Managing Riparian Areas for Water Quality and Wildlife

by Jim Robinson, Agroforester, National Agroforestry Center, Ft. Worth, Texas

Great Plains riparian woodlands have been reported to contain bird communities that are as much as seven times as rich as those in the surrounding Plains.

Riparian buffers are strips of vegetation adjacent to streams or other bodies of water established principally to protect or improve water quality and improve or enhance wildlife habitat. The principal vegetation is generally trees, grasses, and forbs or a mixture of vegetative types to accomplish the intended purposes.

In the Natural Resources Conservation Service, we have two practices that address these purposes. They are a grass filter strip and a riparian forest buffer. For these practices to achieve their intended purpose they must be properly located and sized (width, length, and area) in relation to the stream or water body and adapted to the existing site conditions. This presentation will discuss the Natural Resources Conservation Service considerations in designing riparian forest buffers for water quality and wildlife habitat.

The health of the stream system often is indicative of the sustainability of the watershed or its contributing area. Riparian buffers considered as an integral part of a total conservation system including nutrient management, pest management, tillage and other erosion control, habitat and management practices, provide a contribution to the resilience and sustainability of the landscape.

When assessing the needs for water quality the questions asked are:

- *how wide does the buffer need to be, and*
- *what vegetative components are needed to achieve the desired results?*

Research has shown that approximately 35 feet of width (flow length) significantly reduces the pollutants entering the buffer. This is what NRCS has set as the minimum riparian forest buffer for the protection of water quality. Research has not answered how long the buffer can perform these functions before it fails to provide the desired protection. To do this risk assessment NRCS looks at the condition of the contributing area and the hydrology or how water gets to the stream.

In high risk areas for water contamination the width of the buffer should be increased to provide added assurance of the sustainability of water quality protection.

High risk areas might be considered as contributing areas where:

- intensive cropping is practiced;
- animal confinement areas are in the contributing area;
- high-valued streams exist where greater protection is desired;
- other high-sediment producing areas exist;
- anticipated land-use changes may adversely impact the stream.

Buffers are very effective in processing nitrogen. Some generalized averages for average annual nitrogen uptake by trees include: 1) about 60 pounds per acre for deciduous species, and 2) about 35 pounds per acre for conifer species. Estimates for denitrification in natural riparian forests in the U.S. are in the range of 25 to 35 pounds of N per acre per year.

Riparian forest buffers can provide habitat for a tremendous number of wild animals from big game, to owls and songbirds, turtles, frogs, and insects. All of these creatures and many more may find a place to feed, nest, or breed in the riparian forest ecosystem. The forest buffer's benefits may also extend to the

fin fish, shellfish, and invertebrates that inhabit the adjoining water.

Just as in designing for water quality, the species composition, width, and length of the buffer are critical in determining the effectiveness of the buffer in meeting the habitat objectives. The buffer provides shade to lower water temperature, provides organic material and large woody debris for aquatic habitat, and provides food, shelter and nesting cover for many species of birds and other wildlife.

Great Plains riparian woodlands have been reported to contain bird communities that are as much as seven times as rich as those in the surrounding Plains. How well they provide habitat depends to a large degree on how they are designed.

Small streams flowing through exposed reaches can experience increases in temperature of up to 1.5 degrees Fahrenheit for every 100 feet of sun exposure. Maximum daily temperatures can be as much as twelve to fifteen degrees higher in exposed streams, rendering them unfit for many species of fish.

As much as 75 percent of the large woody debris (LWD) in streams comes from trees within the first 50 feet of the stream bank. One study showed that LWD created an additional 43 percent pool volume in one stream and 71 percent in another stream which was very important to fish survival particularly during low flows in summer.

Some general guidelines for widths (which include the total of two-side plantings along streams) for some representative species are:

Species (common name)	**Desired width** (feet)*
Bald eagle, cavity nesting ducks, herons, sandhill crane	600
Common loon, pileated woodpecker	450
Beaver, dabbling ducks, mink	300
Deer	200
Lesser scaup, harlequin duck	165
Frog, salamander	100

**refer to published state guidelines for more localized information.*

While not all objectives can always be achieved without some conflicts, the benefits we derive from riparian buffers to a large degree depends upon how we plan, establish, manage and maintain our riparian buffers.

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Cooperative Marketing Ideas

Dan Nagengast, Director, Kansas Rural Center, Whiting, Kansas

Some people are great at glad-handing customers or are interested in working with chefs. Others are better off out in the field or writing newsletters. Those talents may be better used in a cooperative situation.

Someone once said that "farmers' co-operative" is an oxymoron. These days "independent farmer" is almost the same. If your farm's survival depends on working with others, make sure it is profitable and on terms that you can live and prosper with.

Reasons to market cooperatively:

Insufficient individual production. Often a beginner's problem. You can't grow enough yet to justify the transportation. Or you are interested in Community Supported Agriculture, but you don't have enough consistency or variety.

Shared resources & efficiency. Share that truck. Pay a common stall fee. Often this type of cooperation includes sharing production resources too: a manure spreader; sometimes two tractors are better than one; a large cooler is cheaper than two small ones.

Best use of diverse talents. Some people are great at glad-handing customers or are interested in working with chefs. Others are better off out in the field or writing newsletters. Those talents may be better used in a cooperative situation.

Market insurance: assured production. You have 350 CSA customers or five good restaurants. You get hailed out. If you are marketing in a group, your customers, at any rate, may avoid disappointment because a group is providing the production.

New, larger markets. More production means a wider range of markets are open to you. If you are very small, a farmers' market, or one restaurant, or neighbors may be your only outlet. Combined production can get you into other situations and markets that may be equally profitable.

Support group. Two heads are better than one. It means more information and more thoughtful solutions.

Some Models:

Rolling Prairie Farmers Alliance. An eight-farm cooperative CSAwith 350 subscribers, and three drop-off sites in whole foods stores.

Land to Hand Alliance. A group of sixteen farmers and ranchers from several counties in North Central Kansas formed to direct market beef, pork, lamb, poultry, goat meat, dairy, soap, eggs, animal feed, vegetables, grain, puppies, herbs, honey, and fiber.

University of Northern Iowa Local Food Project. Works with institutions, including UNI, the local hospital, and a restaurant to increase the amount of local food in their meals programs and on the menu.

County Fair Tomato Co-op. A processing, value-added cooperative attempting to return the product to farmers so that they can make the retail sales and reap the rewards.

Tallgrass Prairie Producers. A group of ranchers in the Kansas Flint Hills that spent 5 years developing a grass-fed beef cooperative. They have taken a break from marketing and are working with another group of ranchers to reorganize on a larger level for mass markets.

Kansas Organic Producers. A 60-member marketing cooperative, with 40+ members actually selling all or part of their production through the co-op. Organized in 1992, major marketing efforts focus on soybeans, wheat, corn, specialty crops, and livestock. Individual members do some beef and poultry marketing. Last year, sales were over $500,000. The co-op has had part-time professional management for the last several years.

Peabody Farmers Market. Seventeen

growers in a small town decided to develop a farmers' market in the park on Main Street. They held monthly meetings through the winter. Charged $20 per stall and hired a market manager. Advertised in the paper and through press release. They are meeting now, and looking toward their second season.

Karen Pendleton; Friendship Gardens. Four women growers who craft dried flower arrangements, one each north, south, east and west of Lawrence, Kansas, so that they are within 20 minutes of each other, but not directly competing. They do a lot of flower trials and arranging together. In addition to moral support, they do craft shows together. This means husbands don' t have to come and it's safer, but also, while one talks, another eats, one takes money, and one can go to the bathroom.

Blue Earth. A group of seven farmers who jointly market through one stand at the Manhattan, Kansas farmers' market and to restaurants.

Adding Value Can Improve Your Bottom Line

Rodney B. Holcomb
Agribusiness Economist, OSU Food and Agricultural Products Center, Stillwater, Oklahoma

Value-Added Agriculture

The past fifteen years have seen some dramatic changes for agriculture, many of which adversely affected small-to medium-sized farms. Agricultural prices, and thereby producer incomes, saw greater volatility due to farm policy changes, developments in international trade, and of course, the weather. As a result of instability in the farm sector, several producers left agriculture and countless others began to explore ways for enhancing their income. Because the American lifestyle during this time period became dependent upon "quick and easy" meal solutions, many producers (individuals and groups) turned to value-added processing ventures to provide this extra income. Through these ventures producers developed income streams from new businesses that were, in some manner, tied to their on-farm production.

Adding value to agricultural products is a popular concept because it can provide substantial benefits, including an increased ability to capture a percentage of the farm-to-retail price spread. For example, wheat represents less than nine percent of the retail value of the typical loaf of bread while the milling, baking, and related activities represent almost 65 percent of the final value (Kohls and Uhl). The opportunities for food manufacturing have also been more profitable in recent years; the return on equity of production agriculture averaged 3.38% while the return on investment for food companies averaged 16.6% during the 1991-95 period (U.S. Dept. of Commerce).

Since 1990, a noticeable phenomenon in U.S. agriculture has been the development of value-added marketing cooperatives (Cook). During the late 1980's and early 1990's, more than $1.2 billion dollars were invested in various value-added marketing cooperatives (Egerstrom). This value-added philosophy has been particularly evident in the Northern Plains states (North and South Dakota, Minnesota), as shown by the development of farmer-owned efforts such as Dakota Growers Pasta Co., Drayton Grain Processors, North Dakota Bison Cooperative, American Crystal

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Sugar Co., and AgGrow Oils. The success of these Northern Plains ventures have increased the interest of Oklahoma producers and cooperatives in value-added processing ventures, resulting in the Saginaw, Texas flour mill partially owned by thirteen Oklahoma cooperatives, and the newly formed Value-Added Products Cooperative in Alva, Oklahoma.

Value-added processing activities offer the state of Oklahoma several possibilities for deriving additional employment, gross state product (GSP) and tax revenues from agricultural commodities currently produced in the state. Typically, most of Oklahoma's agricultural commodities are shipped out of the state as raw commodities, before even primary processing has added value to the state's agricultural outputs. Recent decentralization in the U.S. manufacturing industries, shifts in the U.S. population towards "Sun Belt" states (Gulf Coast states, Arizona, Nevada), and resource allocations towards food processing research made by the state of Oklahoma have created a more friendly environment for the growth of Oklahoma's value-added food and agricultural products processing industries.

Oklahoma, with its vast agricultural output, has the potential to greatly expand its value-added processing activities. In the early 1990's, all livestock and crops (raw agricultural products) produced in Oklahoma directly impacted the state's GSP by slightly over $1.1 billion and accounted for 5.1% of all Oklahoma jobs. However, the indirect and induced effects of this production, from the state's inputs sector through insurance and affiliated governmental outlays, added an additional $2.8 billion to Oklahoma's GSP and generated 6.8% of the state's jobs for a total economic impact of nearly $4.0 billion and 11.9% of the state's total employment (Anderson et al., 1994). On the other hand, Oklahoma's agricultural processing industries and their related economic activities during this time period accounted for roughly $1.6 billion in GSP and roughly 10% of the state's employment. Given that the average return to production agriculture from each consumer's food dollar is now roughly 22%, there should be room to develop more processing activities for Oklahoma's raw agricultural products.

Several factors indicate opportunities for future growth of producer-owned value-added processing entities in Oklahoma. First, the state's agricultural output is tremendous and varied, suggesting processing opportunities for several different crops. Second, the state has provided several incentives for producers considering processing opportunities, including research and planning assistance and tax breaks. Third, the state's highway system and central location offer proximity to market centers while also suggesting prime storage and distribution points for coast-to-coast and Canada-to-Mexico marketing.

Planning a Value-Added Processing Venture

Success in developing value-added processing ventures depends upon careful business planning and marketing. In most cases, producing a value-added product is the easiest part of a value-added enterprise. Manufacturing a product that consumers are willing to buy and having a market outlet for that product, however, are the main difficulties for a food business. These problems can be diminished, if not eliminated, through early planning efforts.

Initial planning can be divided into four basic steps. The first step is to compile all available information concerning the quality characteristics of the commodity being produced in the producer's (or producers') trade territory over a period of time. Based on historical quality information, an initial list of potential processed products can be identified.

The second step is to obtain basic industry

and production information for each potential product or product group. This includes market size, market growth, industry concentration, location of competitors within the region, complexity of processing technology, minimum efficient scale of operation, and location of major market outlets and/or distribution points. Obviously, gathering this information is not a simple task, but the combined industry knowledge and compiled market data from the OSU Food & Agricultural Products Center, the Oklahoma Department of Agriculture, and other information sources can provide an appropriate depiction of each product's market trends and competition.

The next, and possibly the most interesting, step in the process is the analysis of the information. This analysis, which needs to incorporate a rating or ranking system, can be a valuable tool for addressing the advantages and disadvantages associated with the list of potential processing opportunities. In essence, this planning tool provides a means for quantifying/ranking each processing possibility, thereby allowing the individual/group to pinpoint one or two ventures that show the greatest promise for the farm/organization.

The final step in the process is the development of a specific action plan for pursuing the "best" processing alternative. Components of this action plan include determining the business structure to be used for the processing venture; the necessary facilities, equipment, and management for the venture; a plan for raising capital (if necessary); and a marketing scheme for contracting production. Parts of this action plan may require the services of industry or marketing experts, especially if the enterprise is considerably large in scope. Very few producers have the time, industry experience, and management/marketing skills needed to oversee the daily operations of a processing enterprise.

The end result of these planning techniques will hopefully be an enterprise that is both profitable and consistent, providing a steady source of additional income for the producer or producers. Additionally, such ventures are opportunities to capture a significant share of the consumer's food dollar unseen by today's agricultural producers. The resources made available by the state of Oklahoma, several of its state agencies, and Oklahoma State University can serve to meet the needs of those interested in developing these processing entities.

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