields suffer somewhat in double-cropping because of the necessarily late planting dates, but the potential profit of selling two crops allows for that risk to be taken. The Louisville MSA is about as far north as farmers can practically double crop winter wheat and soybeans, due to the shortening growing season.

Soybeans and corn are often part of a farm's crop rotation plan. Corn is grown in a field one year and soybeans the next. This helps to alleviate insect and disease pressures by breaking life cycles of the diseases and insects, because the pests that effect soybeans do not hurt corn and vice versa. Soybeans also have the effect of loosening the soil in which they are raised, thus increasing soil tilth. The downside of this is that soil erosion becomes more of a problem with soybeans than with other crops. This has led to many refinements in the no-till planting method. No-till farming eliminates plowing and working the soil, seeds are planted directly into either sod or the undisturbed residue of previous crops. No soil is therefore exposed to the wind or running

Metro Soybean Production by County, 1994



Farming in the Louisville Metropolitan Area

Soybean Acreage and Production, 1994

County	Planted Acres	Harvested Acres	Total Production (bushels)	Average Yield
Bullitt	3,000	2,900	87,000	30.0
Clark	22,600	22,500	958,100	42.6
Floyd	2,300	2,200	70,800	32.2
Harrison	18,200	17,900	646,100	36.1
Jefferson	2,500	2,300	69,000	30.0
Oldham	3,700	3,600	129,600	36.0
Scott	17,300	17,200	727,100	42.3
Louisville MSA Total	69,600	68,600	2,687,700	39.2
Shelby	15,600	15,500	542,500	35.0
Eight County Louisville Area	85,200	84,100	3,230,200	38.4
Indiana	4,700,000	4,680,000	219,960,000	47.0
Kentucky	1,150,000	1,130,000	42,940,000	38.0

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1993-1994.

water. The disadvantage of no-till farming is that it requires different machinery than what has traditionally been used in farming and it also requires larger amounts of herbicides. At present it is possible to raise almost all crops using the no-till method.

Clark, Harrison, Scott, and Shelby counties are the largest producers of soybeans in the MSA with Clark county raising the most, usually about 23,000 acres. Floyd county usually raises the fewest acres, averaging about 1,700. About 84,000 acres of soybeans were planted in 1994, they produced 3.2 million bushels for a yield of 38 bushels per acre.

Soybean oil is one of the most commonly used vegetable oils and it is manufactured by cooking the beans and then extracting the oil with a solvent. The residue from the oil extraction process is used as a high quality protein livestock feed supplement. The protein content of the soybean oil meal averages about 44 percent. This manufacturing process takes place primarily outside of the area, the one local plant is located next to the University of Louisville's Belknap campus.

Fertilizing soybeans differs quite a bit from fertilizing some other crops because it is a legume. Plants that are legumes have a symbiotic relationship with a bacteria that lives among its roots. These bacteria extract nitrogen from the air and can make it available to the plant; therefore it is unnecessary to apply nitrogen fertilizer to plants that are legumes. Nitrogen fertilizer, either ammonium nitrate or urea, is the most expensive of the fertilizers that are applied to crops, so the advantage of having legumes

in the crop rotation is readily apparent. The major fertilizer elements for soybeans are phosphorus and potassium. A element of minor importance is molybdenum. Soybeans are more sensitive to acid soils than corn so lime is spread more frequently than for fields where corn is the only crop. Suppliers of soybean fertilizers and pesticides are the same as the ones for corn and for that matter all other crops as well.

Soybeans flower over a period of time and make use of insects to carry out much of the pollination, so rainfall at very specific time periods is not as crucial as with corn. Soybeans also seem to fare better in hot weather because the plants don't have the massive leaves that corn does. Large leaves need a lot of water for the growing process to continue. Soybeans can almost go dormant during hot dry weather and can make a remarkable turnaround when rain does fall.

Fungal diseases and soybean cyst nematodes are the diseases that have an economic impact on raising soybeans. Insects do not apply much pressure to soybean crops locally.

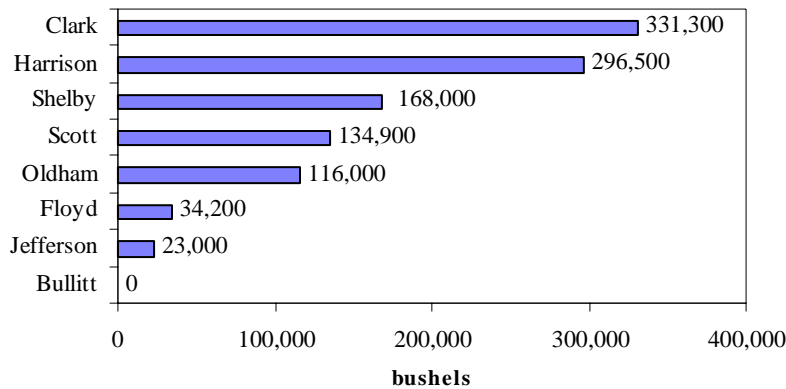
Wheat

The predominant variety of wheat raised in the Louisville area is soft red winter wheat. Planted in the late fall and early winter and harvested locally about the first of July, winter wheat is often raised in a double crop combination with soybeans (double cropping is discussed in more detail in the soybean section.)

About 22,400 acres of winter wheat were harvested in 1994 compared to the 29,000 acres that were planted. This is not an anomaly, merely the effect of using wheat as a cover crop. Cover crops are planted on bare ground after it has been harvested to prevent soil erosion. When spring arrives the cover crop is either plowed under or it is killed with a herbicide and the main crop is planted into the stubble. Over 1.1 million bushels of wheat were produced for an average yield of 49 bushels. Clark

Farming in the Louisville Metropolitan Area

**Metro Winter Wheat Production by County,
1994**



and Harrison counties each harvested about 6,600 acres of wheat in 1994; and no wheat was reported grown in Bullitt county.

Soft winter wheat grown in the Louisville area is sold primarily to a local cracker manufacturer; it is used secondarily for livestock feed. The hard red winter wheat that is grown further west is used for breadmaking flour.

1994 Winter Wheat, County Estimates

County	Planted Acres	Harvested Acres	Total Production	Average Yield
Bullitt	0	0	0	0.0
Clark	6,800	6,600	331,300	50.2
Floyd	1,000	900	34,200	38.0
Harrison	6,900	6,600	296,500	44.9
Jefferson	800	500	23,000	46.0
Oldham	2,600	2,000	116,000	58.0
Scott	2,500	2,300	134,900	58.7
Louisville MSA Total	20,600	18,900	935,900	49.5
Shelby	8,500	3,500	168,000	48.0
Eight County Louisville Area	29,100	22,400	1,103,900	49.3
Indiana	680,000	630,000	38,430,000	61.0
Kentucky	590,000	420,000	25,200,000	60.0

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1993-1994.

Tobacco

The story of tobacco is one of small acreages and very high dollar value. Tobacco has traditionally been the backbone of farming in the region. Burley tobacco is the variety that is grown in the region and it is predominately used in the manufacturing of cigarettes. American cigarettes are a blend of

varieties and burley is used for its even burning qualities. Some burley tobacco finds its way into chewing tobacco and snuff but the vast majority of the burley crop is shipped to North Carolina storage facilities and aged for several years before it is turned into cigarettes.

An entire culture in rural Kentucky revolved around tobacco growing because it can take almost a full year for the growing cycle to be completed. Raising tobacco is one of the most labor intensive farming enterprises anywhere. In the old days, before the raising of transplants in greenhouses and baling stripped tobacco, about 300

man-hours were required to raise one acre of tobacco. That 300 hours has probably been reduced by 30 percent because of changes in technology but it easily remains the crop that requires the most labor. The labor pool for raising tobacco was always located in the rural areas and typically lived on the farms. As the factories moved to towns like Shelbyville, Mount Washington, and Sellersburg, the labor force moved to town to work in those factories

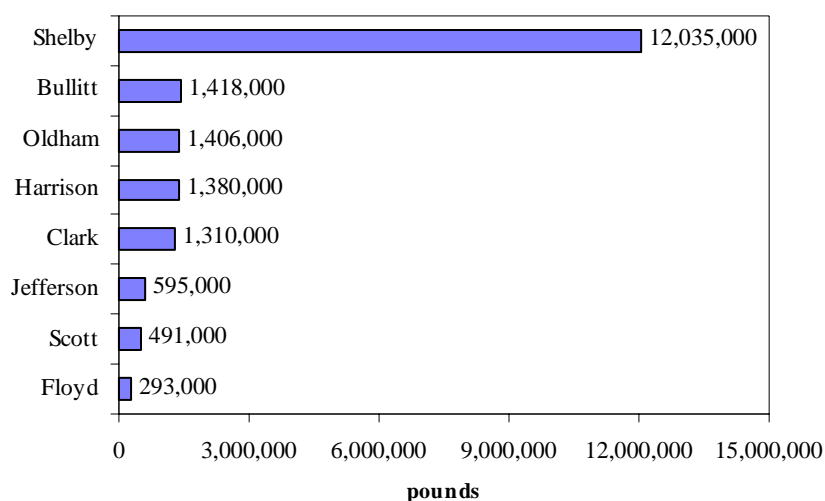
and abandoned the tenant houses that were located on the farms. The traditional labor force is gradually being replaced by migrant workers from Latin America.

Seeds are sown in either plant beds or greenhouses in early spring. Gentle weeding and fertilizing is done there until the middle of May when the 8 inch tall plants are transplanted to the field. Cultivating and additional fertilizer are applied for the next

month. During the latter part of July the flowers are broken out of the 4 to 5 foot tall plants. One month later the tobacco is cut and stored in large airy barns where it stored while drying out. When the plants have cured, usually by late October, the dried tobacco is taken from the barns in preparation for stripping. Stripping is the step in tobacco growing that

Farming in the Louisville Metropolitan Area

Metro Tobacco Production by County, 1993



takes the most time. Until this point it is just the individual plant that is handled. Stripping requires that the individual leaves be removed from the stalk and sorted according to length and color. The stripped tobacco is then placed in a baler that uses compressed air to create 90 pound bales that are taken to warehouses for auction. The auction market traditionally starts in Kentucky the week before Thanksgiving and lasts until February.

During 1993, Shelby County harvested over 5,000 acres of tobacco, that is the second highest amount in the state, trailing only Fayette County which harvested 5,200 acres. Bullitt County is second in production in the Louisville area with 720 acres for 1993. Yields per acre are typically on the order of 2,000 to 2,200 pounds of dried leaf per acre. Tobacco is obviously big business in Shelby County and probably adds to the rural nature of that county more than anything else. Shelbyville is one of the four largest tobacco markets in the state ranked by the number of pounds sold; Lexington is by far the largest, with Shelbyville, Carrollton, and Maysville all selling an almost identical amount. Kentucky and Indiana together produced over 426 million pounds of burley in 1993 and with an average price of \$1.75 per pound means almost three quarters of a billion dollars in cash to the region's farmers.

There are government controls imposed on the quantity of tobacco that can be raised on a farm. The right to

raise tobacco can be leased for 30 to 50 cents per pound per year. There are certain rules that have to be followed for this to be legal and the lease has certain paperwork that has to be filed with the federal government. The right to sell a farm's tobacco quota has been legal for just a few years. Currently the price is depressed because of the uncertainties facing the tobacco industry.

Tobacco is most heavily fertilized of all crops grown locally, requiring very large quantities of nitrogen, phosphorus, and potassium. Lime is also needed in abundance because when the ammonium nitrate or urea nitrogen fertilizer is converted into a form of nitrogen that is usable

by plants the soil becomes more acid. The alkaline lime buffers this acidification process so that the plants don't suffer. Tobacco also requires a different variety of potassium from the ordinary muriate of potash which is high in chlorine to a low chlorine fertilizer known as sulfate of potash. Chlorine based fertilizer grows a tobacco that is very poor in quality.

Chemicals to control weeds, insects, and disease are all needed because tobacco seems very susceptible to a variety of pests. Home gardeners who raise tomatoes can appreciate a tobacco farmers plight because they share many of the same pests, belonging as they do to the nightshade family of plants. Economically important insects are cutworms, aphids, tobacco worms, and grasshoppers. Diseases such as black shank, black root rot and blue

1993 Tobacco, County Estimates

County	Harvested Acres	Total Production	Average Yield
Bullitt	720	1,418,000	1,969
Clark	495	1,310,000	2,646
Floyd	165	293,000	1,776
Harrison	735	1,380,000	1,878
Jefferson	270	595,000	2,204
Oldham	640	1,406,000	2,197
Scott	210	491,000	2,338
Louisville MSA Total	3,235	6,893,000	2,131
Shelby	5,040	12,035,000	2,388
Eight County Louisville Area	8,275	18,928,000	2,287

Source: Kentucky Agricultural Statistics, 1993-1994.

Farming in the Louisville Metropolitan Area

mold can devastate the crop. Tobacco also requires that a growth retardant be applied late in the summer to prevent the growth of suckers.

Tobacco is also a crop that requires a good deal of water, yet it will suffer greatly if too much water is available. Because of the high value of the crop and the small acreages involved tobacco is one of the few crops in the area that is routinely irrigated.

Hay and Forage

The Louisville MSA (under the old definition, which included Shelby County) produced about 350,000 tons of hay from 132,000 acres for an average yield of 2.7 tons per acre in 1993. Over one third of that hay was grown in Shelby County with Harrison County following with 18 percent of the total production occurring there. Shelby County is the number one producer of alfalfa hay in the state and ranks sixth in the state in other types of hay grown. Hay has one use, and that is to feed livestock. Not surprisingly, because many of the cattle in the MSA are located in Shelby and Harrison Counties, that is where their feed is grown as well. While grain is fed to certain classes of livestock, almost every farm animal that is not being fattened for slaughter eats hay, at least during the winter.

The hay that is grown locally basically stays here in the area. The number of animals that are in the MSA requires all of the hay with some hay being imported from out of the state. This hay is usually very high quality alfalfa that is fed to the valuable show and race horses in the region. High quality

alfalfa is grown in the area but with the high humidity typical of a Louisville summer, drying hay thoroughly poses problems. The imported hay is grown in areas of low humidity with irrigation. Kansas, Colorado, and Utah are states that import hay to the metro area.

Alfalfa, nicknamed “The Queen of Forages”, is a high protein, high fiber legume that is a perennial - meaning that the plant lives for several years. Alfalfa is drought-resistant because of its deep roots, does not require nitrogen fertilizer, and produces a high quality hay that can be harvested several times in a growing season. These properties make alfalfa popular with area horse owners, dairy farmers, and farmers raising both dairy and beef calves. Alfalfa is often grown in combination with timothy, a grass, to increase total tonnage and improve drying time.

The seed is expensive and the plant does not tolerate close grazing. This prevents it from being used as pasture, and almost all alfalfa is baled or chopped and blown into a silo. The high cost of the seed deters local farmers from growing more alfalfa. Seed costs over three dollars a pound, and an acre requires over 20 pounds at planting time. However, a field may have to be seeded only every 4 years. Grass hays in contrast have seed costs of \$1.50 a pound and require only 8 to 10 pounds of seed per acre.

Insects are the major economic threat to alfalfa with weevils, Japanese beetles, and aphids being the most common problems. Almost all of the effective insecticides for alfalfa have been banned because of their side effects in the environment. Because alfalfa is harvested as many as four times a year, weeds can often be controlled merely by the mowing process.

As mentioned before, legumes don't require nitrogen fertilizer, but the alfalfa responds well to phosphorus, potassium and lime. Boron is a minor element that is important to alfalfa.

Clover in its different species, such as red, ladino, and white dutch, are important both as pasture and hay. Clover is another legume, that is most often grown in combination with some type of grass typically, timothy, fescue, orchardgrass, or bluegrass. As a hay it is not quite as high in protein or quality as

1993 All Hay, County Estimates

County	Harvested Acres	Total Production	Average Yield
Bullitt	10,900	29,160	2.7
Clark	11,000	30,200	2.7
Floyd	6,200	15,800	2.5
Harrison	25,100	65,500	2.6
Jefferson	11,400	31,620	2.8
Oldham	13,300	36,720	2.8
Scott	5,300	13,900	2.6
Louisville MSA Total	83,200	222,900	2.7
Shelby	49,500	133,750	2.7
Eight County Louisville Area	132,700	356,650	2.7
Indiana	700,000	2,282,000	3.3
Kentucky	2,200,000	5,452,000	2.5

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1993-1994.

Farming in the Louisville Metropolitan Area

alfalfa, nor nearly as drought resistant, it is more tolerant of grazing which is why it is important in area pastures.

There are few insects that prey on clover and in the pasture and hay situations in which it is found, weeds are controlled by either mowing or grazing. Another perennial, the seed is about half the price of alfalfa and because it is almost always grown in combination with grasses the seeding rates are about half of alfalfa's. Because it is a legume, clover not only provides nitrogen for itself but the other plants in the field as well. Fertilizer and lime are quite effective in boosting yields of clover.

Orchard grass, fescue, timothy, and Kentucky bluegrass are all cool weather long stemmed grasses that form the bulk of the Louisville MSA's pasture (and yards for that matter). With the exception of Kentucky bluegrass, which is popular on horse farms because of the thick sod that it forms, orchard grass, timothy, and fescue are grown for hay as well as pasture. During the spring and early summer these grasses grow faster than livestock can graze them, so these pastures are often harvested as hay. By the time the hay is harvested, dryer, hotter weather has moved into the area and the lush growth has slowed to a rate that the grazing animals can keep up with it. During the very hottest and driest parts of the summer, these grasses slow down in their growth until it may actually quit. Area farmers could then take advantage of southern grasses that are more heat tolerant, such as bermuda grass, but those grasses cannot tolerate our colder winters without damage. Kentucky bluegrass hay is almost inedible for livestock. If it grows long enough to be mowed as hay, it is most likely used as bedding for animals.

These grasses are very resistant to insects and diseases, and few pesticides are needed. The sods that they form also prevent a lot of weed growth. Seed is relatively inexpensive, being cheaper than clover, and it is sown at higher rate than clover. Very little of the forages have their seed grown locally. Most of it is imported from the northwestern US.

Annual grasses are used to supplement local hays and pastures on a limited basis. Typically they are a sorghum-sudan grass hybrid. They produce a lot of fair quality forage that can either be grazed or harvested as hay. When these plants are damaged by drought or frost they can be deadly poisonous to animals that eat them, so caution is imperative in using them. Insects and disease rarely pose prob-

lems to this class of forage. This category of forage rarely finds its way off of the farm that produces it due to the large quantity and only fair quality.

In the old days, hay was second only to tobacco in the amount of labor required to harvest it. Now with modern machinery available from Ford-New Holland, John Deere, Case-International, and others, hay harvesting is largely mechanized, especially with the large round bales and stacks. Large round bales contain 600 pounds or more of hay and they can be handled and fed by one person sitting on a tractor.

Livestock

Farmers in the Louisville area raise cattle, hogs, and horses. The region is a major supplier of calves to feedlots nationally. Hog production, while significant, is not sufficient to meet local pork processors demand. Hogs are imported, primarily from the corn belt to the north, into the local market by meat packers. Horse breeding operations, primarily in Oldham County, have become a major source of farm income during the last decade. Numerous national livestock shows held regularly in Louisville generate millions in ancillary income for area residents, as well as enhancing the area's reputation as a farming center.

Cattle

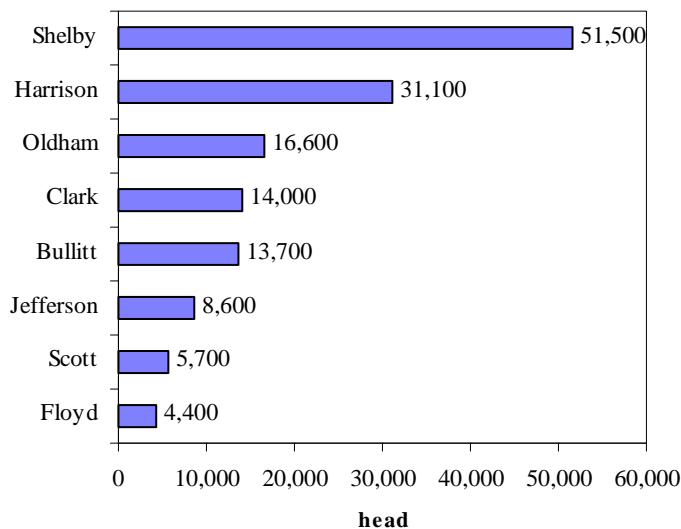
Kentucky and southern Indiana, with its rolling terrain, is well suited to the raising of livestock. Hills allow water to drain into the numerous creeks and reservoirs throughout the area. Areas that have standing water are less than ideal because of the diseases they can harbor and also the foot trouble that livestock can get by living in those areas. Uneven terrain also keeps some areas from being tilled, so those areas are planted in grasses to prevent soil erosion. Allowing animals to graze these areas that can't be otherwise be cropped is one of the more practical alternatives for using this type of land.

There were over 91,000 head of beef and dairy cattle in the Louisville MSA in 1993, with an additional 51,000 head in adjacent Shelby County. Harrison County had 31,000 head, of which eighty percent were dairy animals.

The Louisville MSA plus Shelby County had over 54,000 beef cows, and 15,000 dairy cows. The remaining 76,000 head of cattle include mostly calves of all ages, but also bulls, and older animals being fed specifically for slaughter.

Farming in the Louisville Metropolitan Area

Cattle Inventory by County, 1993



This region is a major producer of feeder calves. The 69,000 cows in the Louisville area will each produce a calf annually. Most of the calves not destined to be replacements for their dams will live their early lives here, be weaned from their mothers and then be sold and shipped to feedlots in the plains states, primarily Kansas, Iowa, Nebraska, Texas, and Oklahoma.

Alternatively, the calves may be kept in the region for a process known as backgrounding. Backgrounding is the process whereby a weaned calf at an approximate weight of four to five hundred pounds is taught to eat from a feed trough and drink from a water trough. This typically takes place during the late fall and winter. When these backgrounded calves reach an age of one full year and a weight of about 700 pounds, they are sold at either the Louisville or Lexington stock yards to midwest and southwest feed lots who then finish the fattening process. The calf is then about 18 to 24 months old and weighs about 1,200 pounds when it is slaughtered. A valuable by-product of the cattle slaughtering process is the hides. The largest user of

cattle hides in the country is the automobile industry where leather is used to cover seats and other interior amenities.

A newborn calf only drinks milk and eats grass. A calf of a few months age eats primarily hay and grass, abundant in our region. An older calf being fattened for slaughter eats a ration made up almost entirely of grain. As mentioned earlier in this report, the metro area is not a major grain producer and hence the dearth of large-scale commercial feedlots. These feedlots are located in the major grain producing areas of the nation because it is cheaper to ship one calf than it is the 35 to 50 bushels of corn, milo, wheat or barley that it takes to fatten a calf to slaughter weight.

The shipment of these calves through the local markets from cow-calf producer to backgrounder to feed-lot is the major reason why the Louisville and Lexington markets are consistently some of the most active markets in the nation.

The most important beef cattle breeds in the Louisville area are English (Angus and Hereford), and European (Charolais, Maine Anjou, and Simmental). The Holstein-Friesian is the primary breed of dairy animals in the region and the nation. The second largest dairy breed in numbers, Jersey's, have far fewer head. Holsteins produce much more milk per cow, and that is after all the main product of the dairy industry.

Cattle Inventory and Milk Production, 1993
Louisville Metro Area

County	All Cattle	Beef Cows	Milk Cows	Production of Milk (000 lb)
Bullitt	13,700	5,500	1,000	11,200
Clark	14,000	7,300	900	12,192
Floyd	4,400	1,800	0	0
Harrison	31,100	10,700	2,200	25,062
Jefferson	8,600	3,400	500	6,000
Oldham	16,600	7,500	1,500	17,600
Scott	5,700	2,400	0	0
Louisville MSA Total	94,100	38,600	6,100	72,054
Shelby	51,500	15,500	9,500	111,000
Eight County Louisville Area	145,600	54,100	15,600	183,054
Indiana	1,200,000	337,000	143,000	2,289,000
Kentucky	2,600,000	1,115,000	179,000	2,120,000

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1993-1994.

Farming in the Louisville Metropolitan Area

Counties in the Louisville metropolitan area have about 6,000 head of dairy cows. Adjacent Shelby County has 9,000 dairy cows, second only to Barren County in the state in milk production, Shelby County dairy cows produced more milk, 111 million pounds, than the entire Louisville MSA combined. In 1993 the Louisville MSA's 6,000 cows produced about 70 million pounds of milk or an average of 11,500 pounds per cow per year.

Milk is priced in the dairy industry by hundred-weight (100 pounds). In 1993, prices for milk were about \$13.50 per hundredweight. Cows typically are milked about 9 to 10 months per year and the remainder of the year they are given time to prepare for the imminent birth of their new calf.

The milk from these farms is typically collected at least once every two days and sometimes more frequently than that. After collection, milk is processed into the different food products that we are all familiar with: fluid milk (skim, whole, lowfat, etc.), powdered milk, butter, ice cream, cheese and so on. One slice of American cheese requires 8 ounces of fluid milk, which makes cheese a much better storage medium. Cheese is much more compact, easier to store, and has a long shelf life compared to fluid milk.

Female calves that are born to dairy cows usually are retained to replace older cows in the herd, while bull calves are destined to be sold as either veal or raised and fattened similarly to beef calves. Very few dairy bull calves stay on the farm for breeding purposes, as almost all dairy farms practice artificial insemination. Artificial insemination enables high quality bulls to be mated to hundreds, perhaps thousands of cows across the nation. A bull who is bred naturally may be able to service only 40 to 50 cows each year.

Hogs

There are hogs raised in the metro area, but not in the numbers of central and northern Indiana and the other major grain producing regions. Farms in the Louisville MSA contain around 42,000 hogs. An additional 10,000 hogs are on farms in adjacent Shelby County, according to state agriculture departments.

To put these numbers in perspective, Indiana's hog population exclusive of the Louisville MSA counties was over 4 million head, while the Kentucky herd excluding the Louisville counties was 850

1993 Hogs & Pigs, County Estimates

County	All Hogs
Floyd	1,100
Jefferson	2,000
Scott	4,300
Bullitt	4,500
Oldham	5,600
Clark	6,000
Harrison	18,800
Louisville MSA Total	
	42,300
Shelby	
	9,900
Eight County Louisville Area	
	52,200
Indiana	
	4,150,000
Kentucky	
	850,000

Sources: Kentucky Agricultural Statistics, 1993-1994;

Indiana Agricultural Statistics, 1993-1994.

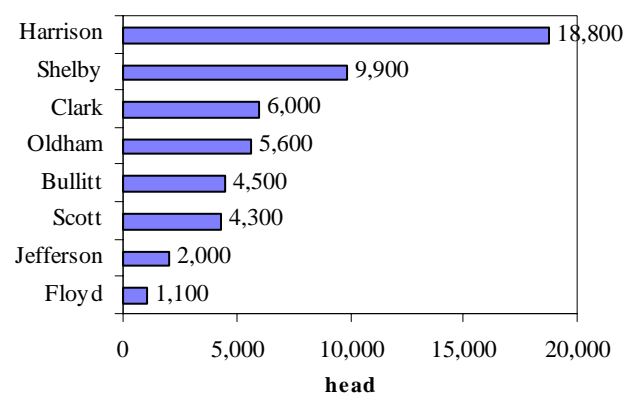
thousand. The major slaughtering plants in the Louisville MSA have to import hogs to support their pork processing operations.

Unlike cattle, hog production does not require a large number of acres. Much of a hog's life is spent being fattened for slaughter.

Horses

Horses in this country are primarily raised for recreation purposes as opposed to food or for farm power. Horses are mainly used for racing, showing, and pleasure riding.

Hogs and Pigs, by County, 1993



Farming in the Louisville Metropolitan Area

Churchill Downs is a Thoroughbred race track of international renown mainly due to the Kentucky Derby. It is considered one of the major tracks in North America with daily purse distribution over \$300,000. A number of breeding farms in the area exist, with Thoroughbred, Arabian, Saddlebred and Quarter Horses being among the most prominent. Many of these farms are located in Oldham county and account for millions of dollars in horse sales every year. The horse with the highest selling price in the world came from Oldham County. That horse was a Thoroughbred yearling and sold for \$13.1 million in the mid-1980's. Oldham County has the third highest dollar volume of livestock receipts among Kentucky's 120 counties, due primarily to its lucrative horse breeding farms. Only Fayette and Woodford counties have a higher sales volume.

Major horse shows in Louisville are held every year in conjunction with the Kentucky State Fair and the North American Livestock Exposition. The World Championship Saddlebred Show with a prize distribution greater than \$600,000 is held during the State Fair. Reportedly over \$1 million in prize money was awarded during the 1995 show. A large Saddlebred show is also held at the Rock Creek Saddle Club in June. Both the World Championship Show and Rock Creek show make up two legs of the Saddlebred Triple Crown and they are both held in Jefferson County. Jefferson County is also the home of the National Show Horse breed registry. A very large Quarter Horse show is held one week prior to the State Fair. Every two years in October the International Arabian Horse Show is held at the State Fairgrounds. In addition to shows, the Great Lakes region rodeo finals are held during the North American Livestock Expo. These events attract fans and exhibitors from all over the region and country.

Forestry

Almost all of the native trees in the area are deciduous hardwoods. Commercially important species are ash, basswood, cherry, hickory, hard and soft maples, red and white oaks, poplar, and walnut. These hardwoods are used in the production of furniture, paneling, and moldings.

In addition to these deciduous hardwoods, the area also has a coniferous hardwood of some economic importance - the Eastern Red Cedar. It's not a true cedar but actually a juniper. It's wood is

very aromatic and is used in cedar chests and it is also used as an ingredient in cat litter. If it is not milled or chipped, cedar logs 6 to 8 inches in diameter and 7 or more feet long are frequently used as fence posts because the wood is highly resistant to rotting.

Property owners will select standing trees to be harvested, once the trees have been sawed down, the logs are drug out of the woods and taken to a lumber or veneer mill. At the mill the log is cut to order. After cutting the lumber it is graded according to a set of nationally recognized rules for each individual specie of wood. After cutting and grading the lumber is stacked with 1 inch sticks placed between each layer of lumber to allow for air circulation. Following four to eight months of air drying the lumber is loaded into a kiln to remove the remaining moisture. At this point the dried lumber can be moved into the actual cutting and shaping part of the manufacturing process. Lumber is generally priced and sold on either a green, rough-sawed basis or kiln-dried basis.

Income from Farming

Net income earned by farmers is one of the most difficult economic variables to measure. The USDA estimates farm income for each county using information on cash receipts by product and detailed estimates of production expenses. The most precise estimates are for years, ending in two and seven, in which a Census of Agriculture is taken. For other years estimates are made by projecting census year data from more aggregate market information on prices and volume. In some cases, the post-censal year estimates are subject to substantial later revision.

Estimates from the 1992 Census of Agriculture are summarized in the table, entitled Agricultural Sales, Expenses, and Net Cash Return, 1992, on the next page. The table provides the most precise measurements available on farm revenues, expenditures and net returns in the Louisville area. The reader can see that receipts are fairly evenly split between crops and livestock. Most of the crop receipts are from grains in Clark, Scott, and Shelby counties; tobacco in Shelby, Oldham, Harrison, Bullitt, and Clark counties; and nursery and greenhouse products in Jefferson, Shelby, and Oldham counties. Most of the livestock receipts are from cattle and calves in Harrison, Shelby, Scott, Oldham, Bullitt, and Jefferson counties; dairy in Shelby,

Agricultural Sales, Expenses, and Net Cash Returns, 1992

	Bullitt County	Clark County	Floyd County	Harrison County	Jefferson County	Oldham County	Scott County	Louisville MSA	Shelby County	Eight C L'ville /
MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD										
	<i>thousand dollars</i>									
Grains	\$779	\$8,262	\$1,243	\$8,646	\$643	\$1,785	\$7,091	\$28,449	\$4,873	\$3
Tobacco	\$2,404	\$1,769	\$463	\$2,468	\$1,183	\$3,018	\$481	\$11,786	\$23,181	\$3
Hay, silage, seeds	\$503	\$304	\$165	\$980	\$380	\$391	\$123	\$2,846	\$1,507	\$
Vegetables, sweet corn, etc.	\$8	\$860	\$314	\$61	\$228		\$28		\$146	
Fruits, nuts, berries	\$12	\$382	\$80	\$92	\$35					
Nursery, greenhouse crops	\$554	\$685	\$249	\$326	\$8,078	\$2,996			\$3,071	
Other	\$34	\$20	\$37	\$17	\$6		\$0			
Total Crops	\$4,293	\$12,282	\$2,550	\$12,590	\$10,553	\$8,248	\$7,763	\$58,279	\$32,830	\$9
Poultry & poultry prod.	\$9				\$1	\$3	\$6		\$8	
Dairy Products	\$1,223	\$1,685	\$211	\$3,866	\$698	\$2,586	\$2,184	\$12,453	\$13,302	\$2
Cattle and calves	\$2,162	\$2,538	\$946	\$10,067	\$1,435	\$2,977	\$3,847	\$23,972	\$9,683	\$3
Hogs and pigs	\$589	\$980	\$209	\$3,027	\$133	\$557	\$6,454	\$11,949	\$1,990	\$1
Sheeps, lambs, and wool	\$6				\$6	\$13	\$46		\$85	
Other	\$86	\$68	\$59	\$130	\$407	\$2,723	\$156	\$3,629	\$1,936	\$
Total Livestock	\$4,075	\$5,451	\$1,556	\$32,918	\$2,679	\$8,859	\$2,170	\$57,708	\$27,004	\$8
Total Value of Crop, Livestock Sales	\$8,368	\$17,733	\$4,106	\$45,508	\$13,232	\$17,107	\$9,933	\$115,987	\$59,834	\$17
PRODUCTION EXPENSES										
Livestock & Poultry Purchased	\$779	\$886	\$91	\$6,451	\$420	\$1,155	\$112	\$9,894	\$3,327	\$1
Feed for Livestock & Poultry	\$686	\$1,243	\$198	\$10,082	\$711	\$1,545	\$695	\$15,160	\$6,485	\$2
Seeds, bulbs, plants & trees	\$175	\$1,105	\$164	\$1,194	\$1,059	\$503	\$490	\$4,690	\$1,144	\$
Commercial Fertilizer	\$467	\$1,876	\$237	\$2,470	\$291	\$831	\$1,196	\$7,368	\$2,997	\$1
Agricultural Chemicals	\$162	\$1,448	\$181	\$1,708	\$108	\$485	\$831	\$4,923	\$1,322	\$
Petroleum Products	\$477	\$947	\$148	\$1,623	\$716	\$946	\$550	\$5,407	\$2,004	\$
Electricity	\$96	\$267	\$57	\$578	\$243	\$301	\$154	\$1,696	\$789	\$
Hired labor	\$610	\$1,272	\$99	\$4,429	\$2,480	\$2,359	\$525	\$11,774	\$5,035	\$1
Contract Labor	\$165	\$80	\$16	\$227	\$348	\$183	\$15	\$1,034	\$1,172	\$
Repair and Maintenance	\$695	\$1,539	\$236	\$2,404	\$759	\$1,387	\$516	\$7,536	\$3,705	\$1
Customwork, machine hire, eq. rental	\$74	\$195	\$67	\$493	\$141	\$157	\$248	\$1,375	\$799	\$
Interest paid	\$551	\$1,189	\$205	\$2,508	\$532	\$1,116	\$1,147	\$7,248	\$4,392	\$1
Cash rent	\$154	\$1,204	\$135	\$1,278	\$357	\$444	\$550	\$4,122	\$772	\$
Property taxes	\$323	\$1,100	\$346	\$1,339	\$507	\$617	\$505	\$4,737	\$1,607	\$
All other production expenses	\$653	\$1,529	\$329	\$4,432	\$1,838	\$1,895	\$701	\$11,377	\$5,246	\$1
Total Production Expenses	\$6,067	\$15,880	\$2,509	\$41,216	\$10,510	\$13,924	\$8,235	\$98,341	\$40,796	\$13
Net Cash Return from Agr Sales	\$2,409	\$2,290	\$1,597	\$4,581	\$1,454	\$3,150	\$1,582	\$17,063	\$18,549	\$3

Source: US Department of Commerce, Bureau of the Census, "1992 Census of Agriculture", July 1994. Shaded areas not disclosed due to confidentiality law.

Net cash return from agricultural sales refers to farm units, not farm operators, and does not exactly equal sales minus expenses. Floyd County net return estimated by author.

Farming in the Louisville Metropolitan Area

Harrison, Oldham, Scott, Clark, and Bullitt counties; hogs and pigs in Scott, Harrison, and Shelby counties; and equine sales in Oldham and Shelby counties. Note that net cash returns are higher in Shelby County than in all the other counties combined.

In the next table, we have summarized the published cash receipt data by county for the last five years. Note that estimates of cash receipts for 1992 are greater, in some cases much greater, than the estimates of the market value of products sold as reported in the 1992 Census of Agriculture. In particular, livestock receipts in Oldham County are reported as \$50.5 million in 1992, but only \$8.9 million in the Census. This huge discrepancy is due to some unusual horse sales in the 1980s and to the imprecision of an extrapolation scheme used by USDA. Discounting the anomaly for horse receipts in Oldham County, it appears that cash receipts have been stable for both crops and livestock in all Louisville area counties.

Personal income from farming includes profits received by farm proprietors as well as wages and salaries paid to farm workers. Farm payrolls in the Louisville area are a bit over \$10 million per year, and fluctuate little. Farm proprietors' net income, on the other hand, varies considerably. In the Louisville area, farm proprietors' income is typically between \$20 and \$80 million per year, depending upon market conditions for farm products and inputs, local weather conditions, and the luck/skill of local horse breeders and stud farms. Net income to farm proprietors may even be negative, as it reportedly was in 1988 for Bullitt, Floyd, and Harrison counties.

Louisville area manufacturers produce a wide range of food and fiber products. There are around 300 firms in the area primarily engaged in the production of food and fiber products. These firms account for about one-fourth of all manufacturing

Farming in the Louisville Metropolitan Area

Cash Receipts from Farm Marketings, 1990 - 1994

	1990	1991	1992	1993	1994
Crops					
Bullitt County	\$4,244,000	\$4,742,000	\$5,092,000	\$5,547,000	\$4,769,000
Clark County	\$15,062,000	\$15,271,000	\$15,723,000	\$18,706,000	na
Floyd County	\$5,140,000	\$4,849,000	\$5,574,000	\$5,617,000	na
Harrison County	\$13,072,000	\$10,374,000	\$14,126,000	\$15,466,000	na
Jefferson County	\$16,930,000	\$18,842,000	\$18,990,000	\$20,529,000	\$19,877,000
Oldham County	\$9,287,000	\$10,524,000	\$11,382,000	\$12,418,000	\$11,706,000
Scott County	\$9,205,000	\$10,635,000	\$9,513,000	\$12,248,000	na
Louisville MSA	\$72,940,000	\$75,237,000	\$80,400,000	\$90,531,000	na
Shelby County	\$28,658,000	\$32,832,000	\$35,104,000	\$38,756,000	\$34,342,000
Eight County L'ville Area	\$101,598,000	\$108,069,000	\$115,504,000	\$129,287,000	na
State of Kentucky	\$1,404,393,000	\$1,485,024,000	\$1,562,321,000	\$1,689,532,000	\$1,584,844,000
State of Indiana	\$2,858,821,000	\$2,617,214,000	\$2,551,512,000	\$3,248,868,000	na
Livestock					
Bullitt County	\$6,888,000	\$6,564,000	\$5,659,000	\$5,685,000	\$5,152,000
Clark County	\$5,377,000	\$4,970,000	\$5,155,000	\$5,478,000	\$3,119,000
Floyd County	\$3,444,000	\$3,067,000	\$3,039,000	\$3,176,000	na
Harrison County	\$51,017,000	\$49,537,000	\$46,954,000	\$50,176,000	na
Jefferson County	\$5,380,000	\$5,112,000	\$3,724,000	\$3,627,000	\$3,119,000
Oldham County	\$84,508,000	\$80,173,000	\$50,521,000	\$39,209,000	\$31,389,000
Scott County	\$2,524,000	\$2,439,000	\$2,289,000	\$2,481,000	na
Louisville MSA	\$159,138,000	\$151,862,000	\$117,341,000	\$109,832,000	na
Shelby County	\$34,716,000	\$32,942,000	\$33,882,000	\$35,500,000	\$31,643,000
Eight County L'ville Area	\$193,854,000	\$184,804,000	\$151,223,000	\$145,332,000	na
State of Kentucky	\$1,694,257,000	\$1,711,058,000	\$1,631,692,000	\$1,724,726,000	\$1,645,433,000
State of Indiana	\$2,217,836,000	\$2,087,001,000	\$1,975,448,000	\$2,093,128,000	na
Crops & Livestock					
Bullitt County	\$11,132,000	\$11,306,000	\$10,751,000	\$11,232,000	\$9,921,000
Clark County	\$20,439,000	\$20,241,000	\$20,878,000	\$24,184,000	na
Floyd County	\$8,584,000	\$7,916,000	\$8,613,000	\$8,793,000	na
Harrison County	\$64,089,000	\$59,911,000	\$61,080,000	\$65,642,000	na
Jefferson County	\$22,310,000	\$23,954,000	\$22,714,000	\$24,156,000	\$22,996,000
Oldham County	\$93,795,000	\$90,697,000	\$61,903,000	\$51,627,000	\$43,095,000
Scott County	\$11,729,000	\$13,074,000	\$11,802,000	\$14,729,000	na
Louisville MSA	\$232,078,000	\$227,099,000	\$197,741,000	\$200,363,000	na
Shelby County	\$63,374,000	\$65,774,000	\$68,986,000	\$74,256,000	\$65,985,000
Eight County L'ville Area	\$295,452,000	\$292,873,000	\$266,727,000	\$274,619,000	na
State of Kentucky	\$3,098,650,000	\$3,196,082,000	\$3,194,013,000	\$3,414,258,000	\$3,230,277,000
State of Indiana	\$5,076,657,000	\$4,704,215,000	\$4,526,960,000	\$5,341,996,000	na

Sources: Kentucky Agricultural Statistics, 1993-1994; and Indiana Agricultural Statistics, 1994-1995.

PROCESSING OF FOOD AND FIBER IN THE LOUISVILLE ECONOMY

payrolls in the Louisville metro area. Food and fiber producers support over 24,000 jobs and \$800 million in earnings for employees and proprietors annually. In terms of jobs and payroll generated by Louisville area firms, the largest industries are wood products, tobacco products, paper products, meat products, apparel, confections, and alcoholic beverages.

In this section, we describe the major manufacturing components of the food and fiber sector in Louisville, list the known companies, and provide economic estimates from our input-output model.

Other (incomplete) estimates of agribusiness manufacturing activity are also available. We discuss the various data sources and measurement issues in Appendix E. The detailed economic estimates just released by the 1992 Census of Manufacturers are provided in Appendix F. Due to confidentiality laws, many of the interesting data elements cannot be disclosed by the Census Bureau. For example, the Census Bureau discloses almost no information about Louisville's tobacco industry - the single largest agribusiness component. Moreover, where disclosed, Census estimates of employment, payroll, value added, and product shipments do not correspond exactly to those from our input-output model. Hence, to avoid confusion, we keep the estimates separate.

The Census data is most useful to us in comparing Louisville's manufacturing activity to that in other similar markets in our region. While we have an input-output model only for Louisville, we have some Census estimates of manufacturing activity for all metropolitan areas. We have displayed these comparative measures, where disclosed by the Census Bureau, in various ways in Appendix F. We have compared Louisville to Cincinnati, Evansville, Indianapolis, Kansas City, Lexington, Memphis, Nashville, and St. Louis. Estimates of sales and payroll, both in absolute and per capita terms, are displayed in as much detail as the Census Bureau reports.

The Louisville market stands out in several of the agribusiness categories. Louisville ranked fourth among the nine metros in the total value of food and beverage (SIC 20) shipments in 1992, and ranked second on a per capita basis. In absolute terms, Louisville ranked second in meat shipments, first in grain mill payrolls, and second in beverage shipments. In per capita terms, Louisville ranked first in meat shipments, bakery payrolls and grain mill payrolls, and second highest in meat payroll, grain mill shipments, and bakery shipments.

Louisville's lumber and wood products industry had the highest value of shipments and payroll among the six comparison metros for which data were reported. Louisville was also first in both of these measures on a per capita basis. The apparel industry in Louisville ranks second of seven in shipments and payroll on a per capita basis. The only other agribusiness manufacturing sector for which good comparison data are available is the paper products industry. Louisville ranks low in both paper shipments and payroll compared to the other seven metros for which estimates are available.

Food and Beverages

The food and beverage industry in Louisville includes firms primarily engaged in the production of meat, liquor, snacks, flour, soft drinks, oils, baked goods, milk, and condiments. Shipments from Louisville area plants are over \$1.3 billion annually. Two sectors, liquor and meat packing, account for over one-half of the value of shipments from food and beverage producers in the Louisville economy. This sector accounts for one in ten of all manufacturing jobs in the Louisville area.

Louisville area food and beverage producers account for around .6 percent of the total jobs and payroll in this industry nationally. This is above Louisville's share of the US population, implying that the area is a net exporter of processed food and

Processing of Food and Fiber in the Louisville Economy

Food and Beverage Producers in the Louisville Metro Area

Company	Products	Employees
Brown-Forman	distillers	1435
Monfort	pork packing plant	900
Fischer Packing	pork processing	570
Pillsbury	dough products	526
Jim Beam Brands	distillers	485
Morgan Foods Inc	soup & vegetable canning	460
Mothers Cookies	cookies	450
Mesa Food Products	tortillas & tortilla chips	350
Rainbo Baking	bread, baked goods	330
Liqui-Dri Foods	batters, mixes	300
Hudson Foods	poultry processing	260
Frito-Lay	potato chips, corn products	250
Wyandot Inc	chips, tacos	250
Paramount Foods	pickles, canned meat products	242
Purnell Sausage Co	sausage	240
Pepsi-Cola General Bottlers	soft drinks	232
Louise's, Inc	potato & tortilla chips	200
United Distillers Production	distilled spirits	200
Royal Crown Bottling Co	soft drinks	165
ATGTBT	potato chips	150
Dawn Food Products	frostings, baking mixes	145
Dean Milk Co	milk, cottage cheese	127
Algood Food company	peanut butter, jellies, jams, etc	126
Southeastern Dairies	fluid milk, juice	120
John Conti Coffee	coffee	97
Delmonico Foods	macaroni, spaghetti	95
Protein Technology	soy protein isolates, meal	90
Derby Cone Co	ice cream cones	87
Pepsi-Cola Bottlers	beverages, beverage containers	77
Golden Foods	edible oils	70
R.C. Bigelow	tea	65
Mid-America Dairymen Inc	milk & milk products	63
Golden Brands	shortening	60
Ramsey Popcorn	popcorn	55
Anita Spring Water	fruit drinks, bottled water	50
Dawson-Baker Packing	meat products	50
Blendex	flour mixes, seasonings	48
Coca Cola Bottling	closed	48
Standard Foods Inc	meat dishes, BBQ, chili, soup	48
Bloemer Food Sales	chili, BBQ	45
Krispy Kreme Doughnut	doughnuts	45
Purina Mills	livestock feed	44
Custom Packaging Co, Inc	meal packs	43
Wynn Starr Foods of KY	flavoring & seasonings	43
DD Williamson	baking ingredients carmel coloring	42
Gordon Foods	chips	42
ATGTBT	tortilla chips	41
Franklin Trading Great Harvest Bread	bread	35
Merchant's Ice & Cold Storage	ice	35
Tova Industries	dry soups, seasonings	35
Plehns Bakery	ice cream, baked goods	34
Kent Feeds	livestock feeds	30

Processing of Food and Fiber in the Louisville Economy

Food and Beverage Producers in the Louisville Metro Area (cont)

Company	Products	Employees
The Torbitt & Castleman Co	syrops, sauces	27
United Distillers Production	distillers dried grains, bourbon	24
Micropak	microwave popcorn	23
Bagdad Roller Mills	feed	22
American Beverage Marketers	drink mixes	20
Irish Hill Foods	meat packing	20
Silver Foods	pancake syrup, salad dressing	20
Henry Fruechtenicht	livestock feed	17
Adam Matthews	cheesecake	15
Paradise Tomato Kitchens	tomato-based food	15
Don Kepley Wholesale Meats	meat processing & packing	13
Muth's Candies	candy	12
Ehrmanns Bakery	ice cream, baked goods	11
Clarendon Flavor Engineering	food flavorings	10
Gettelfinger Popcorn	popcorn	10
Huber Orchards	winery	10
International Processing	bakery prods for animal feed	10
Feeders Supply	livestock feed	9
Miller Processing	slaughtering & processing	8
Robertson Country Meats	country ham	8
Kizito Inc	cookies	7
Allen Robertson & Co	vitamins, mineral supplements, feed	7
Grocers, Ice&Cold Storage	ice	6
Kerns Kitchen	pies, cakes	5
Memphis Meat Processing	beef & pork processing	5
Millstone Farm Sausage	sausage	5
Oertel Brewing	beer	5
Shelby Bakery	bakery products	5
Southeastern Ice Co	ice	5
Baird Dairy	ice cream	4
J. W. Haywood & Sons Dairy	ice cream	4
Cheese Factory	cheese	3
Emery Ice Cream	ice cream	3
Blue River Farm Supply	feed mixing, lumber,	2
Fudge Farm	fudge, pretzels, candy	2
Hoerter & Son	meat packing	2
Marty's Confectionery	cotton candy, gourmet popcorn	2
Ruddell Clark Candies	candy	2
Vogel Popcorn	popcorn	2
George Pfau's Co.	oils, tallows	n/a
Total (92 Companies)		10,410

Sources: Kentucky Cabinet for Economic Development, Kentucky Directory of Manufacturers, 1995"; and "Indiana Industrial Directory, 1995".

beverages. Louisville's share of this industry has been declining along with its share of the US population for at least two decades.

Louisville remains a center for liquor production. Liquor producers in the Louisville area account for around ten percent of the jobs and payroll in this

industry nationally. In terms of employment, the largest local firms are Brown-Forman (1,000), Jim Beam (485), and United Distillers (300).

Processing of Food and Fiber in the Louisville Economy

Meat processors are present in most large urbanized areas, and Louisville is no different. Louisville meat producers account for .6 percent of jobs and payroll in this sector nationally, slightly above Louisville's share of the US population.

The largest food and beverage employer in the Louisville area include Monfort Meats (650), Fischer Packing (570), Pillsbury (526), Morgan Foods (460), Mothers Cookies (450), Mesa Food Products (350), Rainbo Baking (330), Liqui-Dry Foods (300), Hudson Foods (260), Frito-Lay (250), Paramount Foods (240), Purnell Sausage (240), and Dawn Foods (130). See table on the previous pages.

Tobacco Products

Louisville has two manufacturers of tobacco products: Philip Morris and National Tobacco, employing 2,900 and 200 persons, respectively. Philip Morris produces cigarettes and National Tobacco produces chewing tobacco. Both firms' plants are in Jefferson County. Using our input-output model, we estimate that these firms ship around \$2.3 billion in tobacco products per year, and have a combined payroll of \$280 million. (Because of laws preventing disclosure of individual firm's data, the Census Bureau does not publish direct estimates of economic activity for Louisville's tobacco industry.)

Apparel Producers in the Louisville Metro Area

Company	Products	Employees
The Apparel Group	men's clothing	1,200
Louisville Bedding Co	bedding	900
M Fine & Sons	men's shirts	325
Louisville Manufacturing	jackets, caps	297
Louisville/Saydah Home Fashions	placemats, chairpads, napkins	200
Universal Denim Services	stonewashed denim garments	154
Louisville Home Fashions	bedspreads & linen	150
Town Talk Cap Mfg Co	caps, hats, visors	135
Delta Manufacturing	bedding	125
Adver-Togs	advertising caps, jackets, shirts	65
Derby Cap Mfg	caps	65
Lee-McClain	men's clothing	52
Smith & Logsdon	neckties, cloth bags	31
Louisville Glove Company	gloves	25
Superior Distributing Co	pallet pads, wiping cloths	22
Covers Unlimited	boat and auto covers	20
Oates Flag Company	flags, pennants, banners	17
Ancient Mariner	canvas awnings	15
Louisville Tent & Awning	awnings, banners	12
Walker Bag Mfg	burlap & cotton bags	10
Creative Engineering & Mfg	draperies & bedspreads	8
B&B Industrial Sewing	cases, bags, auto seat straps	7
Becker & Durski	racing silks, harness work	6
International Burial Dress Co	burial dresses, veils	6
O K Tent & Awning	awnings	6
Gittings Bedding	pillows, mattresses	5
Lady J & Co	women's leisure ware	5
Ruth's Drapery Service	draperies	5
Hyman Debroy & Sons	tarps, tents, etc	4
JC Marine Mfg	canvas products	2
Total (30 Companies)		3,874

Sources: Kentucky Cabinet for Economic Development, Kentucky Directory of Manufacturers, 1995"; and "Indiana Industrial Directory, 1995".

Textile and Apparel Products

Compared to many other parts of the US, Louisville is not a major producer of textile and apparel products. According to our input-output model, Louisville area producers support around 1,600 employees and a payroll of over \$30 million annually. (The manufacturing directories list firms employing nearly 3,500 persons). The largest employer among local textile and apparel manufacturers is The Apparel Group, with 1,200 employees. Other

large employers include Louisville Bedding, M. Fine and Sons, Louisville Manufacturers, and Universal Denim.

Lumber and Wood Products, including Wood Furniture

There are a number of small sawmills in the area that produce rough sawn lumber. This lumber may be either left in a rough stage of finish for rough

Lumber and Wood Products Firms in the Louisville Metro Area

Company	Products	Employees
Kimball Office Furniture	wood office furniture	470
Louisville Ladder Corp	wood ladders	450
Kitchen Kompact	wood cabinets	250
Blue Grass Cooperage	whiskey barrels	200
Koetter's Woodworking	molding, cabinet parts, doors, stairs	200
Keller Mfg Co	dining & bedroom furniture	175
Haas Cabinet Co	cabinets	168
The Butler Group, Inc	wood counters, tops	160
Gamble Brothers	Masonite mfg	158
Flexible Materials	edgebanding, veneer	150
Northland Corp	lumber & veneer	138
Anderson Wood Products	millwork	130
Ledco	wood doors	120
U.S. Housing Components	prefab housing parts	105
Kister Wood Products	cabinets	100
Schmidt Cabinet Co	wood cabinets	95
Norstam Veneers	veneer	85
Down River Forest Products	wood doors, etc	80
Stemwood Corp	veneers	80
Bittners	custom furniture	75
Kentucky Wood Floors	wood floors	75
Paramount Plywood Products	hardwood lumber & plywood	75
BL Curry & Sons	veneer	74
Kentucky Indiana Lumber	millwork	70
New Albany Box & Basket	wooden fruit & veg. baskets	69
EM Cummings Veneers	veneer	65
Ideal Wood Products	doors & panels	64
Instant Products, Inc	wood rocking chairs, child furniture	63
Heritage Hardwoods	veneer	60
Jefferson Wood Working	wood table products	60
Louisville Hardwoods	lumber	55
Pliable Veneers	wood veneer	50
Rosalco Woodworking	woodworking & millwork	50
National Products, Inc	plywood wall panel, doors	48
Champion Wood Products	dimension wood, molding, millwork	45
Kinetic Wood Truss Mfg	wood trusses	45
Tempo Designs Ltd	furniture	45
Universal Woods	particle & fiber board	40
Starlite Cabinet Co	cabinets, bookcases	38

Processing of Food and Fiber in the Louisville Economy

Lumber and Wood Products Firms in the Louisville Area (cont)

Company	Products	Employees
Adams Custom Veneers	veneer & lumber	35
Louisville Lumber & Millwork	millwork	35
J & J Pallet	pallets	32
Carl Booth & Co	custom veneer plywood	30
Hoosier Wood Floors	hardwood flooring	30
Ohio Valley Door	wooden doors & panels	27
Brown Wood Preserving	wood treating	25
Dura Containers Corp	appliance bases, misc. wood products	25
Kentucky Millwork	millwork	25
Louisville Hardwoods	lumber	25
C. Rueff Sign Co, Inc	wood routed signs & letters	23
Midwest Veneers	hardwood veneer	22
Thompson Custom Cabinets	wood cabinets	22
J&J Pallets	pallets & wood mulch	21
Allhom Eagle Windows	wood windows	20
Dehart Pallet & Lumber	lumber, pallets	20
JL Gilbert Co	chipboard, etc	20
Bill Kraemer Veneers	veneer plywood, doors	20
Lynco Millwork & Mfg	wood cabinets	20
New Albany Componet & Truss	floors and trusses	20
Custom Cabinets	cabinets, bookcases, chests	19
Southwestern Tobacco Co	hogshead repairing	19
Andriot Systems	wood blinds	18
W-M Lumber & Wood Products	pallets, boxes, lumber	18
Wood-Lore	wood craft items	18
Formwoods Inds	veneer	16
Art Boundries	wood doors & cabinets	16
Custom Plywood	plywood products	15
Georgetown Truss	floors&trusses	15
Shively Wood Products	wood products, furniture	15
Universal Barrel Corp	barrels, kegs	15
Wieland Cabinet	wood cabinets	15
Austin Concepts	arch. casework	14
B&B Cabinet Co	wood bookcases, cabinets	14
Burton Lumber Co	pallets, lumber, etc	14
Adkins Export Packing	wood packing boxes, crates,etc	13
Marwood Inc	veneer	12
Merrill Mfg	wooden waterbed frames	12
U.S. Specialties Millwork, Inc	architectural millwork	12
Best of Kentucky	upholstered wood furniture	11
Charles Reichmuth	lumber	11
Lyndon Millwork	windows, stairways, doors	11
OP Link Handle	wood handles	11
Audubon Block Company	wood blocks, cleats	10
Best Made Pallett	pallets	10
Commonwealth Fabricators	custom casework	10
Kelvin Corp	bourbon barrels	10
Kentuckiana Wood Products	pallets	10
Leggett & Platt	bed foundations	10
Triple A Woodworking	sawmill	10
John Canter Cabinets	cabinets & bookcases	9
Sanders Sawmill	sawmill, lumber	9

Processing of Food and Fiber in the Louisville Economy

Lumber and Wood Products Firms in the Louisville Area (cont)

Company	Products	Employees
Barks Lumber Co	pallets	8
Dial One Custom Workshop	wood cabinets	8
Faske Wood Moulding	doors, moldings, stairs, trim	8
Interior Systems Mfg	custom cabinetry	8
Renaissance Wood Products	cue racks	8
DBM Inc	cabinetry	7
Al's Woodcraft	wood furniture, birdfeeders, etc.	7
Fleenor Sawmill Inc	sawmill, lumber	6
Prince Custom Cabinets	cabinets	6
Wakelam Lumber Co	pallets, lumber	5
Woodesign	wood cabinets	5
Woodtek	wood cabinets	5
Floyds Knobs Mfg Co	wood furniture, plaques	4
Wright Enterprises	wood cabinets & brochure racks	4
Custom Millwork	wood cabinets	3
Monroe Pallet & Mfg	pallets	3
Shireman Pallets	pallets	3
B&J Pallet Co	pallets	2
Custom Fabricators	cabinets, tops	2
Lanhams Reproduction Shop	wood furniture	2
John Moss & Son	upholstered furniture	2
The Woodshop	wood treating, custom millwork, cabinets,	2
Bimmerles	picture frames	1
Caldwell Sash	wood sash	1
Mother Goose Originals	wood gifts	1
Total (116 Companies)		5,510

Sources: Kentucky Cabinet for Economic Development, Kentucky Directory of Manufacturers, 1995"; and "Indiana Industrial Directory, 1995".

construction (barns, fences), or these mills might sell the lumber to several local buyers who grade the lumber and dry it for the furniture and molding industries.

Local cabinetmakers, hobbyists, and furniture manufacturers buy this lumber, but the majority of dried lumber is exported from the area. A recent industry newsletter, the *Hardwood Market Report* listed two local wholesalers (Louisville Hardwoods, and the Northland Corporation) of rough sawn lumber and a buyer of veneer logs for the European market. Local buyers purchase from a wide territory, but most of the wood is produced in the hilly forests in and around the Appalachian mountains. The cant (core) of logs purchased primarily for furniture products is often sold to pallet makers, several of which are located in the Louisville area.

Louisville area lumber and wood products firms support around 6,000 employees and over \$150 million in payroll annually. (The manufacturing directories report only around 2,800 employees in

these industries). The production of veneer and plywood, kitchen cabinets, millwork, hardwood floors, pallets, and wood furniture are the dominant activities locally. Overall, Louisville accounts for .5 percent of all value-added among US lumber and wood products firms - slightly more than our area's share of the national population. In terms of employment, the largest Louisville area wood products firms are Bluegrass Cooperage (200), Northland (140), Andersen Wood Products (130), Ledco (120), Kister Wood Products (100).

Paper Products

The Louisville area hosts over 30 firms primarily engaged in the production of corrugated boxes, paperboard displays, envelopes, and other paper products. The firms employ over 2,600 persons, according to the Kentucky and Indiana Directories of Manufacturers. Unlike many of the other agribusiness industries, the paper products sector is

Processing of Food and Fiber in the Louisville Economy

Paper Products Firms in the Louisville Metro Area

Company	Products	Employees
Stry-Lenkoff	dry cleaning tags	204
Southern Standard Cartons	paperboard boxes	160
Stone Container	coated papers, bags	160
Willamette Industries	corrugated packaging	160
Inland Container	corrugated boxes	142
Packaging Unlimited	corrugated packaging	140
Container Corporation of America	corrugated boxes	135
Chesapeake Container	corrugated packing and displays	134
Curtis 1000	envelopes	127
Independent Container	corrugated boxes, packing material	115
Thoroughbred Containers	corrugated displays	115
St. Joe Container	corrugated containers	110
Double Envelope Corp	envelopes	101
Carton Craft	folding paperboard cartons, displays	100
Atlantic Envelope Co	envelopes	88
Deco Paper Products	paper plates	85
Mafcote Industries	portioned cups	79
Packaging Service	corrugated board	75
Burns Packaging	corrugated shipping containers	60
Dayton Carton-KY	cartons	47
Courier Carton	folding cartons	43
Louisville Label	gummed labels	35
Castille	packaged giftwrap	32
Promotional Packaging	display packaging	32
Kentucky Paper Box	folding cartons, set-up paper boxes	31
Accu-Tec	corrugated fibre boxes	30
Phoenix Hill Die Cutting & Design	fiber cartons	30
Midwest Paper Products	corrugated shipping containers	27
Stone Container	corrugated shipping containers	23
Label Specialties	labels	14
Rebco	corrugated paper products	13
Sonoco Products	fiberboard containers	11
Louisville Envelope Manufacturing	envelopes	10
Specialty Mfg of IN	cardboard shipping containers	3
Labels Unlimited	labels	n/a
Total (35 Companies)		2,671

Sources: Kentucky Cabinet for Economic Development, Kentucky Directory of Manufacturers, 1995"; and "Indiana Industrial Directory, 1995".

not dominated by one or two very large firms. As is evident from the table below, most employees work in a firm with 100 to 200 persons. The major activity is the production of cardboard boxes and other shipping materials.

Farm Machinery, Fertilizers

Besides land and labor, fertilizers and machinery are the major inputs to farm production. With the exception of one company (Brinly Hardy) located in downtown Louisville, all farm machinery is produced

outside of the Louisville MSA. Franchised dealerships much like automobile dealers sell and service farm machinery in this country. These dealers may carry several lines of equipment but always only one major manufacturer's line. The major tractor and implement dealers that are located in this area are Agco-Allis Chalmers, Case-International, Ford-New Holland, John Deere, and Massey-Ferguson. There are obviously others, but they have a small presence locally. No producers of agricultural chemicals showed up in our scan of manufacturing directories.

WHOLESALE AND RETAIL TRADE OF AGRIBUSINESS PRODUCTS

In this section we examine recent data on the distribution system for agribusiness products in Louisville and several comparable metro areas. Two comprehensive US Census Bureau publications on this subject have been released in the last year. They are the *1992 Census of Wholesale Trade* and the *1992 Census of Retail Trade*. These publications provide detailed estimates of sales, payroll, and employment by type of product and for all metropolitan areas and states. The last estimates were for 1987.

We have compiled estimates for key agribusiness sectors in tables and charts found in Appendix F. For comparison, we have also provided estimates for eight other metro areas: Cincinnati, Evansville, Indianapolis, Kansas City, Lexington, Memphis, Nashville, and St. Louis.

At the wholesale level, the Louisville market stands out in the distribution of lumber and wood products. With \$26 million in payroll, Louisville lags only Kansas City and St. Louis. Note that Louisville ranks third of nine in payroll, but only fifth in sales volume. This implies that Louisville lumber and wood products wholesalers are shipping lower valued products, but are supporting more jobs due to the higher physical volume.

Louisville's rank in most of the other wholesale categories is in line with its relative population size. Louisville ranks seventh out of nine in the payroll at wholesaling operations for groceries, apparel, and paper. Similarly, Louisville ranks seventh in the wholesaling of farm products and supplies. Memphis, only slightly larger than Louisville in population size, has nearly ten times the payroll in the wholesaling of grain and other raw farm products. Indianapolis tops the list in payroll of firms wholesaling supplies to farmers.

At the retail level, we find that Louisville stands out in its concentration of nurseries and lawn and garden stores. The Louisville market has twice the number of nursery store employees per capita as

does the US as whole, 75 percent more payroll per capita, and 48 percent more sales per capita. However, many horticulture products are sold by general discount stores (Wal-Mart, K-Mart), mail order, and other outlets not classified under SIC 526. We cannot tell from the available data whether Louisville is a major exporter of these products or simply differs from other markets in the industrial classification of retail outlets.

General Farm Supply Stores

The Louisville area seems to have two types of farm supply stores. One type seems to be modeled after the hardware store. Their product lines will include clothing, hardware, plumbing and electrical supplies, fencing, small implements, power equipment, pet food, and veterinary supplies. This type of store markets to both area farmers and to homeowners, and is counted officially under general retailing.

The other type of store appears to eschew the business of the homeowner and sells its goods almost entirely to farmers. Fertilizer and lime are delivered to the store in railroad car quantities and are priced to the farmer by the ton. Seed and pesticide application and sales are dealt with on an acre measurement as opposed to a homeowners square footage measure. These stores often carry the products that the first type of store does, but the emphasis is placed on the farmer customer. The economic activity of these stores is officially counted under wholesale trade, SIC 5191.