

PURDUE AGRICULTURAL ECONOMICS REPORT

DECEMBER 2000

China: Future Customer or Competitor in Livestock Markets?

Thomas Hertel, Professor; Alejandro Nin, Graduate Research Assistant; Allan Rae, Professor at Massey University; and Simeon Ehui, Economist with the International Livestock Research Institute

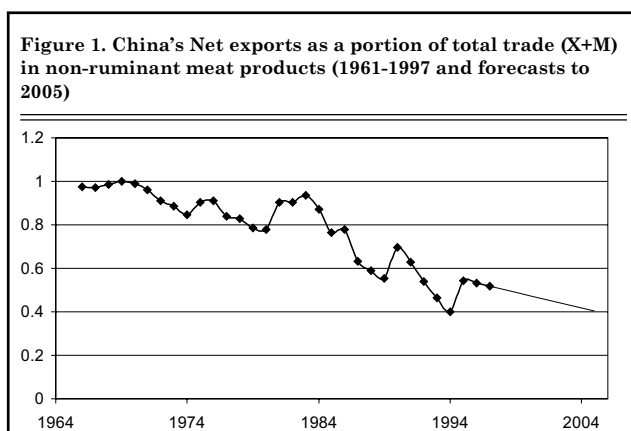
China's future role in international agricultural trade continues to be a puzzle. Part of this puzzle, namely that related to grains, has received far more attention than has livestock trade, which has been relatively neglected. China is a net exporter of livestock products, although over the last two decades imports have been increasing faster than exports. Figure 1 shows the time path of net exports (exports – imports) of meat, essentially poultry meat and pork, presented as a fraction of total non-ruminant meat trade (exports – imports) from 1965 to 1997. Forecasts from 1997 to 2005 (discussed below) are also shown. The trend is clear. The decrease of net exports as a proportion of total trade reflects a

steady deterioration of China's comparative advantage in pork and poultry production. This begs a further question: Will China eventually become a net importer of livestock products?

The Organization of Economic Cooperation and Development (OECD) projects that China will be a major net importer of poultry meat by 2005. In contrast, the International Food Policy Research Institute (IFPRI) projects an increase in China's net exports of poultry meat in the coming decades. Resolving this controversy requires examination of the forces underpinning change in consumption patterns in China, as well as the structural changes that have been occurring in China's livestock industry (Figure 2).

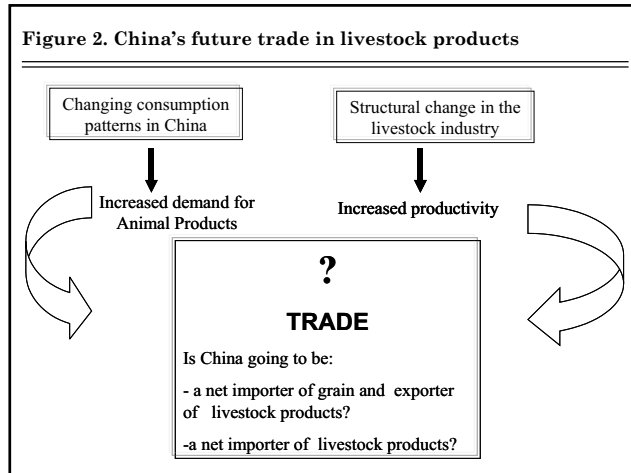
Rising Demand for Livestock Products

The changing patterns of food consumption in Asia are now well documented. Rapid increases in household income, with urbanization, foreign investment, and marketing have combined to shift consumption toward non-traditional cereals and value-added products, including many derived from livestock. As a consequence, meat consumption in China has risen from 13.4 kg per person in 1980 to 41.2 kg per capita in 1995 – an increase of more than 200.0 percent! This rapid growth in meat consumption helps explain the increase in meat imports. In 1991 China became a net importer of poultry meat, and by 1995 China was the world's third largest poultry meat importer. Research suggests that this increase in meat consumption will continue until 2020, when meat consumption will reach 60 kg per capita.



In This Issue

China: Future Customer or Competitor in Livestock Markets?	1
What Do Locally Owned Cooperative in Indiana Look Like?	5
The Law Behind Planning and Zoning.	9



But Supply is also Growing

Even with the growth in domestic demand for meat products, China's gross exports have continued to increase – but at a somewhat slower pace than imports. An analysis of the supply-side helps square this with the increase in consumption.

Figure 3 shows the evolution of China's non-ruminant production since 1961. Pork, the most important source of animal protein in China, is the most important contributor to increased output. China is now the world's largest producer of animal protein foods, with pork output

growing at an average annual rate of 7 percent since the early 1980s. The 1990s showed an increase in the importance of poultry production with 12 percent annual growth rates between 1980 and 1995, giving a cumulative increase of 485 percent over this period.

This rapid expansion of meat production has been possible because of the structural transformations that expanded private plot sizes, specialization among household production units, increased foreign investment, and on expanded domestic feed industry. Chinese authorities have also played a role by actively promoting poultry production because these animals are more efficient feed converters than hogs, cattle, and sheep.

Output gains have been fueled by increased productivity

In general, there are two sources of productivity growth: technical change and "catching up." The first relates to advances in the technologies used by the world's most advanced livestock production

facilities. Finding still more productive technologies is usually described as shifting the "technological frontier." Catching up, the second source of technical change, stems from an improvement in a country's efficiency that moves it toward the frontier. Catching up can be measured by rate at which producers adopt known technologies, closing the gap between them and the world's most efficient producers.

If China's productivity is growing at the same rate as the growth in the technological frontier, China is not catching up—the ratio between China's productivity and the world's productivity remains the same. If China's productivity growth is greater than expansion in the frontier, then China is incorporating new technologies and increasing its relative efficiency: China is catching up to the frontier.

Figure 4 shows the source of productivity growth (output per head of inventory) in China's pig and poultry industries. Historical growth is reported from 1976 to 1997 and is projected from 1997 to 2005. Productivity growth is represented by a cumulative index. If, for example, productivity grows by 20.0 percent in 1978 and 5.0 percent in 1979, the cumulative productivity index for the two years is calculated as $[1.2 \times 1.05] = 1.26$, or 26.0 percent. Figure 4A shows that the rapid productivity growth for pigs since the 1980s is largely due to "catching up." The overall frontier, established by the most productive countries in the world, shows little change, whereas productivity in China grew at an average annual rate of 5.4 percent between 1978 and 1997. Based on the productivity forecast out to 2005

Purdue Agricultural Economics Report is a quarterly report published by the Department of Agricultural Economics, Purdue University.

Editor

Gerald A. Harrison
E-mail: harrison@agecon.purdue.edu
Phone: 765-494-4216 or
toll free 1-888-398-4636

Editorial Board

Lee F. Schrader
Stephen B. Lovejoy
Christopher A. Hurt
Philip L. Paarlberg

Layout and Design

Cathy Malady

Circulation Manager

Patt Sheahan

Agricultural Economics Department

www.agecon.purdue.edu

PAER World Wide Web

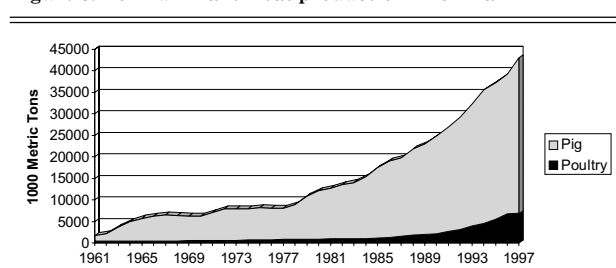
www.agecon.purdue.edu/extensio/paer.htm

Cooperative Extension Service

www.anr.ces.purdue.edu

Purdue University
Cooperative Extension Service,
West Lafayette, IN

Figure 3. Non-ruminant meat production in China



(also in Figure 4A), we expect that catching up will continue to explain most of the productivity growth in China's pig production in the next five years.

The composition of growth in output per head in China's poultry sector is quite different. Figure 4B shows that China's poultry productivity experienced very little catching up until the 1990s. However, there is a sharp upturn in relative efficiency at the end of the period. Poultry production in China has been catching up at a remarkable pace (more than 6.5 percent per year) since the early 1990s. This growth in the relative efficiency of China's poultry sector will likely continue.

The combination of catching up and technical change is expected to result in poultry output growth rates continuing to exceed those for pigs. Modernization of China's pig sector began about a decade earlier than was the case for poultry, so efficiency gains are still possible, but they will come at a slower rate than in the poultry sector. The projected annual rate of catching up in poultry production is about 7.5 percent compared to about 3.3 percent for pig production. The technological frontier for the poultry sector also appears to be more dynamic than for pigs. Technical change in poultry production is forecast to grow at about 3.1 percent per year compared to about 1.5 percent annually in pig production. All things considered, the 11.0 percent

annual rate of growth in poultry productivity between 1995 and 2005 is projected to be more than double the 4.9 percent annual rate of growth in pig productivity.

2005: Exporting or Importing Meat?

Examination of the supply and demand-sides of China's livestock puzzle allow something to be said about the future of China's trade. Caution is important since China's income and productivity growth are only part of the story. Other countries' productivity will also be increasing. Furthermore, other sectors in the Chinese economy will be experiencing technological change, and they will compete with livestock production for scarce labor and capital. These other effects can be recognized by combining the supply and demand projections into a modified version of the Global Trade Analysis Project (GTAP) model of the world economy. This global general equilibrium model captures developments in both the farm and non-farm economies as well as simultaneous changes in bilateral trade. The model uses projections of the labor force, investment rates and income growth simulated forward from 1995 to 2005. It also takes into account the productivity forecasts shown in Figure 4.

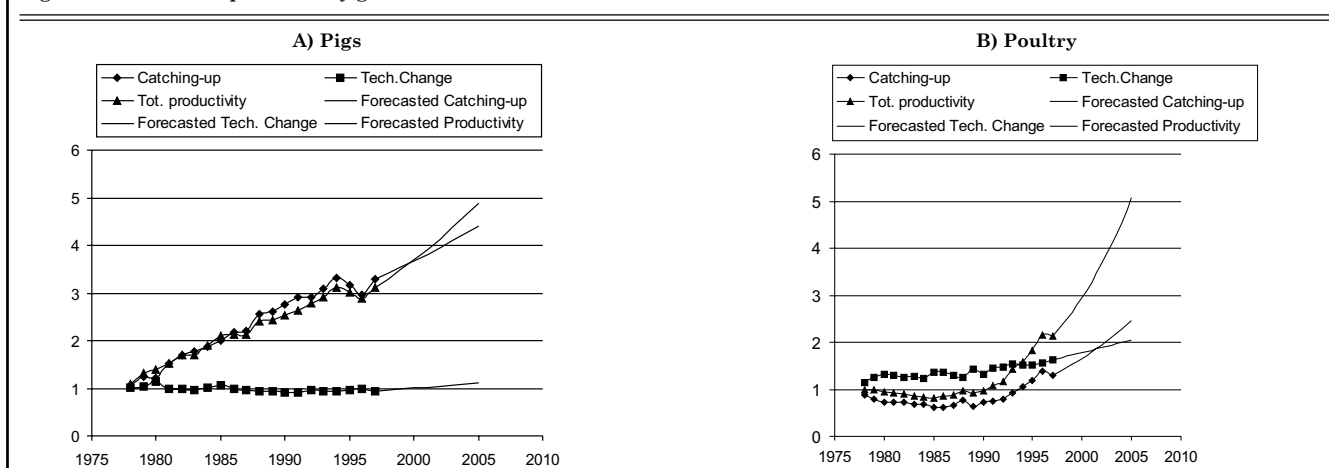
According to our forecast, China's imports will nearly double over the decade from 1995 to 2005. However, exports will also increase so that

China will still be a net exporter of non-ruminant meats (essentially poultry meat and pork), slightly increasing the balance of trade surplus from \$1.6 million in 1995 to \$1.7 million in 2005. The importance of imports in total trade will continue to increase – from about 30 percent to almost 45 percent of exports by 2005. Net exports as a share of total trade will continue to decline under these forecasts (Figure 1).

The model used to estimate productivity also provides information about possible errors in the forecasts. This information leads to a distribution of possible increases in productivity in each sector. These range from 109-135 kg/head for pork and 4.9-6.2 kg/head for poultry. The potential impact on China's net trade in 2005 was developed by running the model again, sampling from this distribution of possible livestock productivities. The range of trade balance outcomes are displayed in the first part of Figure 5. The trade balance for non-ruminant products might be as high as +\$3.6 million or as low as -\$48.0 million dollars. The possibility that China will be a net importer of non-ruminant products in 2005 cannot be ruled out, although continuation of net exports is the most likely outcome.

The Asian financial crisis, has made economists pay increased attention to macro-economic uncertainty. What would happen if growth of non-livestock productivity slows,

Figure 4. Cumulative productivity growth rates for China



and as a consequence incomes rise more slowly? The net trade position in meats is very sensitive to this. An economy-wide slowdown will affect livestock trade on both the supply and the demand sides. Lower income growth obviously reduces domestic demand, and lowers the need for imports. In addition, lower productivity growth in the non-agricultural sectors means less competition for labor and capital. Wage costs and interest rates facing livestock producers would be lower under a slowdown scenario. This translates into enhanced supply and further erosion of the need for imports. On the other hand, rapid growth in the non-livestock economy has the opposite effect. By fueling income growth, meat demand is also increased. Meanwhile, the competition with other sectors for inputs also intensifies. All things considered, the rate of productivity growth in the non-livestock sectors of the Chinese economy plays a key role in determining the livestock trade balance. The range of trade balance estimates in the second part of Figure 5 (-\$1,586 mill. to +\$5,035 mill.) underscores this point. This range is based on only small changes in China's overall growth rate—from a low 5.9 percent per year to a high of 6.9 percent per year. Yet even this modest degree of macro-economic uncertainty is sufficient to generate greater uncertainty in China's non-ruminant trade balance than

that resulting from uncertainty in the livestock sector itself!

Uncertainty is also introduced by China's pending accession to the World Trade Organization (WTO). While this development is not formally reflected in our projections, it is clear that it will have implications for China's trade balance. Meat imports into China are currently constrained by many tariffs in the 20 percent to 45 percent range, along with import licensing requirements. Under the US-China Bilateral Agreement, China is committed to establish a tariff-only import regime for meats and dairy products, and all WTO-inconsistent non-tariff barriers must be removed. The Agreement also requires reductions of up to 70 percent in tariffs on some frozen meat cuts. Foreign enterprises will be permitted to engage in the full range of distribution services within China, and China has also agreed to abide by the WTO Sanitary and Phytosanitary measures. Such reforms of China's meat import policies would, by themselves, encourage increased imports of meats that would likely reduce China's net exports.

The growth in consumption of livestock products in China over the past 20 years has been explosive. Many producers in North America and elsewhere are watching this development, and hoping to claim a share of the China market sometime in the future. This view ignores the

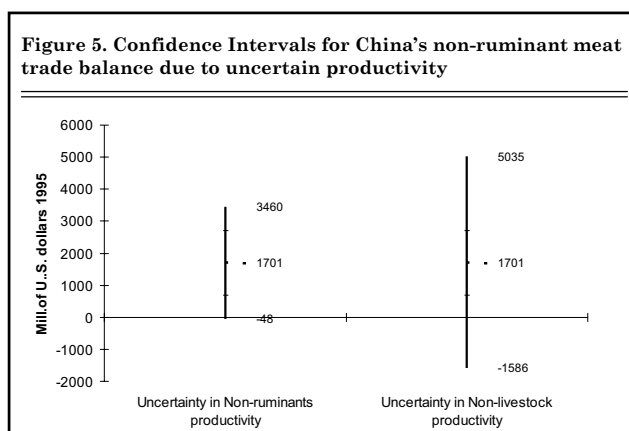
supply-side of China's meat products industry. Fueled by strong productivity growth, pork and poultry output in China has been growing rapidly. The outcome of this race between demand and supply for meats will have a great impact on world markets in the coming decade. China could become the world's largest meat importer – or she could prove to be a fierce competitor, exporting to Asia's rapidly growing markets.

Our analysis of past productivity performance in the Chinese pork and poultry sectors is an aid that serves as a basis for forecasting future developments in the livestock sector. Having started the modernization process a decade earlier, pork productivity is already at 60 percent of North American levels. On the other hand, poultry productivity in China is only 30 percent of that in North America. However, poultry output per head is accelerating. We project poultry productivity to grow by 11 percent per year out to 2005. This growth will be insufficient to offset fully the projected growth in demand, so China's trade balance in meats will likely continue to deteriorate. However, our base case analysis shows China remaining a net exporter of non-ruminant meats in the medium run.

Our analysis of potential uncertainties, both in the livestock and non-livestock economies of China, shows that the nation's net trade position is very sensitive to these factors. If livestock productivity growth is at the high end of possible outcomes, and if there is a slow-down in the rest of the economy, China could become a fierce competitor in export markets by 2005. On the other hand, slower than expected diffusion and adoption of livestock technology coupled with a rapidly growing macro-economy could fulfill the dreams of those who see China as a major future market for their meat exports.

For More Information

Contact the author or the editor if you wish to have the information sites and the references.



What Do Locally Owned Cooperative in Indiana Look Like?

Jennifer Vandeburg, Research Associate; Joan Fulton, Associate Professor; Susan Hine, Assistant Professor, Department of Agricultural and Resource Economics, Colorado State University; and Kevin McNamara, Professor

Consolidation in agricultural production and in agribusiness, is resulting in a number of business challenges for local agricultural supply and grain marketing cooperatives.

A recent study conducted by the Purdue University Department of Agricultural Economics focused on understanding cooperative operators' perceptions of trends shaping the future of their industry and strategies that they have used to maintain their competitiveness. Data were collected through interviews with 35 managers of locally owned Indiana farm supply and grain marketing cooperatives during the months of May and June 2000. Cooperative managers were asked for their opinions about industry trends as well as for information describing lines of business, size, source of business, and technological adoption. These data are described in this article to present an overview of the size and structure of Indiana cooperatives and to provide insight into how these cooperatives plan to face the challenges of survival in the future. In the second article in this series, we will discuss the new business arrangements local agricultural cooperatives are using to meet the challenges of consolidation in agribusiness.

Lines of Business

Indiana local cooperatives engage in several business activities. Table 1 reports responses from 34 managers about the business activities in which their cooperatives are involved. Lines of business are grouped into three categories: farm supply, grain marketing, and administrative. Each category is subdivided to indicate the primary activities within each line of business.

Farm supply activities are divided into the agronomy division, energy division, retail farm supply store, and feed division. The agronomy

division is a core business for local farm cooperatives. One reason local agricultural cooperatives were established was to supply agronomic products and services to farmers, and this continues as a major part of cooperatives' business today. All sample cooperatives offer agronomic products and services, including seed, fertilizer, crop protection products, and custom application services. Ninety-one percent offer agronomic consulting services. The results suggest that local cooperatives are keeping pace with

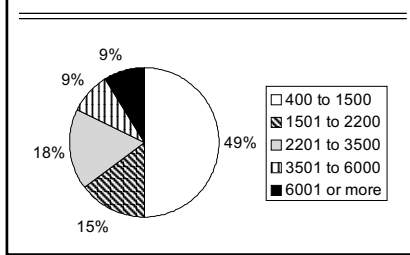
innovation. Eighty-eight percent of the local agricultural cooperatives offer precision agriculture services such as GPS (Global Positioning System) mapping and variable rate fertilizer and chemical application.

The energy division is also an important area of business. Eighty-two percent of local cooperatives sell fuel products, with petroleum most common, followed closely by liquid propane. Forty-four percent of cooperatives also operate convenience stores (C-stores) as part of their fuel sales efforts.

Table 1. Cooperatives Involved in Specific Lines of Business (34 of 35 Cooperatives Responded)

Line of Business	Number of firms involved in this line of business	Percentage involved in this line of business
Farm Supply		
Agronomy Division		
Seed Sales	34	100%
Chemical Sales	34	100%
Fertilizer Sales	34	100%
Agronomic Consulting	31	91%
GPS Mapping	30	88%
Variable Rate Fertilizer/Chemical Application	30	88%
Energy Division		
Petroleum Supply (Bulk Fuel)	28	82%
Gas at the Pump	21	62%
Convenience Store (C-Store)	15	44%
Liquid Propane Supply	25	74%
Retail Farm Supply Store	27	79%
Feed Division		
Feed Sales	28	82%
Toll Milling	12	35%
Livestock Nutrition Consulting	25	74%
Animal Health Products	26	76%
Grain Marketing		
Grain Division		
Grain Handling	30	88%
Commodity Brokerage Services	7	21%
Identity-Preserved Grain Contracts	15	44%
Administrative Services		
Financing		
Crop Input Loans	23	68%
Operating Loans	15	44%
Livestock Production Loans	8	24%
Feed Loans	10	29%
Crop Insurance	5	15%
Electronic Ordering	7	21%

Figure 1. Percentage of Indiana Cooperatives in Each Size Category (Size Category by Number of Members)

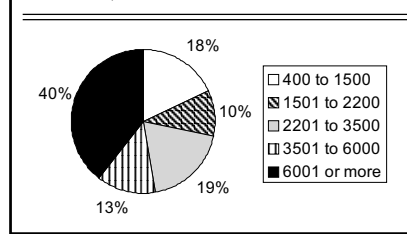


Seventy-nine percent of the cooperatives surveyed indicated that they operate retail farm supply stores. These stores vary in their selection and scope, from selected merchandise to a wide range of products for livestock supply, horticulture, and machinery repair.

Livestock production in some parts of Indiana is restructuring and becoming more concentrated. According to the Indiana Agricultural Statistics Service, the volume of pork production has fluctuated with market cycles, the number of hog farms has decreased and the size of the remaining farms has increased dramatically over the past ten years. As a result, a greater percentage of pork production operations now operate their own feed mills. Despite this trend toward providing fewer feed manufacturing services to farms, 82% of the state's local cooperatives are still active in feed supply. Some have branched out into recreational or "hobby" feeds, and those cooperatives in urban areas target suburban pet and horse owners. Many cooperatives with feed businesses also provide livestock nutrition consulting services and sell animal health products. However, only 43% of cooperatives with feed businesses offer toll-milling services.

Most local agricultural cooperatives in the state, 88% of those interviewed, indicated that they operate grain handling facilities, in varying scale, from a few small truck houses to large rail terminals. About one-fifth of the cooperatives have

Figure 2. Percentage of Indiana Cooperative Membership in Each Size Category (Size Category by Number of Members)



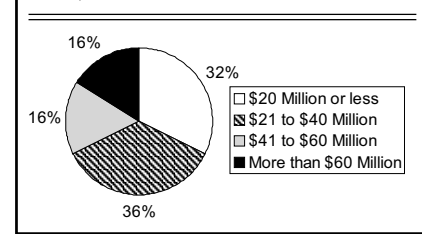
commodity brokerage services available through their elevators. Half of the grain marketing cooperatives offer identity preserved grain programs to their growers.

Twenty-three (68%) of the cooperatives interviewed offer financing in some form. The most common form is crop input loans, followed by operating loans, which may include expenses such as cash lease payments. Some cooperatives also make financing available for livestock feed and for livestock production.

Size

We use five measures to discuss the size of local cooperatives in Indiana: number of members (those who own equity in the cooperative), total annual sales, sales per member, number of employees, and sales per employee. Local cooperatives in Indiana had a wide range of membership totals at the end of 1999, from less than 500 to more than 7,000 members. As shown in Figure 1, nearly half of the cooperatives responding to this question* have between 400 and 1500 members, but they only account for 18% of total cooperative membership in the state, as shown in Figure 2. Fifteen percent of the cooperatives have 1501 to 2200 members and account for 10% of the state's membership. Eighteen percent of the state's cooperative have 2201 to 3500 members and 19% of membership. The cooperatives with 3501 to 6000 members, 9% of the cooperatives responding, account for 13% of Indiana's cooperative membership. The group of local agricultural cooperatives with the largest membership, more than 6000 members, account for only 9% of the cooperatives who

Figure 3. Percentage of Indiana Cooperatives in Each Size Category (Size Category by 1999 Fiscal Year Sales)



responded, but they encompass 40% of the total membership in Indiana.

Despite the fact that these cooperatives are locally owned, they are not necessarily small businesses (Figure 3). The lowest level of total sales was less than \$20 million, and the highest level of total sales for fiscal 1999 exceeded \$60 million. More than two-thirds of respondents had sales less than \$40 million. Thirty-six percent of responses fell between \$21 and \$40 million for fiscal 1999. Sixteen percent of responses fell into the \$41 to \$60 million sales range, with another 16% having sales of more than \$60 million for fiscal year 1999.

Level of sales was greatly affected by lines of business operated by the cooperatives. Grain sales are included in total sales, so those cooperatives with large grain operations tend to show a larger volume of sales.

Over two-thirds (68%) of local cooperatives had sales per member of \$20,000 or less (Figure 4). Thirteen percent had sales per member of more than \$40,000. The value of sales per member for each cooperative is affected by the amount of non-member business it engages in and the products and services offered by the cooperative, particularly grain sales. For cooperatives with higher levels of non-member business, the sales per member value is higher, all other things being equal. In addition, cooperatives operating businesses such as grain handling have a higher volume of sales.

The number of employees working for a local cooperative in Indiana depended on the lines of business the cooperative was involved in. Retail businesses, like C-stores, hire a

* Note: Some cooperatives chose not to respond to particular questions. Total number of responses varies depending on the question.

Figure 4. Percentage of Indiana Cooperatives in Each Size Category (Size Category by Sales per Member)

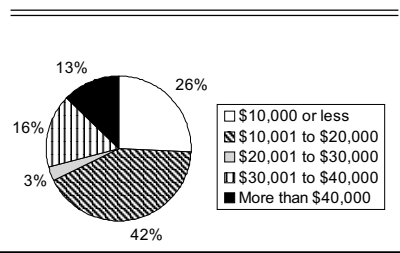


Figure 5. Percentage of Indiana Cooperatives in Each Size Category (Size Category by Number of Employees).

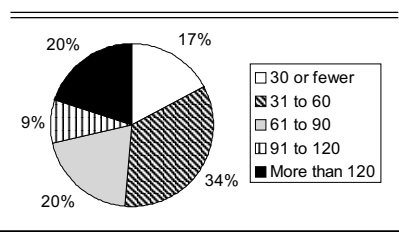
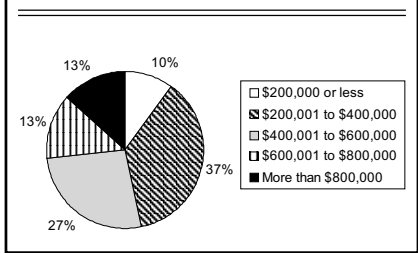


Figure 6. Percentage of Indiana Cooperatives in Each Size Category (Size Category by Sales per Employee)



number of part-time employees. Employee numbers ranged from less than 30 to more than 150 employees at the time of the survey, including part time and seasonal employees (Figure 5). One-third of the respondents had between 31 and 60 employees, with half employing 60 or less. Twenty percent, however, employed more than 120 workers.

Sales per employee ranged from less than \$200,000 to more than \$800,000 (Figure 6). Thirty-seven percent of the cooperatives responding to the sales and employee number questions had sales per employee between \$200,001 and \$400,000. Nearly two-thirds (64%) of the responses indicated a sales per employee level between \$200,001 and \$600,000. The lines of business a cooperative engages in affect this value, because certain businesses, particularly retail, require large number of employees.

Source of Business

Most of the managers responding to the survey (71%) indicated that their cooperatives' market share had increased over the last five years (Figure 7). Fifteen percent felt that market share had been stable, while fifteen percent said that they had lost market share in the last five years. When asked about their market share for the next five years, 79% expected market share to increase, while 21% expected a stable market share. No manager expected decreasing market share for the next five years. The majority of managers expected to gain prominence in their respective markets. Some managers expressed the opinion that the increased strength is necessary for continued success.

Most agricultural cooperatives have both members and non-members for customers. When asked about the trend in the amount of business they have been doing with members and non-members, the majority of managers indicated that volume of business has been increasing over the last five years with both groups (Figure 8). Fifty-five percent of the respondents indicated that volume of business with members had grown over the last five years, and 33% of managers felt that the volume of business with members had

been stable. In contrast, 75% of responding managers indicated that non-member business had grown over the last five years. Non-member business has become increasingly important to the success of local cooperatives.

Managers tended to have similar, but stronger, expectations about the future (Figure 9). Seventy-three percent of managers expect volume of business with members to increase, and 88% of managers expect business with non-members to grow. This response, too, suggests that

Figure 7. Managers' Perception of Cooperative Market Share Trend: The Last Five Years and the Next Five Years

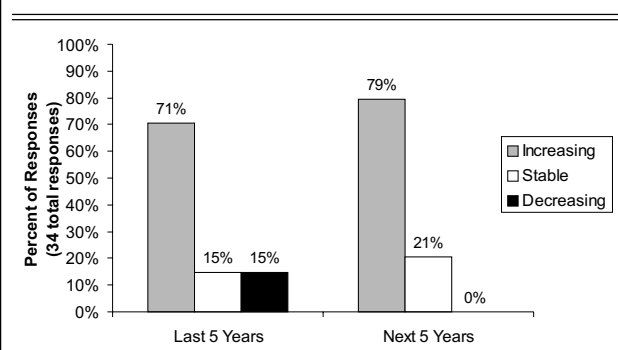
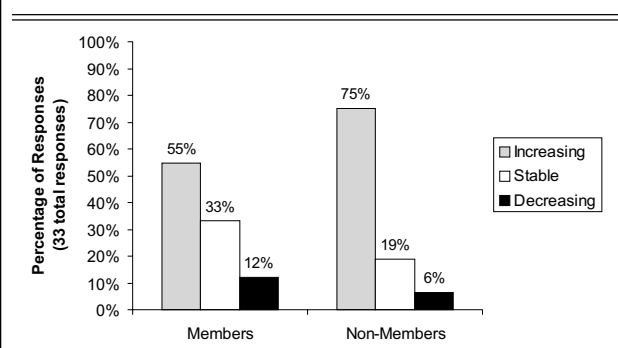
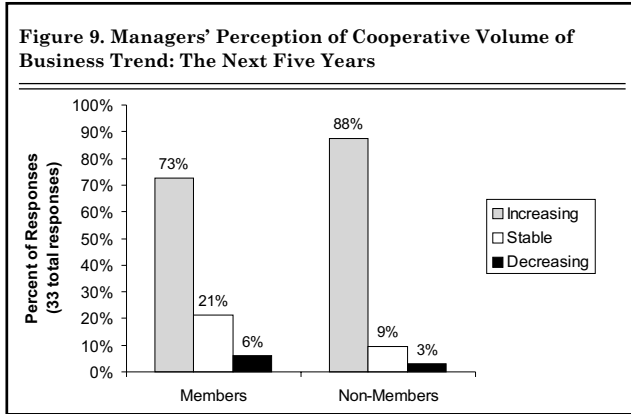


Figure 8. Managers' Perception of Cooperative Volume of Business Trend: The Last Five Years





managers see non-member business becoming an increasingly larger share of cooperative business.

Another indication of the importance of non-member business is the percentage of total sales volume attributed to non-members. Figure 10 shows that 41% of the cooperatives that responded do more than 40% of their business with non-members. Sixty-three percent do more than 30% of their business with non-members.

Technological Adoption

Business is currently in the midst of major changes with respect to information and computer technology. Local agricultural cooperatives are being influenced by these technologies as well. Cooperatives have adapted their operations to incorporate computer technology into their day-to-day business operations (Figure 11). Ninety-seven percent or more of the surveyed cooperatives use computerized billing and accounting systems. E-mail is more common for use with suppliers and end-users (82%), but is not used as

much with farmer-customers (53%). Eighteen (53%) of the cooperatives responding to this question have an informational web page to provide members and customers with various types of information, like: cooperative news, grain bids, and information on how to contact the cooperative. Only eight (24%) have implemented web ordering alternatives. Sixty-five percent of the cooperatives use computers in their plant operations, including inventory computers in their delivery trucks. Fifty-nine percent offer cardrol gas pumps, either for co-op credit or at their C-stores.

How Local Cooperatives Are Responding to Change

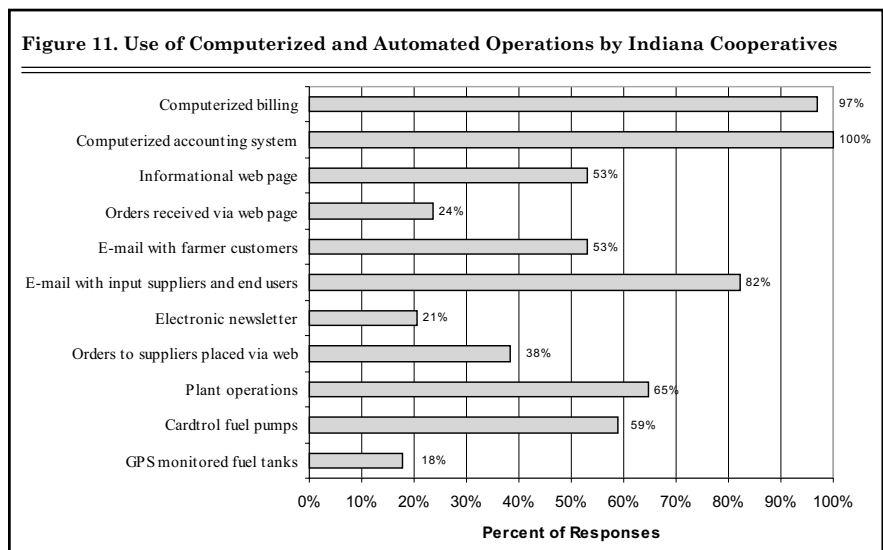
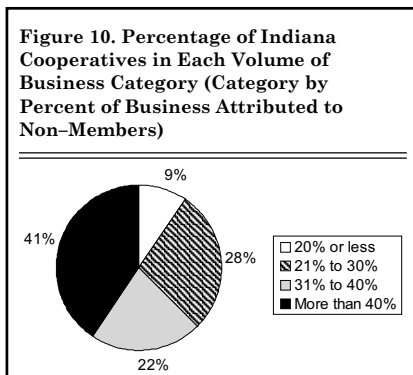
The structural changes in agriculture, the consolidation of production agriculture and of agribusiness, are creating an environment full of

challenges for local agricultural cooperatives. Local cooperatives have been adapting by offering new products and services, like precision agriculture services, and by adding nontraditional lines of business, like C-stores. Managers are also acknowledging the increased importance of non-member business for the future success of their cooperatives. Local cooperatives are bringing information technologies into their operations, particularly for informational and business-to-business applications. While the speed of adoption is important, it remains to be seen whether local cooperatives are adopting information technologies fast enough to keep pace with the rest of the business world.

Cooperatives are also responding to this changing business environment through a variety of business arrangements, including strategic alliances, joint ventures, mergers, and acquisitions. The next article in this series will discuss the extent to which local cooperatives throughout Indiana are engaged in restructuring through mergers, acquisitions, joint ventures, and strategic alliances. Driving forces that motivate these arrangements will be described, and key success factors will be evaluated.

References

Indiana Agricultural Statistics 1999-2000. Indiana Agricultural Statistics Service. Purdue University. 2000.



The Law Behind Planning and Zoning

*Jesse J. Richardson Jr., Attorney and Assistant Professor in the Department of Urban Affairs and Planning at Virginia Tech in Blacksburg, Virginia; Julie Farris, Member Indiana Bar; and Gerald A. Harrison, Professor and Extension Economist**

The law regards municipalities as “creatures of the state” and dictates that municipalities must look to the state constitution, their charter, or state laws for authorization to exercise powers. Therefore, a municipality has no powers whatsoever unless the state decides to give the municipality power. Municipalities include, in Indiana, townships, cities and counties.

A municipality may sue and be sued, like any person. In addition, municipalities may enter into contracts, buy and sell land and pass ordinances. Finally, and most obviously, a municipality may raise, borrow and spend money. These powers are similar to those possessed by most adults. However, a municipality may not, for example, buy land for any purpose that it chooses. In engaging in any of the listed activities, a municipality must be pursuing a purpose allowed by the state.

Localities generally possess the ability to plan and zone. Planning and zoning falls within the broad scope of the “police power.” However, the source and scope of a locality’s power to plan and zone depends upon whether the state is a Dillon’s Rule jurisdiction or a Home Rule jurisdiction. Even though the law accepts the general proposition that a locality possesses the power to plan and zone, the law places limits on that power.



The Police Power

Most purposes allowed to a municipality fall within the broad definition of the “police power.” The term “police power” refers to ability to legislate to further the public health, safety and welfare of the jurisdiction. The *United States Constitution* delegated this power to the states in the Tenth Amendment: “all powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”

Therefore, even powers within the broad scope of the police power must be delegated to the municipality prior to exercise of the power. A broad grant of the police power to a locality does not give a locality the power to enact a zoning ordinance. The power to zone must be specifically delegated. The states have delegated portions of this police power to local governments by state constitution, charter or enabling statute. The state grants charters to recognize the legal existence of the municipality; grant powers to the municipality; place limits on the powers of the municipality; and, set out the boundaries of the entity.

One may think of a charter as the organizing document or “birth certificate” of the entity. A municipality does not exist until a charter is issued recognizing it.

Dillon’s Rule

To deal with the issue of determining what powers a particular state had allocated to municipalities, several doctrines emerged. The United States began with the proposition that municipalities are creatures of the state, and must look to the state for all power. This doctrine was later stated as Dillon’s Rule. The name derives from its primary author, a



judge in Iowa. The rule dates to 1865, and in its entirety, states:

- It is a general and undisputed proposition of law that a municipal corporation possesses and can exercise the following powers and no others: First, those granted in express words; second, those necessarily or fairly implied in or incident to the powers expressly granted; third, those essential to the declared objects and purposes of the corporation—not simply convenient, but indispensable. Any fair, reasonable doubt concerning the existence of the power is resolved by the courts against the corporation, and the power is denied.

This rule arose in response to widespread corruption at the local level at the end of the nineteenth century. Courts felt that state control of local government power was necessary to combat crime boss rule of cities and other ills that were threatening democratic governance.

Home Rule

The home rule movement, beginning with Missouri in 1875, prompted several states to adopt state constitutional amendments expanding the scope of municipal independence. The home



rule doctrine allows a municipality to exercise any function, so long as it is not prohibited by the state legislation or in conflict with the state constitution or any state statute. Although the doctrine appears promising to those desirous of expanding local autonomy, one commentator characterized it as “... an uncertain privilege, for it depends entirely upon the whim of the legislature and may at any time be repealed or

* Reviewers, Otto Doering, Professor, Purdue University, and Mark Thornburg, Attorney, Indiana Farm Bureau made numerous valuable suggestions.

modified". In addition, the grants of home rule authority vary widely. Some grants are very broad, while others are somewhat restricted.

A 1978 study showed that 41 states had granted home rule authority to cities, while only 27 states had granted home rule jurisdiction to counties. Some states, including Indiana, have adopted *legislative* home rule, whereby local governments may exercise all powers the state legislature is capable of delegating to them even though the legislature has not delegated the power. The legislature may take certain powers from localities or limit local powers under legislative home rule. For example, if the Indiana legislature sets forth a certain manner in which a power may be exercised by a locality, the locality must follow the legislature's instructions.

On the other hand, *constitutional* home rule refers to a broad grant of home rule power contained in the state constitution. In contrast to legislative home rule, the legislature cannot change or limit a local government's power under constitutional home rule. The courts determine the scope of the constitutional grant of authority.

Home Rule in Indiana

Indiana law provides that "the policy of the state is to grant units all the powers they need for the effective operation of government as to local affairs." Further, "the rule of law that any doubt as to the existence of a power of a unit shall be resolved against its existence is abrogated." "Any doubt as the existence of a power of a unit shall be resolved in the favor of its existence." The *Indiana Code* explicitly rejects Dillon's Rule.

A unit in Indiana may exercise any power to the extent that the power is not expressly denied by the Indiana Constitution, Indiana statute nor expressly granted to another entity. A township may not exercise any power where a unit in which the township is located exercises that same power.

Indiana law provides that a unit must utilize the constitutionally or statutorily prescribed method of exercising any power, if the constitution or a statute provides a prescribed method. If no constitutionally or statutorily prescribed method exists, the unit must adopt an ordinance (county or municipality) or resolution (township) specifying the particular method of exercising the power or comply with any Indiana law permitting a specified manner for exercising the power.

Finally, the *Indiana Code* lists certain powers that units do not possess. These prohibited powers include unauthorized taxation and imposition of duties on other units.

The Comprehensive Plan

Indiana law requires each municipality to adopt a comprehensive plan. A comprehensive plan must contain:

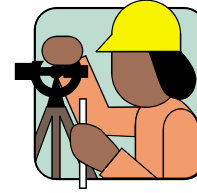
- (1) A statement of objectives for the future development of the jurisdiction;
- (2) A statement of policy for the land use development of the jurisdiction; and,
- (3) A statement of policy for the development of public ways, public places, public lands, public structures, and public utilities.

Comprehensive plans are not laws. Therefore, courts generally do not entertain legal actions attacking comprehensive plans, unless the attack is directed at a failure to comply with the requirements set forth by the legislature. Comprehensive plans must be implemented by local ordinances. The most common implementation tool for comprehensive plans is the zoning ordinance.

Zoning

Indiana law does not require localities to adopt zoning ordinances but allows the adoption at the option of the locality. If adopted, the zoning ordinance must contain the elements set out by the legislature in *Ind. Code* Section 36-7-4-600, et. seq.

Zoning is the "division of a municipality by legislative regulation



into districts and the prescription and application in each district of regulations having to do with

structural and architectural designs of buildings and of regulations prescribing us to which buildings within designated districts may be put." New York City enacted the first comprehensive zoning ordinance in the United States in 1916. That ordinance classified uses and created zones for all uses. The zones were mapped. The provisions included height and area (setbacks, etc.) controls.

In 1926, the United States Supreme Court upheld the constitutionality of traditional comprehensive zoning ordinances in *Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 47 S.Ct. 114, 71 L.Ed. 303 (1926). Land use professionals refer to "traditional" zoning as "Euclidean" zoning. Euclidean zoning encompasses division of the municipality into geometric patterns of "use districts." In other words, Euclidean zoning divides the area into sections. The ordinance restricts use of land within each section so that each section contains a single or narrow range of uses. For example, single-family residential zones contain primarily single-family houses. Farmland should predominate in agricultural zones. Note that all land in the jurisdiction zoned, for example, single-family residential need not be, and usually is not, contiguous.

Historically, zoning seeks to prevent one landowner from harming his neighbor by engaging in an incompatible use. Zoning is done by dividing up a city into uses zones in which harmful uses are excluded. In other words, by segregating uses zoning attempts to separate incompatible uses.

But zoning serves purposes beyond preventing harm. Modern zoning often regulates uses to achieve public benefit or to maximize

property values in a locality. Unfortunately, zoning may also be used to exclude low- to moderate-income people who cannot afford the housing permitted in the locality. This exclusion results, for example, from large minimum lot sizes or large minimum square footage requirements in residential districts. These requirements drive up the cost of housing.

Zoning laws embody the assumption that whole-some housing must be protected from harmful neighbors. Thus, commerce and industry are excluded from residential zones, as they are deemed harmful to housing. Even within residential zones, there is a hierarchy of desirable uses. The law regards the single-family home as the highest use. Creation of districts containing only single-family homes seeks to protect this highest form of housing from intrusion by apartments, commercial development, or any other potentially interfering use.



Creation of districts containing only single-family homes seeks to protect this highest form of housing from intrusion by apartments, commercial development, or any other potentially interfering use.

Categories of Uses under Zoning Ordinances

Zoning ordinances allow some uses in each district, prohibit others and allow some uses only by special exception. This section examines and explains the various categories of land uses under each zoning ordinance.

“Of Right” Uses

Land use regulations specify for each zone those activities that are permitted as a manner “of right” or “permitted uses.” If listed as an “permitted use,” the landowner may engage in this use without question.

Prohibited Uses

Generally, any use not listed as “permitted” is prohibited. An ordinance may specifically prohibit a particular use in a district to avoid a finding that this use may be similar to a permitted use in the district. For example, if not specifically prohibited, a court could find that a mobile home is a “single-family dwelling”

allowable in a single-family residential district.

In Indiana, a board of zoning appeals may approve a “variance.” A variance allows a use that is prohibited by the zoning ordinance. The board may impose reasonable conditions as a part of its approval. Indiana law prohibits a board of zoning appeals from approving a variance unless the board determines in writing that:

- (1) the approval will not be injurious to the public health, safety, morals, and general welfare of the community;
- (2) the use and value of the area adjacent to the property included in the variance will not be affected in a substantially adverse manner;
- (3) the need for the variance arises from some condition peculiar to the property involved;
- (4) the strict application of the terms of the zoning ordinance will constitute an unnecessary hardship if applied to the property for which the variance is sought; and
- (5) the approval does not interfere substantially with the comprehensive plan of the locality.

Special Exceptions

To conduct certain uses, a landowner may have to apply for and receive a “special exception.” A special exception is a permit that allows a particular use subject to listed conditions. (Special exceptions are also referred to as special uses or conditional uses that require a permit.)

The use of the word “exception” is misleading. Special exception uses are allowed in that particular district, but not in all locations within the district and not without conditions or qualifications. For example, if listed as a special exception in the agricultural zone, an intensive livestock operation may be appropriate in those portions of an agricultural zone



which are thinly populated and contain appropriate soils, topography and tree buffers. However, in other areas of the zone that are adjacent to dense residential settlements or where the intensive livestock operation may threaten groundwater, the operation is not appropriate.

The author compares permitted uses in a zoning ordinance to the purchase of clothing “off the rack.” Perhaps the use does not precisely “fit” each area within the zone. However, the governing body feels that the fit is close enough to warrant allowing the use throughout the zone.

In contrast, special exceptions are analogous to tailored clothing. The governing body of the jurisdiction tailors the conditions and restrictions of the special exception to fit the particular piece of property on which the use will be conducted.

Amendment of the Zoning Ordinance

Once a zoning ordinance has been adopted and land has been zoned, problems may arise with proposed amendments to change the zoning application to specific parcels or to grant relief from its requirements to certain lots. Amendments to a zoning ordinance are commonly called “rezonings.” Rezonings that apply to specific parcels or certain lots should be distinguished from comprehensive rezoning. Comprehensive rezoning involves study of the entire municipality and a reworking of the entire zoning ordinance. This section details the legal issues that arise when localities rezone all or a portion of the locality.

Rezonings Generally

Like the adoption of the original zoning ordinance, the amendment of a zoning ordinance is a legislative matter. As a legislative matter, the rezoning decision is left to the discretion of the local legislative body. The courts will disturb the rezoning decision of the locality only when it is arbitrary or capricious. Arbitrary and capricious decisions involve willful and unreasonable action without consideration and in disregard of the facts or circumstances of the case.

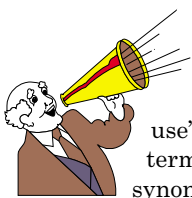
Courts examine individual or specific rezonings more closely than comprehensive rezonings because the chance for arbitrariness is heightened when only one or a few land parcels are involved.

Spot Zoning

"Spot zoning" is perhaps the most used and least understood term in zoning parlance. Spot zoning the singling out of one piece of property for a different treatment from that accorded to similar surrounding land which is indistinguishable from it in character, all for the economic benefit of the owner of the lot or area so singled out. In Indiana, spot zoning is not illegal per se if the zoning action bears a rational relation to the public health, safety, morals, convenience or general welfare. The key distinction is that spot zoning is not pursuant to the police power when it fails to further the public interest. Instead, spot zoning provides private benefit, perhaps to the detriment of the public.

Non-conforming Uses

Most of us have heard the term



"grandfathered use" used in connection with zoning. "Grand-fathered use" is the everyday term commonly synonymous with

"non-conforming use." A non-conforming use is a use of the premises that legally existed prior to the enactment of a zoning ordinance or proper amendment of the zoning ordinance, and which is permitted to continue subsequent to the enactment of the ordinance despite the fact that it does not conform to the new zoning requirements. However, since non-conforming uses deviate from the desired uses under the zoning ordinance, the law frowns upon them. Typically, a zoning ordinance will allow continuance of a non-conforming use, but will prohibit extension, expansion, or change unless to a conforming use. In addition, most ordinances provide that if a non-conforming use is abandoned for two years or more, the use may not be reinstated. Some localities "amortize" the use, which requires a property owner to discontinue the nonconforming use after a certain period of time.

Agricultural Nonconforming Use

Indiana law now allows for an "agricultural nonconforming use." This law that has gathered much attention, was passed in 1998 and amended in 1999. "Agricultural use" for nonconforming purposes is broadly defined. The essence of this new law is that zoning changes or a comprehensive plan may not terminate or restrict an agricultural use if

it was consistent with or a permitted use under the prior zoning ordinances, and was in place three of the five years before a recent change in zoning.

Conclusion

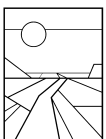
Planning and zoning by local governments carry out the police power function of protecting the general health, safety and welfare of the locality's citizens. The planning function is reflected in the comprehensive plan, which is implemented most commonly through zoning ordinances.

Zoning ordinances mainly attempt to prevent incompatible uses from locating next to one another by separating uses in different zoning districts. Zoning itself is fairly straightforward. However, the law allows variances and some uses are permitted only under certain circumstances. In addition, uses that were permissible prior to the zoning ordinance or amendment are subject to restrictions. To understand the law behind planning and zoning, one must be familiar with the legal terminology.

References

Contact the editor if you wish to have the references and cites to references and statutes.

Purdue University is an Equal Opportunity/Affirmative Action employer.



Gerald A. Harrison
Purdue University
Department of Agricultural Economics
1145 Krannert Building, Room 630
West Lafayette, IN 47907-1145

Non-profit Organization
U.S. Postage
PAID
Purdue University