

# AGRICULTURE

## INTRODUCTION

*The Agriculture Element of the Boone County Comprehensive Plan describes the significance of the number of farms, the amount of land devoted to farming activity, and the average size of a farm in Boone County. The Agriculture Element traces the history of farm production in Boone County and offers conclusions based on this data. Much of the updated information for this element comes from the “Agricultural Profile: Boone County, Kentucky” included in the Boone County Conservation District’s 2010 study titled Rural Treasure – The State of Boone County Agriculture. The Agricultural Profile is itself largely an analysis of data contained in the USDA’s 2007 Census of Agriculture, which was released in 2009. Also included in Rural Treasure are the results of a “Survey of Agricultural Land Owners in Boone County” and a “Boone County Cost of Community Services Study,” both of which are summarized later in this element.*

### **Farmland Inventory**

A farm, as generally defined by the U.S. Department of Commerce, Bureau of the Census, is any place from which \$1,000 or more of agricultural products were sold, or normally would have been sold during the census year. Recent reports on the number of cultivated acres in Boone indicate that there were 44,176 acres in crops in 2002. By 2007 that number had fallen to 35,832.

### **Prime Farmland and Farmland of Statewide Importance**

Estimates by the U.S.D.A. Natural Resources Conservation Service indicate that 38,794 acres of Boone County land are classed as Prime Farmland as of 2008. Prime Farmland is defined in the National Soils Handbook based on criteria of crop production potential, land availability, and climate. According to the Soil Conservation Service Soil Survey (1973 and 1989), historically, much of the best farm soils were located in the eastern half of Boone County, however, development has displaced many of these areas. The following soil series comprise the prime farmland in Boone County: Ashton, Avonburg, Boonesboro, Wheeling, Huntington, Egam, Lindside, Newark, Nolin, Captina, Chavies, Faywood, Jessup, Licking, Negley, Nicholson, and Rossmoyne. Low to moderate slope is an important factor in this classification as well. Soils of Statewide Importance encompass an additional 23,987 acres and include the following soil series: Brashear, Captina, Chavies, Faywood, Jessup, Licking, Negley, Nicholson, Rossmoyne, Wheeling, and Woolper. This soil classification includes soils and slopes of less ideal conditions than the prime farmland areas.

### **Farms and Farm Tenure**

As **Table 8.1** shows, 59% of the population of Boone County lived on farms in 1940. Since then, the number and percentage of people living on farms in Boone County has decreased drastically. In 2007, less than 1% of the estimated 112,459 Boone County residents lived on farms. From 1940 to 2007 the county population increased by 101,639 people, while the population of those living on farms decreased by 5,349.

This rapid population growth has been gradually reducing the amount of available farmland. It has also reduced the amount of land zoned primarily for agriculture use. This phenomenon of farmland reduction is an on-going process, and is assisted by the location of new sewer and water lines as they encroach into existing farming regions. The sewer and water lines increase pressure on the existing farmlands to develop for industrial and suburban residential developments.

**TABLE 8.1 – PERCENT LIVING ON FARMS**

| YEAR | COUNTY POPULATION | FARM POPULATION | % LIVING ON FARMS |
|------|-------------------|-----------------|-------------------|
| 1940 | 10,820            | 6,406           | 59.2%             |
| 1950 | 13,015            | 5,561           | 42.7%             |
| 1960 | 21,940            | 5,750           | 26.2%             |
| 1970 | 32,812            | 3,916           | 11.9%             |
| 1980 | 45,842            | 2,425           | 5.3%              |
| 1990 | 57,589            | 1,350           | 2.3%              |
| 2000 | 85,991            | 1,100           | 1.3%              |
| 2002 | 93,616            | 1,088           | 1.2%              |
| 2007 | 112,459           | 1,057           | 0.9%              |

*Source: 2007 U.S. Census of Agriculture & American Community Survey Estimates*

**Table 8.2** compares the number of farms and farmland in Boone County since 1900. Between 1959 and 2007, the county lost 522 farms consisting of 46,472 acres. In the 25-year period from 1982 to 2007, 280 farms totaling 30,640 acres were replaced by suburban development, non-farming activity, or farms that became inactive. The average farm size was up to 110 acres, after having dropped from 124 acres in 1978 down to 101 acres in 2002. In 2007, Boone had more farms containing on average 22 more acres each compared to Campbell and Kenton counties. Between 2002 and 2007, total farmland acreage in Boone County declined just 0.2%; but declined 8.5% in Kenton County and 6.0% in Campbell County. Farm acreage in Kentucky rose 1.1% during the same period. **Table 8.3** further describes Boone County farms by size in acres since 1909.

**Table 8.2** and **Table 8.3** indicate the decrease of farms and farmlands as development of Boone County has occurred. The Boone County Extension Service expects the number of farms to reverse the trend and begin to increase, although most of them likely won't increase in acreage due to land use changes from agriculture to other uses. Livestock numbers have also been decreasing. In 1982, Boone County had over 16,500 cattle. By 2007 the number had dropped to 9,291 and further to an estimated 8,900 in 2009 (USDA, NASS, 2011). Hogs and pigs peaked at 13,100 in 1970, but have continually dropped since, with 2007 totals of just 59. Nationally, livestock production has risen, but this increase is attributed to larger, consolidated farms. Boone County, however, is distinctly an area of small farms, and is not sharing in this increased livestock production.

Even with the amount of development occurring, Boone County remains important in terms of agriculture. Through 2008, Boone County ranked within the top 76 counties or better out of the total 120 Kentucky counties in many of the major crop and livestock categories, including corn, soybean, tobacco, hay, cattle, and hogs. In terms of cash receipts, Boone's ranking was near the middle of the state for Crops (52), Livestock (63) and Total cash receipts (64).

In Boone County, 96.5% of the farms (658 farms) are classified as Small Family Farms with less than \$250,000 in sales (BCCD 2010). Of the 658 Small Family Farms in Boone County, 41.5% (n=273) are classed as Residential/Lifestyle Farms where the operator reports their primary occupation as something other than farming. The next largest farm category (28.6%) in the county is Retirement Farms (n=188). Both of these patterns are seen in the other two northern Kentucky counties and across the state as well.

Further analyses of the 2007 Census of Agriculture show that Boone County is tracking with national trends in terms of farmer age. Between 2002 and 2007, the average age of the Boone County farmer increased from 56.6 to 57.9 years. Regarding tenure, the numbers in Boone County vary somewhat from those of Kenton, Campbell and the state as a whole, with larger percentages of full ownership and tenants seen in Boone (see **Table 8.4**).

**TABLE 8.2 – FARM NUMBER AND ACREAGE**

| YEAR      | FARMS  | TOTAL ACRES | AVG. SIZE (ACRES) |
|-----------|--------|-------------|-------------------|
| 1900      | 1,598  | 149,191     | 93                |
| 1909      | 1,540  | 145,693     | 95                |
| 1919      | 1,831  | 151,242     | 83                |
| 1929      | 1,563  | 149,159     | 95                |
| 1939      | 1,443  | 146,424     | 102               |
| 1949      | 1,314  | 134,105     | 102               |
| 1959      | 1,204  | 121,222     | 101               |
| 1969      | 1,245  | 126,706     | 102               |
| 1978      | 847    | 104,882     | 124               |
| 1982      | 962    | 105,390     | 110               |
| 1992      | 798    | 80,864      | 101               |
| 1997      | 783    | 83,258      | 106               |
| 2002      | 743    | 74,915      | 101               |
| 2007      | 682    | 74,750      | 110               |
| Kenton*   | 481    | 42,544      | 88                |
| Campbell* | 535    | 47,335      | 88                |
| Kentucky* | 85,260 | 13,993,12   | 164               |
|           |        | 1           |                   |

Source: 2007 U.S. Census of Agriculture (\* 2007 data)

**TABLE 8.3 – FARM SIZE BY ACRES**

| ACRES        | 1909 | 1919 | 1929 | 1939 | 1949 | 1959 | 1969 | 1978 | 1982 | 1992 | 1997 | 2002 | 2007 |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1-9          | 158  | 283  | 132  | 125  | 111  | 128  | 200  | 90   | 136  | 100  | 78   | 65   | 54   |
| 10-49        | 439  | 549  | 437  | 369  | 356  | 328  | 353  | 240  | 324  | 301  | 261  | 307  | 308  |
| 50-179       | 720  | 773  | 758  | 728  | 636  | 555  | 485  | 345  | 321  | 278  | 227  | 265  | 204  |
| 180-499      | 211  | 220  | 228  | 210  | 206  | 183  | 183  | 140  | 149  | 96   | 101  | 88   | 97   |
| 500-999      | 11   | 5    | 8    | 9    | 4    | 10   | 20   | 30   | 30   | 18   | 19   | 12   | 11   |
| 1000+        | 1    | 1    | 0    | 2    | 1    | 0    | 4    | 4    | 2    | 3    | 5    | 6    | 8    |
| <b>TOTAL</b> | 1540 | 1831 | 1563 | 1443 | 1314 | 1204 | 1245 | 849  | 932  | 798  | 691  | 743  | 682  |

Source: 2007 U.S. Census of Agriculture

**TABLE 8.4 – FARM TENURE PERCENTAGES**

| TENURE      | BOONE | KENTON | CAMPBELL | KY    |
|-------------|-------|--------|----------|-------|
| Full Owners | 80.6% | 77.3%  | 76.8%    | 76.8% |
| Part Owners | 14.7% | 18.7%  | 22.1%    | 19.4% |
| Tenants     | 4.7%  | 4.0%   | 1.1%     | 3.8%  |

Source: 2007 U.S. Census of Agriculture

### Agricultural Zoning Districts

The Boone County Zoning Regulations contain two agriculturally oriented zoning districts: Both the Agriculture (A-1) and Agricultural Estate (A-2) allow all agricultural uses, as well as sales of agricultural products. The Agriculture (A-1) zoning district covers about 49,500 acres of the county. This zoning district lies primarily within the rural western half of the county. Agricultural Estate (A-2) covers about 47,500 acres of the county and lies mainly between the A-1 zoning areas and the developed eastern portion of the county. Both districts allow residential construction; the A-1 requires a five acre lot size and the A-2 requires a two acre lot size. Together the two districts cover approximately two-thirds of the county's 164,120 acres (see **Figure 8.1**).

### Agricultural Districts

Agricultural Districts are administered by the Boone County Conservation District, under the Kentucky Division of Conservation, and allow farmers to form special areas where commercial agriculture is encouraged and protected. They are totally different and distinct from local zoning districts, and are designed to protect agriculture as a viable segment of the state's economy and the land as an important and valuable natural resource. The Agricultural District law, KRS 262.850, is aimed at protecting the best agricultural land for food and fiber production and discouraging its conversion to non-agricultural uses. The program was enacted in 1982 and amended in 1984 and 2000. Agricultural districts offer members the following protection under the law:

- The right to have their land assessed by the local property valuation administration at the land's agricultural use value;
- Protection against involuntary annexation;
- Deferred assessment of fees for water service extensions until the land is removed from the agricultural district and sold for non-agricultural purposes;
- The right to request that the local soil and water conservation district board hold a public hearing on the proposed taking of land under condemnation proceedings initiated by certain utilities.

Districts also benefit members by making them a higher priority for state cost share assistance, a higher ranking in Kentucky Purchase of Agriculture Conversion Easements (PACE), and eligibility for federal tax benefits for PACE applications.

To form an Agricultural District, the land must be composed of 250 contiguous acres and may contain tracts, lots, or parcels that total not less than ten (10) acres, or less than five acres if in horticulture production. The land must meet a state definition of agricultural land as defined in KRS 132.010. The program is entirely voluntary, and landowners can withdraw from the district at any time. In 1995, Boone County had a total of five of these agricultural districts which totaled 3,343 acres. In 2004, there were 13 districts comprising 6,770 acres and there are currently 16 districts encompassing 8,179 acres of land owned by 80 families (BC Cons. District Annual Report 6/30/10).

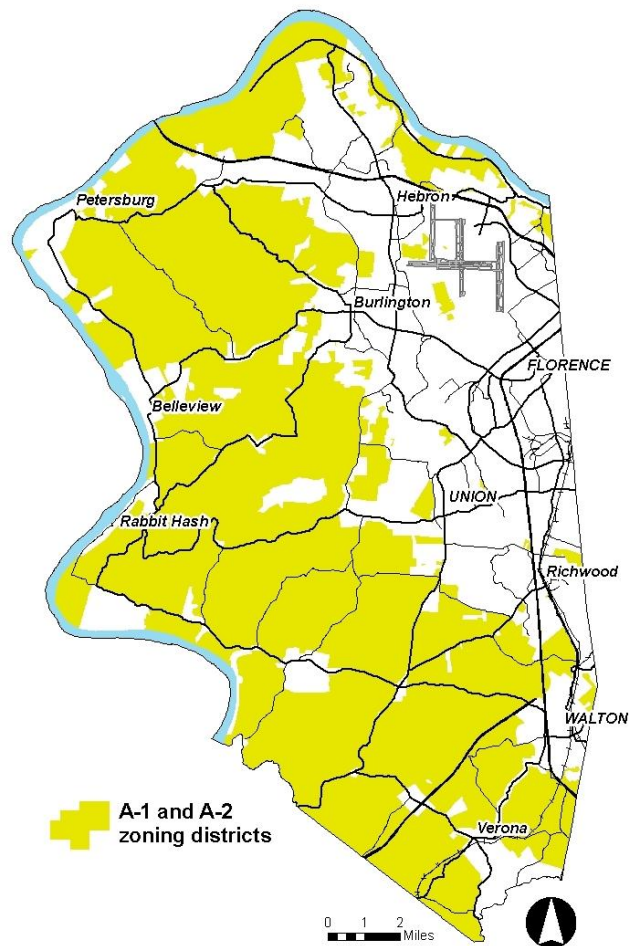


Figure 8.1 - Land zoned A-1 or A-2

### Farm Assistance Programs

As mentioned in the Environment Element, the Kentucky Agriculture Water Quality Act, passed in 1994, protects surface and ground water from potential pollutants as a result of agriculture and forestry operations. The act did not establish any new water quality laws other than requiring that all agriculture and forestry operations of ten or more acres develop and implement a water quality plan by 2001. An Agriculture Water Quality Committee comprised of the Conservation Districts of Boone, Kenton, and Campbell counties meets as needed to assist in developing individual water quality plans. As of June, 2010, a total of 534 water quality plan certificates have been received by the Boone County Conservation Districts (BCCD 6/30/10).

In addition to water quality, the Boone County Conservation District assists landowners with conservation measures under various programs. As of 2010, district staff are assisting nine farmers who have begun or completed Environmental Quality Incentives Program (EQIP) contracts under the Federal Farm Security and Rural Investment Act of 2002 (2002 Farm Bill). Program goals include reduction of soil erosion, reduction of non-point source pollution, and promotion of habitat conservation for at-risk species. EQIP has helped fund nearly \$255,000 in conservation practices on 2,685 acres in Boone County. Under the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill), “21 contracts have been obligated for \$374,161.12 on 12,481.2 acres” (BCCD 6/30/10). In addition to the EQIP program, eight other Boone County landowners are implementing conservation practices on 1,256 acres under either the Federal Conservation Security Program or Wildlife Habitat Improvement Program (WHIP). As of June 1, 2010, the conservation district reports that conservation plans have been written on 2,400 acres, soil quality improvement practices have been applied to 1,312 acres of cropland, and water quality improvement practices have been applied to 1,599 acres in Boone County (BCCD 6/1/10).

### 2010 Survey of Agricultural Land Owners in Boone County

The Boone County Conservation District sponsored a survey of agricultural land owners. The results were included in their study titled Rural Treasure: The State of Boone County Agriculture which was conducted by an independent researcher, with the assistance of Conservation District staff. Of the total distribution of surveys, 340 valid surveys were received. The return rate of 20.4% was considered “above average” by the researcher. The surveys sought to elicit data on farmer and farm demographics and tenure, as well as respondent opinions on farmland preservation and future plans.

The typical survey respondent is a 62-year old male with some college with an annual income between \$50,000 and \$100,000. However, less than \$1,000 of that income comes from agriculture and he is employed at least part-time off the farm. While respondent income levels from agriculture ranged to over \$300,000, 88.0% of respondents (292 of 332) reported making \$10,000 or less annually from agriculture while 2.1% (7 of 332) reported annual earnings from farming in excess of \$50,000. The 340 respondents collectively own 48% (17,356) of Boone County’s cropland, although 62.4% of this land is in active production. Most respondents had learned farming as children and had been farming for at least 20 years. The survey asked farmers to classify their type of farming in the form of self-perception (**Table 8.5**), their future plans regarding farming (**Table 8.6**), farmers’ views on the importance of farming (**Table 8.7**), and their willingness to participate in farm incentive programs (**Table 8.8**).

**TABLE 8.5 – FARMING TYPE BY SURVEY RESPONDENT SELF-PERCEPTION**

| PERCEPTION   | % OF 299 | NUMBER |
|--|----------|--------|
| Livestock Producer                                 | 35%      | 104    |
| Equine Owner/Manager                               | 14%      | 41     |
| Tree Farmer  | 13%      | 40     |
| Produce Farmer                                     | 8%       | 25     |
| Commodity Farmer                                   | 8%       | 24     |
| Hay Farmer   | 8%       | 23     |
| All Other (Gardener, Nursery, Bees, Tobacco, etc.) | 14%      | 42     |

*Source: 2010 Survey of Agricultural Land Owners in Boone County*

**TABLE 8.6 – FUTURE PLANS OF SURVEYED FARMERS**

| <b>FUTURE PLANS FOR AGRICULTURAL LAND</b>  | <b>% OF 335</b> | <b>NUMBER</b> |
|--|-----------------|---------------|
| Pass to relation (undecided)               | 34%             | 114           |
| Pass to relation (farming)                 | 26%             | 87            |
| Sell to non-farmer                         | 20%             | 68            |
| Pass to relation (non-farming)             | 11%             | 38            |
| Sell to farmer                             | 4%              | 13            |
| Other (Undecided, Conservation, No Answer) | 5%              | 15            |

*Source: 2010 Survey of Agricultural Land Owners in Boone County*

**TABLE 8.7 – SURVEYED FARMERS VIEWS ON AGRICULTURE**

| <b>VIEWS ON AGRICULTURE</b>                                  | <b>AGREE</b> | <b>DISAGREE</b> |
|--|--------------|-----------------|
| Ag Lifestyle and culture is important                        | 90.0%        | 4.4%            |
| Pass Farmland should be preserved                            | 85.3%        | 9.1%            |
| Farmland preservation has a positive impact                  | 85.6%        | 8.8%            |
| Maintaining Ag lifestyle difficult due to economic pressures | 82.9%        | 9.7%            |
| County becoming too urban                                    | 80.0%        | 13.8%           |
| Future generations should be able to farm in Boone County    | 80.3%        | 10.3%           |
| Land is solely a real estate investment                      | 35.3%        | 54.4%           |
| Don't want land restrictions now                             | 87.9%        | 6.8%            |
| Don't want land restrictions in the future                   | 86.8%        | 7.9%            |
| Willing to explore loose land use restrictions               | 44.4%        | 47.6%           |
| Willing to explore strict land use restrictions              | 42.9%        | 48.2%           |

*Source: 2010 Survey of Agricultural Land Owners in Boone County (\*305 to 322 responses)*

**TABLE 8.8 – SURVEYED FARMERS WILLINGNESS TO PURSUE FARM INCENTIVE PROGRAMS**

| <b>POTENTIAL INCENTIVES OF PROGRAMS</b>    | <b>ENCOURAGE</b> | <b>DISCOURAGE</b> |
|--|------------------|-------------------|
| Improved ways to inherit farms             | 80.9%            | 4.1%              |
| Preservation of farming culture            | 77.1%            | 7.6%              |
| Environmental benefits                     | 77.1%            | 7.1%              |
| More/improved farmers' markets             | 76.5%            | 6.8%              |
| Tax incentives                             | 75.9%            | 7.1%              |
| Preserve rural aesthetics                  | 75.0%            | 8.2%              |
| Expose children to Ag way of life          | 74.7%            | 8.8%              |
| Incentives from conservation programs      | 71.5%            | 12.1%             |
| Conservation of green space                | 71.5%            | 12.6%             |
| Knowledge that farmland is being preserved | 71.2%            | 11.8%             |
| Preserve informant's land                  | 55.6%            | 24.4%             |
| Restrict how land is used                  | 27.1%            | 56.2%             |
| Potential decrease in land resale value    | 20.3%            | 59.4%             |

*Source: 2010 Survey of Agricultural Land Owners in Boone County (\*262 to 284 responses)*

## 2010 Boone County Cost of Community Services Study

The Boone County Cost of Community Services Study was included in the Conservation District's Rural Treasure as a stand-alone report completed by Associate Professor Alison F. Davis, UK Department of Agricultural Economics. The analysis employed a methodology used by the American Farmland Trust in hundreds of communities in the US. The purpose of the study was to answer the question: "Do property taxes and other revenues generated by residential land uses exceed the amount of publicly-provided services required by them?" The study used tax data to define three land use classes: Residential, Commercial and Farmland. The county budget for Fiscal Year 2009 (7/1/09 – 6/30/10) was analyzed to determine the amount of revenue generated and expenditures used by each land use class. The results are presented in **Table 8.6**.

**TABLE 8.6 – BOONE COUNTY REVENUES/EXPENDITURES BY LAND USE CATEGORY (FY 2009)**

| <b>LAND USE<br/>CATEGORY</b> | <b>REVENUE<br/>%</b> | <b>EXPENDITURE<br/>%</b> |
|------------------------------|----------------------|--------------------------|
| <b>RESIDENTIAL</b>           | 64.8%                | 93.9%                    |
| <b>COMMERCIAL</b>            | 32.3%                | 5.0%                     |
| <b>AGRICULTURE</b>           | 2.9%                 | 1.1%                     |

*Source: 2010 Boone County Cost of Community Services Study*

## CONCLUSION

It is apparent that future development of the county's rural areas will occur. In order to protect those who want to continue to farm, tax structures, planning efforts, Purchase of Development Rights (PDR), incentive programs, conservation easements, and utility expansions should be explored. A combination of these tools should be used instead of concentrating on a single solution.

New residential developments in agricultural areas should be closely correlated to adequate infrastructure. The proposed rural water line improvements through the rural areas of the county may be seen by property owners and developers as an encouragement for low density residential development to occur in mostly agricultural areas. However, other infrastructure, including sewer, adequate roads, fire hydrant water pressure, storm water management, fire and rescue, and law enforcement are necessary to support residential development in the long term. This adds to the cost of providing community services. Agriculture, on the other hand, enables an economic use of the land, and requires relatively little infrastructure support or public expenditure. Boone County needs to be careful not to allow residential development in areas without adequate existing or planned infrastructure to fragment existing agricultural land uses. When this type of development does occur, compact efficient land use development patterns should be encouraged to assure the availability of lands in the county for agricultural use. New residential development is further addressed in the Housing Element.

The impacts of residential growth on existing agricultural land and agricultural operations are now known. New residential development often means that nearby farmers have to deal with trespassing, vandalism, and complaints regarding agricultural odors and noises. Many farmers also lease land or cooperatively farm certain fields or share equipment that are distant from their main farm. It has become increasingly difficult and dangerous for farmers to drive or pull equipment to another location because of increased suburban traffic, and basic lack of understanding on the part of motorists on how to pass, and reluctance to wait for agricultural equipment.

The Boone County Farm Bureau was instrumental in implementing a county ordinance that offers some protection for farmers from neighbor complaints on agricultural odor and noise. The Bureau created a Grievance Board that helps mediate issues in order to lessen the need to go to court. So far the Board has been successful in its mission, and can also provide assistance to a farmer dealing with trespassing or vandalism. The Board will likely become more active as residential growth extends into agricultural areas. This plan encourages farmers to list their property in an official Agricultural District. Furthermore, mechanisms are in place in the Boone County Zoning Regulations (Section 3158) and the Boone County Subdivision Regulations (Section 308) to help minimize negative impacts of development locating next to farmland.

Public improvements can also impact agricultural operations. Roadway improvements should be designed to accommodate wide farm machinery in the case of guard rails, storm water culverts, bridges, embankments, and sight distance at intersections.

Consistent with State law, large, concentrated agricultural production of livestock and similar operations, sometimes known as “mega-farms” should be treated in planning and land use regulations as an industrial use, not an agricultural use because of the potential noise, visual, traffic, and other impacts on surrounding land uses.

Agricultural land has value in addition to the actual production of goods and services, according to the Boone County Conservation District. It has benefits for storm water filtration, ground water recharge, flood reduction, soil retention, wildlife habitat, air purification, historic sites, scenic corridors, as well as the economic benefit of visual community character.

Diversification of crops would also preserve existing farmlands as the tobacco industry is threatened with an uncertain future. Farmers have been evaluating alternative crops as the tobacco market decreases. Such crops would include herbal crops, hay, timber (wood products), textile industry, aquaculture, vegetable and fruit produce, and medical industry crops.

A good farmer’s market network should supplement the successful Boone County Farmer’s Market to link producers with grocers and customers. Participating in farmers markets may also help farmers get in contact with purchasers of alternative crops for such uses as medical, research, and others. The “demand” for a particular product would be put in contact with potential suppliers. This would also promote a more regional distribution of crops and other agricultural-related products as local companies could contract out with local farmers for alternative crops to meet their needs. Furthermore, there may be a need for alternative livestock, such as bison and ostrich that can be met by the local farmers instead of having items shipped into the area. A good farmers market network can help the sustainability of the region as local farming and agricultural needs are met by local suppliers. This plan recommends that settlement money be used to create a “clearinghouse” type of organization that matches grocery markets and plant nursery operations with local growers of produce and horticultural products. In this way local growers may be stimulated to produce more of these goods to supply the steady and growing demand of these markets. As a result, the residential and commercial growth of Boone County can support a strong agricultural market in concert with urban land conversion.