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# Find Out What We're Made of:

## A Strategic Plan for Indiana's Agricultural Economy

**2005**

# Executive Summary

# Background and Purpose

Like many states, Indiana is grappling with globalization trends and the resulting flow of manufacturing jobs to low labor cost regions. BioCrossroads, Indiana's life sciences initiative, was formed to leverage the state's life science assets for the creation of stable, high paying jobs. Eight areas of focus were defined in 2003 for BioCrossroads' efforts, one of which was AgriBiotechnology.

Early in 2004 it became clear that a better understanding of Indiana's agricultural economy was needed before BioCrossroads could intelligently identify the opportunities of greatest value to Indiana. Many local and state leaders encouraged BioCrossroads to undertake a broad analysis of the ag economy. This project, guided by an advisory board representing a cross section of Indiana's public and private agricultural leadership, has been underway for most of 2004.

The first phase of this project sought to understand Indiana's ag economy – its strengths, weaknesses, unique opportunities and threats. Moreover, since the end goal was new jobs, this analysis focused on jobs and wages rather than the more traditional "wealth creation" approach. An interim report was released in December 2004 to share the findings with economic development experts and decision-makers across the state.

Agriculture accounts for 190,000 jobs and $5.14 billion in annual income. While this represents about 5% of Indiana's job base, it is a significant portion of the state's rural economy. (Bureau of labor Statistics 2003 and Indiana Agricultural Statistics 2002)

The interim report found that Indiana's Hardwoods, Grain, Pork and Beef, Canning and Baking Industries account for over 80% of ag wages, growth and economic impact in Indiana. It also detailed 111 sub-segments of the ag economy by size of wage base and growth or decline in average wages and number of jobs over the past ten years. Finally, it identified specific areas of strength and weakness.

The second phase of this project aimed to develop specific actions to build on Indiana's strengths and shore up weaknesses, all with the objective of maintaining and expanding the job base. Armed with the understanding from the phase one analysis, the advisory team developed the recommendations and specific strategies contained in this report.

It is the goal of BioCrossroads and the ag advisory board that this study and its recommendations will serve as a useful tool to state and local leaders and help to stimulate vibrant growth in Indiana's ag economy. In addition, this broad understanding of Indiana's ag economy will help BioCrossroads identify new research and development efforts at key institutions, which supports BioCrossroads' effort to grow new life sciences businesses and jobs.

# Findings

The year long study of Indiana's ag economy resulted in five major findings:

**1.** Indiana's ag economy can be better viewed as nine clusters of inter-related industries (rather than the traditional 14 sectors used by the Federal Bureau of Labor Statistics). These clusters comprise Wood Products, Grains, Pork & Beef, Canning, Baking, Poultry, Dairy, Beverages and a miscellaneous category.

**2.** Over 80% of jobs and wages today reside in five of these clusters – Wood Products, Grains, Pork & Beef, Canning and Baking.

**3.** Indiana has significant competitive ***strengths*** to leverage. Examples include:

* 4.3 million acres of high quality hardwood forests supporting an industry which employs 47,000 Hoosiers,
* A central location within a one day drive of two-thirds of the U.S. population and
* A world leading land grant university, which provides trained workers and modern technologies.

**4.** Indiana has significant ***weaknesses*** which must be addressed. Examples include:

* A serious decline in food processing,
* A negative image in the industry of Indiana's environmental regulatory agency which dissuades investment in Indiana and
* A lack of coordination between multiple state agencies involved with ag economic development.

**5.** Significant ***threats*** to Indiana's ag economy include:

* Global competition from Asian, Chinese and Latin American wood product manufacturers,
* Continued global pressures on commodity grain prices along with political pressures to reduce domestic price supports and
* The need to meet rising environmental stewardship standards and to deal with the consequences of urban encroachment.

The Agriculture Advisory Board convened by BioCrossroads also developed recommendations around leadership, focus and six specific ***opportunities*** for the state to defend its existing job base, address its key weaknesses and build upon its strengths.

# Recommendations

The following recommendations address the leadership and focus of Indiana's ag economic development efforts statewide, along with six specific strategies within the wood products and food-related clusters tailored to Indiana's opportunities and threats.

## 1. Leadership

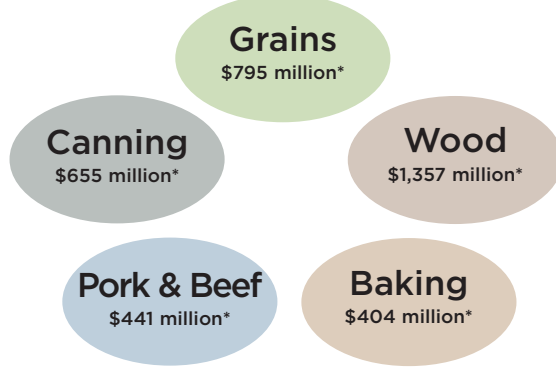
The Agriculture Advisory Board of BioCrossroads ***recommends that Indiana establish a central authority to drive economic development in the agriculture and agribusiness sectors*** to coordinate activities which currently reside in various agencies and programs. Whatever structure is chosen for agriculture, Indiana needs focused leadership to assure that the state:

- Integrates agricultural economic development into Indiana's overall economic development efforts,
- Identifies and implements statewide strategies to defend and expand the ag economy in a globally competitive arena,
- Annually updates its analysis of the strengths, weaknesses, opportunities and threats and uses this information to guide economic development activities and
- Establishes metrics and tracks and publishes progress toward the goals of these strategies, especially from the perspective of jobs and wages.

The Board further recommends that this authority be charged with prioritizing strategies to defend and expand top job-supporting clusters and position Indiana to attract investment in future food and ag technologies and businesses. Both priorities will require that the state become adept at forging novel alliances across public and private sectors.

## 2. Strategic Focus

The Agriculture Advisory Board of BioCrossroads ***recommends that Indiana designate the following five agricultural clusters as immediate priorities*** for defense and expansion into domestic and global markets. These five currently represent 84% of Indiana's ag economy (more if owner-operator farm income is considered).




*Does not include approx $1,000 million in primary farm production

## 3. Specific Cluster Strategies

***Six specific strategies are recommended to support and expand Indiana's agricultural and rural economies***. Three focus on the hardwood cluster in marketing, manufacturing and improvement of Indiana's forest base, while three address weaknesses and opportunities in the food and ag clusters. Several components of these strategies are already underway but operate without the coordination and urgency which could be provided by focused state leadership. These six strategies address all five of the largest clusters. They will also strengthen the smaller clusters.

### Strategy 1

***Develop and implement a global branding and marketing strategy for Indiana's wood products.***

Indiana's hardwoods industry underpins a range of high quality products and employs 47,000 Hoosiers. Indiana produces wood that is generally higher quality than global competitors. This positioning requires a clearly articulated and aggressively executed effort to create and globally market Indiana's 'quality' brand. The state should take the lead in organizing the private sector and trade offices in this effort, as private companies are constrained by anti-trust provisions and competitive pressures.

### Strategy 2

***Introduce advanced manufacturing techniques to improve the competitiveness of Indiana's hardwood product companies.***

Efforts are already underway to identify technologies which can aid Indiana's competitiveness. The activities of the Indiana Hardwood Lumbermen's Association and the Purdue University Center for Advanced Manufacturing to commercialize log scanning and cryogenic cooling technologies is one example. State leadership is needed to accelerate and expand such efforts to counter the imminent threat from Asian and Latin American imports.

**Relevance of Strategies to Indiana's ag clusters**

| CLUSTER | Brand IN Hardwood Products | Advanced Hardwood Product Mfg | IN Hardwood Genetic Improvement | Part Time Farming Focus | National Food Proc. Center | Ag Park of the Future National Pilot |
|---|---|---|---|---|---|---|
| **Wood** | | | | | | |
| **Grains** | | | | | | |
| **Pork & Beef** | | | | | | |
| **Canning** | | | | | | |
| **Baking** | | | | | | |
| Dairy | | | | | | |
| Poultry | | | | | | |
| Beverages | | | | | | |

### Strategy 3

***Improve the health and future value of Indiana's hardwood forests by creating mechanisms to produce, distribute and plant improved seedlings.***

Indiana has the technology (improved tree genetics) needed to assure the future health and value of its forests and woodlots. But Indiana currently lacks adequate mechanisms and incentives to see them planted. The collaboration between Purdue University and the Hardwood Tree Improvement and Regeneration Center in West Lafayette can provide improved varieties of most Indiana hardwoods today. The state needs strategies to produce, distribute and provide planting incentives. These strategies must assure that woodlot owners and foresters plant seedlings selected to maintain and improve the health and species diversity of the forests. It will also assure that plantation owners plant seedlings selected to provide the highest value wood to assure the state's continued leadership in high quality wood products.

### Strategy 4

***Recognize the importance of Indiana's part-time farming workforce and develop policies to maintain and support this segment by explicitly linking it to non-farming rural development.***

Of Indiana's 63,000 farmers, over half farm part-time. This statistic is somewhat unique to Indiana. The state should explicitly target rural development efforts to the needs of this rural workforce, including consideration of educational and training programs for combination farming and "off-farm" careers.

### Strategy 5

***Create a national food processing research center to address Indiana's declining strength in this value-added segment.***

In the early 1990's, Indiana began losing ground in key segments of the food processing industry. Increasingly, Indiana's raw agricultural products are shipped to other states, where products are processed and sold back as finished products. However, Indiana hosts the nation's largest food science department at Purdue University, making it a logical candidate for a national food processing laboratory. This asset would provide a powerful base to address this weakness in the economy.

### Strategy 6

***Position Indiana as a national pilot site for integrated, environmentally sound production of food and bio-energy.***

Food production, particularly animal-based production, faces growing constraints from rising environmental standards and encroaching urban populations objecting to odors and noise. Technologies to solve many of these challenges are being developed at universities like Purdue University, but are often too expensive for individual operations to afford. Indiana has an opportunity to take a national leadership role in defining and piloting an integrated solution to these challenges.

Indiana should form a novel public/private coalition to design and build an 'Ag Enterprise Zone' in which greater environmental stewardship is made economically feasible. A pre-permitted, pre-zoned park for animal, food and bio-energy operations could be designed in which the cost of the waste treatment facilities are shared across many operations. Further, by clustering operations in which the side-stream of one is a feedstock for another (e.g., soy protein from a biodiesel plant fed to chickens whose waste is burned for bio-energy), economics can be maximized and environmental footprints minimized. Indiana has the assets and opportunity to lead the nation in developing 21st Century agri-processing and to attract industries and jobs in the process.

# Conclusion

Defending and expanding Indiana's ag job base requires leadership to assure that the state understands current economic realities, focuses on the top-producing clusters and develops and executes specific strategies to enhance Indiana's competitiveness. These recommendations represent the highest impact opportunities identified by the BioCrossroads ag advisory board. It is hoped that these recommendations form the basis of a statewide ag strategy. Detailed explanations and rationales for all recommendations are contained in the following pages.

# A Plan for Indiana Agriculture

# Recommendation 1: Enhance Statewide Leadership

***The Agriculture Advisory Board of BioCrossroads recommends that Indiana establish a central authority to drive economic development in its agriculture and agribusiness sector.***

### *Rationale*

Dramatically lowered shipping costs, increasingly open markets and instant communication are rapidly turning every agricultural operation on the planet into a current or potential competitor of our farmers and agribusinesses. In the face of this intensifying competition, Indiana must either become more effective at coordinating its efforts to remain competitive or lose markets, companies, jobs and farm income. Other regions and countries are already becoming more aggressive. For example, China has targeted U.S. furniture production and invested heavily in modern production plants. In only three years, Asian imports idled 35% of America's furniture manufacturing capacity. Indiana needs a mechanism to enhance its leadership in the agricultural arena.

The advisory board does not recommend any specific leadership structure. But the structure chosen must provide statewide leadership, assuring that the state has a plan, coordinates efforts across multiple agencies and stakeholders toward that plan's objectives and measures results. The advisory board believes four functions are key to success. The state must:

- Integrate agricultural economic development into the state's overall economic development efforts,
- Identify and implement statewide strategies to defend and expand Indiana's ag economy in a globally competitive arena,
- Annually update its analysis of the strengths, weaknesses, opportunities and threats to the ag economy and use this information to guide its economic development activities and
- Establish metrics and track and publish progress toward the goals of these strategies, especially from the perspective of jobs and wages.

The first function simply recognizes that production agriculture and related agribusinesses are part and parcel of Indiana's economy, and represents leverage opportunities with non-agricultural sectors.

The next three recommended functions resulted from reviewing ag strategies of other states. Most treat the state as a neutral party, passively reacting to requests for support and equally supportive of every citizen and agribusiness. This commonly held vision precludes states from making hard decisions to allocate limited resources to the highest impact activities.

Although this approach insulates decision-makers from the political discomfort of needing to prioritize among constituents, the advisory board believes that this luxury is no longer available to Indiana. Difficult decisions must be made based on clear, recent, reliable data and demonstrably linked to visible, high-impact goals of benefit to the state. This can be achieved by annual updates of the data underpinning state strategies, annual revisions of those strategies and publicly shared metrics and progress reports.

# Recommendation 2: Focus

***The Agriculture Advisory Board of BioCrossroads recommends that Indiana designate the following five agricultural clusters as immediate priorities for defense and expansion into domestic and global markets.***

***Rationale***

These five clusters currently represent 84% of Hoosiers' income from the ag economy in wages paid, over 80% of growth in Indiana's ag economy over the past 10 years and over 80% of total economic impact. (The components of each of these clusters are listed in Appendix V, found at http://www.biocrossroads.com/agreportappendices.pdf)

The top five clusters represent the bulk of ag economy jobs and wages. The drop off from # 5 (Baking) to # 6 (Beverages) is almost 50%. This is by no means to suggest that these four smaller clusters are not worth supporting, as current size does not predict future growth. However, any effective strategy must start with the recognition of current realities, and these five clusters underpin the state's ag economy job base today.

The analysis focused exclusively on jobs and wages (or their farm income equivalent), not on the more traditional measures of value of shipments or wealth creation. This decision was deliberate, as the mission of BioCrossroads is to create high paying jobs. Highly automated sub-segments, as seen in Indiana's poultry and egg operations, hire relatively few workers, but they pay significant corporate taxes. This contribution to Indiana's economy is not reflected in this report and merits analysis in the future.

| Cluster | Actual Wages Paid 2003 | % of Total | % Growth Index | Wages Paid x Multiplier |
|---|---|---|---|---|
| **Wood** | $ 1,357,277,177 | 31.4% | 0.90 | $ 2,961,440,000 |
| **Grain** | $ 795,394,549 | 18.4% | 1.37 | $ 2,071,880,000 |
| **Canning** | $ 655,442,483 | 15.1% | 0.75 | $ 1,480,440,000 |
| **Pork & Beef** | $ 441,330,894 | 10.2% | 1.22 | $ 1,261,190,000 |
| **Baking** | $ 404,676,129 | 9.3% | 0.83 | $ 972,090,000 |
| Beverages | $ 234,375,660 | 5.4% | 0.96 | $ 655,530,000 |
| Misc | $ 173,286,874 | 4.0% | 0.68 | $ 360,500,000 |
| Dairy | $ 148,418,777 | 3.4% | 1.19 | $ 447,400,000 |
| Poultry | $ 118,743,918 | 2.7% | 1.14 | $ 455,070,000 |
| **TOTAL** | **$ 4,328,946,461** | **100.0%** | | **$ 10,665,540,000** |

# Recommendation 3: Cluster Specific Strategies

***Six specific strategies are recommended to support and expand Indiana's agricultural and rural economies.***

1. **Brand/Market Indiana Hardwood Products**
2. **Adopt Advanced Manufacturing Techniques**
3. **Improve Indiana Hardwood Forests**
4. **Part Time Farming Workforce**
5. **National Food Processing Center**
6. **Ag Park of the Future National Pilot**

It should be noted that various groups were already working on several of these strategies at the time this report was being drafted. The Indiana Hardwood Lumbermen's Association (IHLA) had already prioritized and implemented high-impact manufacturing technologies for Indiana's wood products cluster in partnership with Purdue University's Center for Advanced Manufacturing. Similarly, the Food Science Department at Purdue University had already outlined the opportunity to create a national food processing center in Indiana. The U.S. Forest Service and Purdue University had been developing improved hardwood trees for Indiana's forests for many years, making the recommended forest improvement strategy possible.

## Strategy 1

***Develop and implement a global branding and marketing strategy for Indiana's wood products.***

The high quality and existing reputation of Indiana hardwoods creates the opportunity for Indiana to create a globally recognized brand for its products. The board recommends the development of a global branding campaign focused on Indiana high quality hardwood finished products.

This strategy could utilize the Department of Commerce's foreign trade offices, perhaps providing those officials with training about Indiana's hardwood products and equipping the foreign offices with Indiana made office furniture. Recent efforts by the Jasper Chamber of Commerce, the Business Modernization and Technology Corporation and the IHLA to organize competitiveness networks among Indiana hardwood products companies merit encouragement and support from the state.

### *Rationale*

The furniture industry as a whole has gone through a significant downturn. The North American furniture industry has seen over 35% of its production idled or moved to China since 2001, with much of the loss centered in the Carolinas. This analysis confirmed a dramatic increase in U.S. log exports to China during this period (1,500% in three years). However, Indiana's furniture manufacturing sector has only slowed by about 10%, in line with Indiana's overall manufacturing decline

since 2000. Indiana log exports to China have barely changed. The state's hardwood sector supports 47,000 Hoosier jobs and shows resilience in the face of fierce foreign competition.

It is clear that such pressures will only increase. This cluster's resilience provides time for Indiana to increase its competitiveness. Failing to act aggressively could result in the same job losses which have hit the Carolinas in recent years. A global branding and marketing strategy is needed immediately, and the Indiana Department of Commerce's export and promotional programs appear likely conduits for some of this effort.

## Strategy 2

***Introduce advanced manufacturing techniques to improve the competitiveness of Indiana's hardwood product companies.***

It is recommended that the Indiana hardwood industry engage with Purdue University's Center for Advanced Manufacturing to assure that the industry is tracking, evaluating and adopting new technologies with the goal of establishing and maintaining global leadership in the manufacturing of finished hardwood products.

***Rationale***

As discussed, Indiana's furniture industry is under assault by Chinese and other foreign manufacturers. The Chinese are also competing as low cost producers. While Indiana should not compete in this area, it must adopt methods of production that cut costs, increase productivity and shorten lead time from order to delivery. Indiana has certain advantages to exploit, such as access to technologies and proximity to key markets. An IHLA study already identified two technologies with the potential to significantly improve Indiana's competitiveness – log scanning and cryogenic cooling.

*Log scanning*: Currently logs are positioned for cutting into lumber or veneer by eye, and yields are dependent upon the skill of the sawyer. Computerized scanning tools are now becoming possible which improve the yield per log as much as 18-40% in preliminary tests.

*Cryogenic Cooling*: Blades used to "slice" veneer cannot be cooled using traditional methods, such as lubricants sprayed on the blades, because it would stain the wood and reduce its value. The blades must cut at a slow rate and be cooled. This reduced cutting speed and down time reduces productivity. Also, blade life is very short. Cryogenic cooling allows for super-cooled air to be utilized so blades can be used longer and kept sharper. There is also less downtime on the production line. Research is currently underway at Purdue University's Center for Advanced Manufacturing in this area.

Several challenges to Indiana's hardwood manufacturers exist. One is that they are unaccustomed to cooperatively developing technologies and lack both the experience and institutions to work with their in-state competitors. State leadership is critical to organizing hardwood manufacturers efforts.

A second challenge is assuring continued access to new competitive technologies. Purdue already provides expertise to Indiana companies on existing technologies through their Technology Assistance Program (TAP). The Purdue Center for Advanced Manufacturing has the potential to provide Indiana companies a first chance to license new Purdue technologies. However, mechanisms are needed to identify and access new competitive technologies arising from sources out of state. An excellent example is found in the Purdue/IHLA identification of log scanning technology from the University of Mississippi.

Although the challenge of competitors whose labor costs can be as low as $0.60 per day per worker may seem daunting, Indiana has tremendous advantages to leverage. In addition to a several month advantage in order fulfillment, Indiana hardwood companies also invest in capital improvements at a higher rate (3.0% vs. 2.6%) than their counterparts (5 year average, U.S. Census Annual Survey of Manufacturers). This underscores the industry's willingness to invest in its future.

Indiana's hardwood manufacturing industry faces tremendous foreign competition. Until now it has shown more resilience than other states and enjoys advantages in local hardwood supply, time to delivery, expertise from Purdue University and willingness to invest in capital improvements. The time is ripe for a state-led partnership between industry and academia to coordinate manufacturing techniques to enhance Indiana's competitive edge.

## Strategy 3

*Improve the health and future value of Indiana's hardwood forests by creating mechanisms to produce, distribute and plant improved seedlings.*

***Rationale***

Today, 47,000 Hoosier jobs depend upon hardwood forests and the industries they support. A need exists to assure the continued health of this supply and an opportunity exists to further increase the quality and value of Indiana's hardwood base. A statewide strategy should be developed to produce, distribute and provide planting incentives for several reasons. One, to assure that woodlot (wild or lightly managed acreage) owners and foresters plant seedlings selected to maintain and improve the health and species diversity of the forests. Two, to assure that plantation (heavily managed acreage) owners plant seedlings selected to provide the highest value wood to continue Indiana's leadership in producing high quality wood products.

Indiana has access to the technology (improved tree genetics) needed to assure the future health and value of both acreages. The Hardwood Tree Improvement and Regeneration Center (HTIRC) at Purdue University, a cooperative effort with the U.S. Forest Service, has improved varieties of black walnut, black cherry, curly maple, oaks and even chestnuts. However, Indiana currently lacks adequate mechanisms and incentives to see them planted. Two nurseries provide seedlings for planting, but their capacity is limited, and their charter has been to provide low cost seedling for reforestation. Typical seedlings sell for $0.25 each. High quality seedlings, in contrast, have been sold for as much as $31 each.

The binary nature of Indiana's hardwood acreage (plantation and woodlot) calls for specific approaches to each.

For forests and minimally managed woodlots, "improvement" means tending to the overall health of the forest by planting the proper mixes of hardwood species and seedlings with diverse genetics. For heavily managed tree plantations and woodlots, "improvement" means planting seedlings with uniform genetics and with the highest value of wood. Fostering the planting of both categories of hardwood seedlings is essential if Indiana is to maintain and grow its hardwood industry.

## Strategy 4

***Recognize the importance of Indiana's part-time farming workforce and develop policies to maintain and support this segment by explicitly linking it to non-farming rural development.***

***Rationale***

For decades, farmers have found they must increase the acreage they till to provide a living wage. Because of this, many economic development efforts have focused on ways to provide a living wage from smaller operations. Value-added operations, local marketing, premium priced organic production and other approaches shared the goal of providing a living wage from small operations. These efforts are valuable and worthy of continuation. However, the advisory board believes that this approach must be augmented, especially in a state where only 55% of farmers consider farming to be their primary occupation.

The other 45% of Hoosier farmers also hold non-farm jobs. Because of modern seed, equipment and ag chemicals, they are able to farm significant acreage crops like beans or corn and still hold a full-time job. These "dual-career" Hoosiers will need an array of options to receive training related to one career or the other without pursuing a full blown degree program in both. This population also represents a labor pool which could help address worker shortages in areas such as health care and education. Indiana needs to create an adequate number of non-farm jobs in rural areas and provide the training needed to fill them.

Indiana has an opportunity to leverage this large, rural workforce but only if its unique needs and capabilities are recognized and incorporated into an overall strategy.

## Strategy 5

***Create a national food processing research center to address Indiana's declining strength in this value-added segment.***

***Rationale***

Eight of the nine economic clusters which make up the state's ag economy fall within foods and food manufacturing. Given the importance of food processing, an update of an analysis by Purdue economists John Connor and William Schiek was performed. (*Food Processing, An Industrial Powerhouse in Transition*, 2nd edition, 1997). This analysis used figures from 1992.

Drs. Conner and Schiek divided the food processing industry into three categories of companies: Supply Oriented, Demand Oriented, and Footloose. (See appendix VI at http://www.biocrossroads.com/agreportappendices.pdf for the industry segments which comprise each category.)

***Supply Oriented*** companies need to locate near their supply of raw materials. This requirement is due to relatively high shipping costs or perishability of the raw materials. Examples of these companies are soybean processing, corn milling, meat packing, poultry and canning. How well Indiana is faring in this category is calculated by:

$$\frac{\text{Indiana's \% of U.S. Supply Oriented Companies}}{\text{Indiana's \% of U.S. Net Farm Income}}$$

If the ratio is:

**< 1 Indiana processes less than it grows**

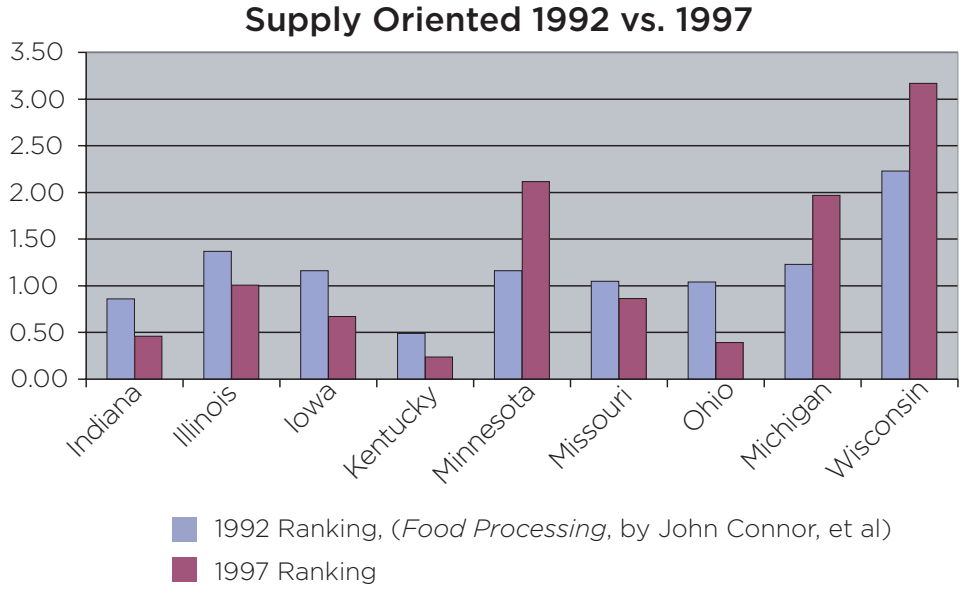
**= 1 Indiana processes just what it grows**

**> 1 Indiana processes more than it grows**

In 1992, Connor and Schiek calculated this ratio at .86. By using updated figures from the 1997 United States Business Census Bureau, the authors of this report calculated that the ratio had dropped to .46. The drop appears to be a direct result of lost processing business.

| | 1992 | 1997 |
|---|---|---|
| **Food Processing %** | 2.33 | 1.20 |
| **Farm Income %** | 2.72 | 2.61 |
| **Ratio** | 0.86 | 0.46 |

From 1992 to 1997, Indiana lost food processing industries.



***Demand Oriented*** companies must be near centers of population for consumption. This requirement is due to the higher cost of distribution or the limited shelf life of the product. Examples of this category include soft drink bottling, milk processing and ice cream manufacturing. How well Indiana is faring in this category is calculated by:

$$\frac{\text{Indiana's \% of U.S. Demand Oriented Companies}}{\text{Indiana's \% of U.S. Population}}$$

If the ratio is:

**< 1 Indiana processes less than it consumes**

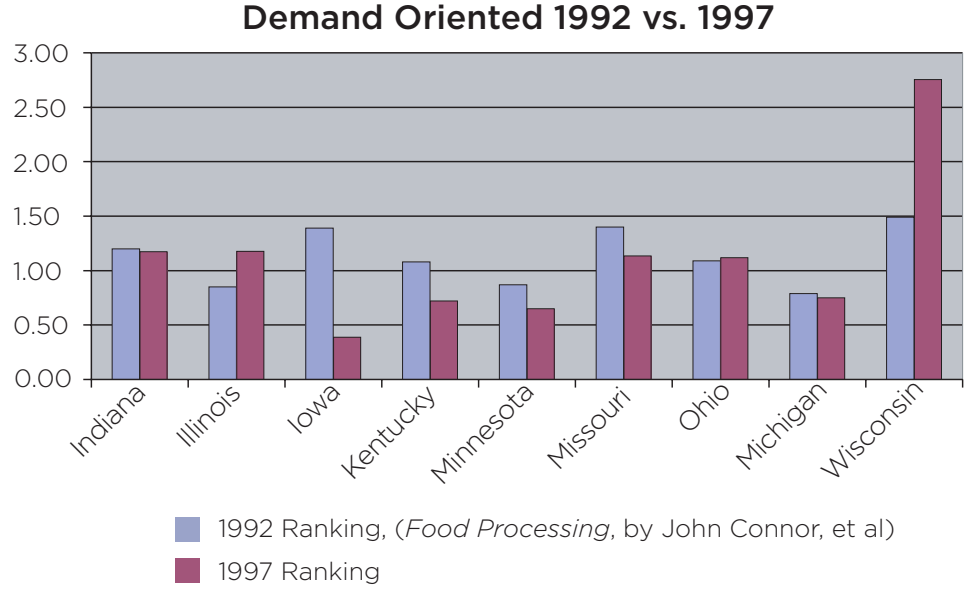
**= 1 Indiana processes just what it consumes**

**> 1 Indiana processes more than it consumes**

Indiana has not lost as much as in the Supply Oriented category.

| | 1992 | 1997 |
|---|---|---|
| **Food Processing %** | 2.65 | 2.50 |
| **Population** | 2.22 | 2.20 |
| **Ratio** | 1.19 | 1.14 |

A comparison of other Midwestern states indicates that most process about what their populations consume. Wisconsin processes more than their population consumes, and Iowa appears to have lost a significant portion of this category of businesses and jobs.



***Footloose Oriented*** companies do not fit into either of the two previous designations. Neither manufacturing costs of raw materials nor distribution costs are overriding factors in their location. These companies are growing faster in output and employment and their value-add to sales ratio is higher than the other two categories. Local governments typically recruit these companies with tax incentives, although these companies are harder to retain. Footloose companies are less constrained in site selection.

With the exception of Illinois and Kentucky, no corn belt state has fared well in attracting these companies. Examples of these companies include breakfast cereals, canned specialties, flour mixes and dough and pet foods. How well Indiana is faring in this category is calculated by:

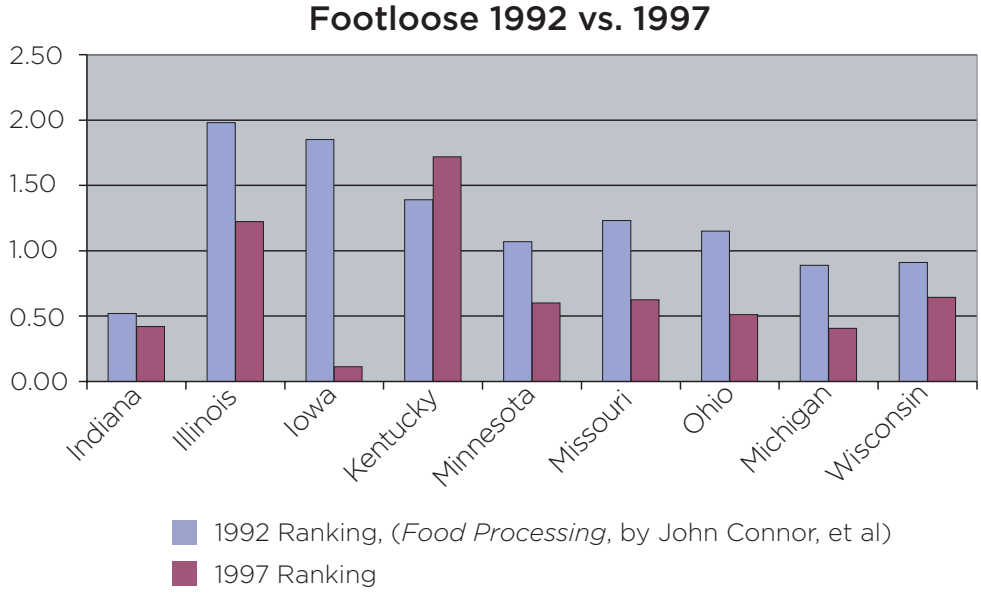
$$\frac{\text{Indiana's \% of U.S. Footloose Processing}}{\text{Indiana's \% of total U.S. Manufacturing}}$$

If the ratio is:

**< 1 Indiana has fewer such companies than expected from its overall manufacturing base**

**= 1 Indiana has as many such companies as expected from its overall manufacturing base**

**> 1 Indiana has more such companies than expected from its overall manufacturing base**



Indiana's total manufacturing percentage has grown, but its food processing capacity has declined.

| | 1992 | 1997 |
|---|---|---|
| **Food Processing %** | 1.81 | 1.60 |
| **Total Manufacturing** | 3.49 | 3.70 |
| **Ratio** | 0.52 | 0.43 |

A look at Indiana's position relative to other Midwestern states makes it clear that these mobile food processing companies and jobs have been leaving the region. (Kentucky is the exception.) While Indiana has not lost significantly over this period, it has about half the strength in the sector compared to its other manufacturing positions.

***Overall***, Indiana must address its weaknesses in food processing. The state continues to ship more raw agricultural products to other states for processing. It then buys back finished foods to feed its population, in effect acting as a colony.

However, Indiana has several strengths to build upon. First, Indiana's central location makes it a good distribution point for foods, with 65% of the U.S. population within a one day drive. Second, Purdue University has the largest food science department in the nation.

A recommended centerpiece of a food processing strategy is the creation of a national food processing center at Purdue University, preferably with federal funding. This effort could then be leveraged with Purdue's Technology Assistance Program, its New Ventures Program and the Madison Test Kitchen to drive development and expansion of Indiana food processing businesses. In addition, Indiana's recruitment efforts need to focus on supply and footloose oriented companies.

## Strategy 6

***Position Indiana as a national pilot site for integrated, environmentally sound production of food and bio-energy.***

***Rationale***

The advisory board envisions Indiana tackling two of the most intractable challenges facing agricultural production operations today – the need to meet constantly rising environmental standards and the consequences of urban encroachment.

The vision is particularly ambitious in that it seeks to turn these 'problems' into competitive advantages for businesses to locate in the state. Three considerations lead the board to consider the creation of specialized 'Ag Enterprise Zones' or 'Ag Parks' as a solution.

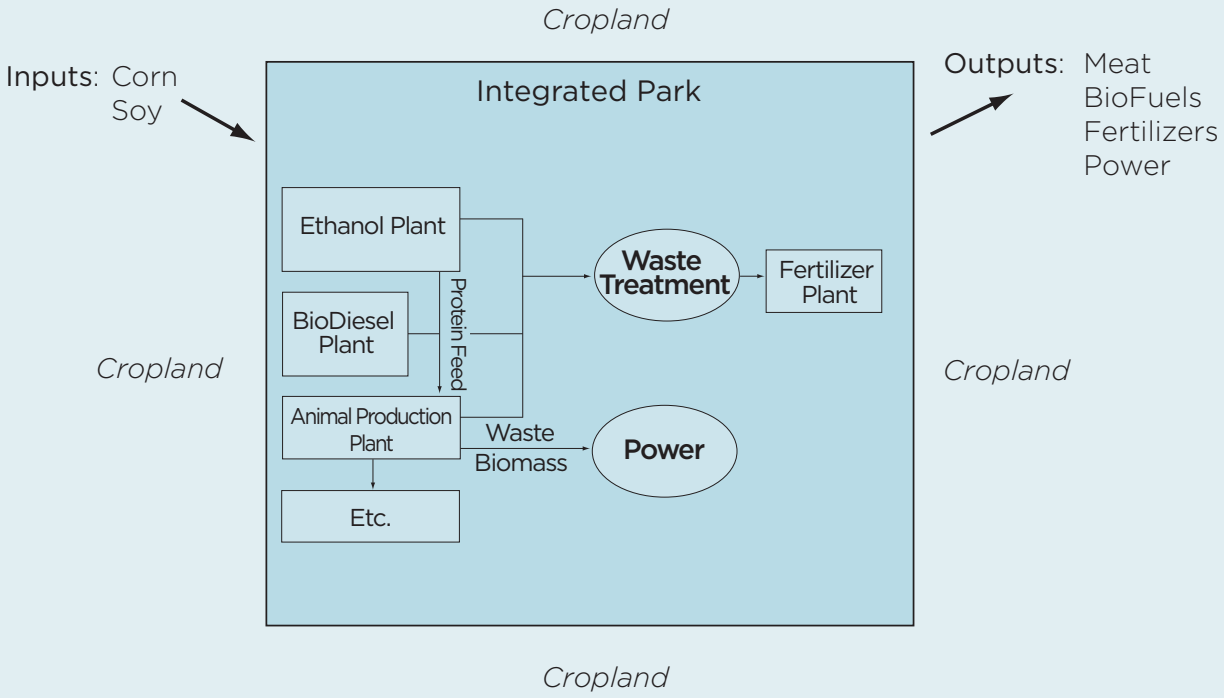
First, the board believes that new technologies for handling wastes and odors already exist and are adequate to meet even the most stringent standards. These are, in general, too expensive for individual operations to afford. However, if multiple operations were to be clustered together, the cost of the latest and best technologies could be shared (e.g., common waste treatment plants).

Second, co-locating multiple agricultural operations creates the possibility of integration, where the side streams or waste streams of one operation serve as raw materials for another. Both improved economics (e.g., reduced shipping costs) and waste avoidance are possible.

Third, by zoning blocks of land specifically for agricultural operations and situating these 'Ag Parks' away from population centers, many of the challenges of urban encroachment could be mediated.

The advisory board recommends that Indiana design, plan and pilot an integrated 'Ag Park of the Future' in which higher environmental standards and improved economics are achieved by the sharing of common infrastructure costs and the integration of feedstocks, side and waste streams. The concept is illustrated on the next page:

## Integrated Ag Park Concept



This effort has the potential to attract significant federal funding. It addresses existing priorities of multiple federal agencies – the Environmental Protection Agency, the U.S. Department of Agriculture, the Food and Drug Administration and the Department of Commerce, which are logical candidates to fund this concept. This pre-zoned, pre-permitted park will meet strict environmental standards at reasonable cost, providing a powerful draw to attract agricultural businesses to Indiana.

A team at Purdue has begun planning an initial scoping study. The end design would include:

- Pre-permitted ag enterprise zones to attract bio-energy and food production investments,
- Clustering of ag businesses to share investments in modern pollution controls and maximize economics,
- Tracking and early adoption of new technologies (e.g., cellulose-to-ethanol fermentation, soy oil to aviation bio-diesel) and
- Integrating operations in which the byproduct or waste stream of one operation provides raw materials for another – improved economics and reduced waste.

Successful execution of such an ambitious project will require the creation of a novel set of public and private alliances. State leadership is essential, as these alliances will involve collaboration between entities which do not traditionally interact at this level. Moreover, this effort will require a new level of engagement by state agencies such as the Indiana Department of Environmental Management, which will need to participate in evaluating new technologies and commit in advance to granting permits in exchange for the higher levels of environmental stewardship offered.

Finally, a successful 'Ag Park' pilot will directly address Indiana's growing weakness in the food processing sector discussed earlier. It will also position the state as a leader in integrating public policy, effective regulatory regimes and rural and agricultural development efforts into both jobs and a healthy environment.

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