



Factors to Consider when Bringing Conservation Reserve Program (CRP) Land or Idle Land Back into Production

Encouraged by higher grain prices, many producers are considering cropping land that has been out of crop production for several years. Some may even consider nontraditional uses, such as forestry and developing wildlife habitat. Each must realize, however, that he or she is farming land with a different history than that of the rest of the farm. If there have been several years of sod, such as results from the ten-year enrollment in the Conservation Reserve Program (CRP), the quality of the soil will be greatly improved. Maintaining this soil quality will require planning and good management. This publication will look at factors to consider, such as which cropping system to use, pests that will be encountered, fertility status of the field, other nontraditional options, and the economics of bringing land back into production.

Soil Quality and the Effect of Tillage

Lloyd Murdock, Extension Soils Specialist

Ten years of grass greatly affects the quality of a soil. The improvement in pore volume and size distribution are probably the changes that make the most difference. These properties determine the infiltration rates, internal drainage and aeration, water-holding capacity, and the portion of soil water that is available to plants. Soils with the best aggregation for crop growth are soils that have been in grass for many years. They show improved mechanical properties that allow traffic and tillage under wetter conditions. Compared to conventionally tilled cropped soils, these soils have greater amounts of organic matter, structural stability, total pore space and air-filled pore space, and higher infiltration rates. All these characteristics result in improved water availability for plant growth.

When grasslands are cultivated, organic matter and nitrogen decline most rapidly during the first ten years of cultivation. The soil structure deteriorates even more rapidly, with the greatest rate of destruction occurring in

the first two to three years after cultivation. Long-term tillage results in reduced water availability and aeration within the root zone.

Should Tillage Be Used?

Tillage aids in weed control and removes much of the residue from the surface. This allows a more rapid warming and drying in the spring and helps eliminate voles by destroying their habitat. With time, however, tillage destroys many of the advantages gained by many years of sod. If tillage is used, it should be restricted to the first year and only involve an implement that disturbs the top few inches of soil (such as a disk). A turning plow would eliminate much of the improvements made over the last ten years.

With a little extra management, these fields can be planted no-till and most of the gains from ten years of sod can be preserved and used to the producer's advantage.

Grain Cropping Systems

Jim Herbek, Extension Grain Crops Specialist

Which grain crop should be initially grown on perennial sod land? There is no single answer since each situation will vary. Factors determining crop choice are personal preference, price outlook, fertility levels, potential pest problems (diseases, insects, weeds, and voles) and the ability to control them, and the amount of vegetative cover.

Clean-tillage eliminates potential pest, fertility, planting, and vegetative sod problems, so there will be few differences to consider in choosing the initial grain crop to be grown. However, with no-tillage there will be advantages and disadvantages to weigh.

Corn and soybeans are probable choices, but wheat and grain sorghum are also potential grain crops for the CRP or perennial sod land. Each possesses advantages and disadvantages that may influence its choice as the initial no-till crop.

Wheat

Advantages

- Allows a start on grass sod control in the fall that can benefit succeeding crops.
- Early sod decomposition increases residual nitrogen availability for succeeding crops.

Disadvantages

- Requires multiple applications of burndown herbicides for sod control.

- No effective residual herbicides to aid in grass sod control.
- More difficult to plant with a drill in a heavy grass sod. Reducing sod cover helps.
- More nitrogen is required because residual nitrogen is not immediately available.
- There is limited effectiveness of postemergence herbicides on some broadleaf species.

Grain Sorghum

Advantages

- Later planting requirement helps avoid planting into cool, wet soil conditions.
- Limited residual herbicides are effective in aiding grass sod control.

Disadvantages

- Few residual and postemergence herbicides are available for broadleaf weed problems.
- Few residual herbicides and no postemergence herbicides are available for grass problems.
- Small seed is more difficult to plant in heavy residue. Seed placement and depth are critical.

Soybeans

Advantages

- Later planting requirement helps avoid planting into cool, wet soil conditions.

- The later planting date allows more time for grass sod control options.
- Better selection of herbicides and options for postemergence grass control.
- Grassy weeds are easier to control in a broadleaf crop (i.e., soybeans).
- Roundup Ready soybean technology offers opportunity to manage perennial weeds.
- More residual nitrogen would be available for use by the second-year crop (i.e., corn).
- Preferred crop to plant if presence of soil insects is unknown.

Disadvantages

- Soybeans are less suited for low pH soils than corn.
- If soybean cyst nematode is present, corn would be a better option.
- Effective grass sod control requires multiple applications of burndown herbicides.
- Residual herbicides to aid in grass sod control are not as effective as those used with corn.
- Residual and postemergence herbicides give limited control of perennial broadleaf weeds.
- Inoculation is necessary since sufficient naturally occurring soil rhizobia, which are needed for good nodulation, may not be present after several years of grass sod.
- May have more vole damage in soybeans since they feed for a longer period of time.

Corn

Advantages

- Best crop to plant in heavy residue. Seed placement and depth are not as critical.
- Best choice of residual herbicides for effective grass sod control.
- Better residual and postemergence herbicides are available for broadleaf weed control.
- Corn is generally the best choice for postemergence control of perennial vines.
- Corn is better suited to low pH soils than soybeans.
- Residual nitrogen from a perennial sod benefits corn more than legumes (soybeans).

Disadvantages

- The earlier planting date requirement results in greater potential of planting into cool, wet soils that lead to poor stands and growth.
- Because of earlier planting dates, time is limited for grass sod control and reapplication if needed (unless fall applications were made).
- Early sod control treatments result in a layer of dead residue that keeps soils cool and wet (less soil water evaporation and no plant transpiration occurs).
- Delayed planting may be necessary to avoid cool, wet soil conditions.
- No-till corn will require more nitrogen the first year. Slow decomposition of the heavy sod and microbial tie-up of residual nitrogen result in less nitrogen being available.
- Only control option for soil insects is an “at-planting” soil insecticide.

CRP Land and Soil Insect Pests

Lee Townsend, Extension Entomologist

Key Factor

Field history is the key factor to use in determining potential soil insect problems. The types and numbers of soil insects that can thrive depends on the vegetation present in previous years. Plant characteristics, such as leaf color, odor, and pollen, can attract certain insects. These insects may feed on the plants and lay their eggs in the soil so that their immature offspring can feed on the roots. Some insects feed on only a few types of plants; others eat a variety. The greater the diversity of plants (grasses and broadleaf species) in a field, the greater the diversity of soil insects that will be found there. However, there should be relatively small numbers of each kind in such a field; no one group should be favored. A field with a relatively pure stand will have greater numbers of a few types or species.

The longer a particular type of vegetation is present, the greater the opportunity for specific insects to increase in number. Ten years of grass or grass and broad-

leaf cover on CRP land provides a stable situation. The insects may occur over the entire field or only in specific areas. Fortunately, most CRP acreage was seeded in fescue. Few soil insects build up in large numbers in relatively pure fescue sod. Over many years, University of Kentucky research and demonstration plots have shown very low numbers of soil insects associated with fescue.

Potential Soil Insect Problems

White grubs, wireworms, and corn root aphids can reduce crop stands or slow early growth. However, recent research and demonstration plots on CRP land in Kentucky have shown soil insects to be below damaging numbers. The potential for problems with soil insects in fields with strong, vigorous stands of fescue is very low.

Grain sorghum, soybeans, and wheat have few problems with soil insects, so they are excellent crops in fields where problems are anticipated. Corn is more

susceptible to damage by wireworms, white grubs, and corn root aphids. If factors favor corn production, then an at-planting application of a granular soil insecticide is recommended for weedy or nonfescue fields. Dock and plantain are good host plants for corn root aphids. An abundance of them in a field increases the potential for damage by these pests. Corn root aphid numbers can be reduced by some granular soil insecticides. There are no “rescue” treatments for soil insects once damage has been found, so careful crop selection and use of preventive treatment, when necessary, make the best strategy.

Assessing Pest Potential

Placing bait stations to trap wireworms and digging soil cores to look for white grubs are two ways to get an idea of soil insect pressure in a field before planting.

These time-consuming operations need to be done several weeks before planting.

Need for Insecticides on CRP Land

Routine application of a soil insecticide for corn following CRP is not justified in the vast majority of cases. Insecticide seed treatments, however, are recommended to protect corn and soybeans from attack by seed maggots. This pest can severely reduce stands in fields with a substantial cover of crop residue.

For more information see:

Wireworms (Entfact 120)

Seedcorn Maggot (Entfact 309)

Soybean Cyst Nematode

Don Hershman, Extension Plant Pathologist

It had been anticipated that soybean cyst nematode (SCN) populations would decrease to very low levels in land that had been idle for several years, such as with the ten-year CRP program. In most cases this has proven true; however, some CRP fields tested continue to have high levels of SCN. A survey of 50 fields in the CRP was conducted in the spring of 1995. Twenty of the survey sites, occurring in eight of the 50 fields, revealed the presence of SCN. Approximately half of these sites had less than ten cysts per pint of soil. Two fields had at least one site with more than 100 cysts per pint of soil. It appears as though CRP fields with a prior history of

soybean production may be at some risk of having damaging levels of SCN at the end of the CRP period.

Past experience tells us that it is unlikely that populations of more than 50 cysts per pint of soil can be maintained in a field without some low-level reproduction. Weeds present in years and seasons prior to surveying may have been responsible for maintaining SCN populations. A failure to pick up SCN in 254 sites suggests that damaging levels of SCN in CRP acreage is not a widespread problem. Nonetheless, farmers intending to plant soybeans on idle land, such as CRP fields, should have the soil tested for SCN.

Strategies for Managing Perennial Sod and Weedy Vegetation

James Martin, Extension Weed Scientist

Achieving effective control of the vegetation in sod fields may be a major obstacle during the transition to row-crop production. Since many sod fields have a high potential for soil erosion, no-tillage practices are preferred over methods that use tillage to control vegetation. Only in rare situations should tillage be used to manage vegetation in sod fields.

Some of the key items to consider in this process include weed inventory, mowing, burndown herbicides, timing of application, and preemergence and postemergence herbicides.

Weed Inventory

Be on the lookout for unexpected problems while converting sod land into a cropping system. Know

which weed species are present in the field and focus on managing the major problem weeds. Some of the species that occur in sod fields may be difficult and expensive to control; mapping infested areas may allow opportunities for cutting treatment costs by spot treating problem areas.

When scouting sod fields, the relative importance of such weeds as foxtail and pigweed may go unnoticed because they tend to be suppressed by the dense stand of fescue or other weeds and vegetation present. However, once the vegetative cover is killed, these and other weed species may emerge in large numbers. Tillage can also encourage a shift to a different spectrum of weeds by bringing buried dormant weed seed near the soil surface, where they germinate.

Mowing

Mowing ahead of the application of burndown herbicides helps remove old mature vegetation and stimulates new leaf growth. A common recommendation is to mow during August and wait three to six weeks for regrowth to occur before spraying. Fescue needs to be actively growing with an approximate height of 4 inches for optimum control with Gramoxone Extra treatments and between 6 and 12 inches for translocated herbicides such as Roundup Ultra. When renovating pastures, growers may want to do an initial clipping during late spring to prevent seed set of endophyte-infected tall fescue before reseeding the field with another forage the following fall.

Burndown Herbicides

Roundup Ultra and Touchdown are examples of translocated herbicides used to control sod and perennial weed species. Research indicates that tall fescue can be controlled with Roundup Ultra at 2 to 3 pints per acre when applied in the fall in a spray volume of 3 to 10 gallons of water per acre. Increasing the rate of Roundup Ultra to a total of 4 pints per acre has resulted in substantial reduction in the population of such perennials as trumpet creeper. Touchdown should provide similar results to Roundup Ultra when applied according to label directions.

Reduced control can occur with Roundup Ultra and Touchdown because of antagonism with ions in the spray water or with certain tank-mix partners. To avoid or minimize antagonism problems, consult the herbicide labels for approved tank mixtures and for use of ammonium sulfate as an additive.

Gramoxone Extra is a contact herbicide that mainly kills plants or portions of plants that receive spray but does not move to the roots or underground plant parts. Research has shown that fescue sod often can be controlled with Gramoxone Extra when applied as two separate sprays at a rate of 1.5 pints per acre for each treatment. The two treatments should be given about ten to 21 days apart.

When rotating to no-till corn, the use of atrazine at a rate of 1.5 to 2 quarts per acre or other triazine herbicides in conjunction with the traditional burndown herbicides is a common practice. In order to gain the benefits of the triazine herbicide, rainfall is needed to move the herbicide off the surface residue and into the soil for root uptake in the sod. In fields that will be rotated back to a forage crop after corn harvest, consider using products that contain cyanazine instead of atrazine to avoid carryover injury to fall-seeded crops.

Timing of Application

Fall tends to be the best time to apply translocated herbicides for many perennials because of optimum movement of the chemical to the roots or other underground plant parts. An additional burndown treatment may be warranted in the fall to accelerate kill and degradation of the sod before planting a fall-seeded crop or in the spring to control cool-season weeds or sod regrowth before planting corn or soybeans. In some instances, fall applications may provide opportunities to use greater rates of such herbicides as Banvel or 2,4-D due to more time for dissipation of herbicides from the soil before planting sensitive crops in the spring.

Programs initiated in the spring are limited in their ability to control or suppress some of the perennial weeds that may be encountered in sod fields. However, if fescue sod is the dominant component of the vegetative cover, then the most economical and effective option would be to rotate to corn and use a triazine herbicide in conjunction with a burndown herbicide.

Control of fescue sod with spring applications may be a greater challenge in soybeans than in corn. Under ideal conditions, sequential spray programs in the spring may offer acceptable control of fescue in no-till soybeans. The initial treatment should generally include a translocated herbicide, such as Roundup Ultra or Touchdown, when fescue is actively growing and soil temperature at 4 inches below sod is at least 60°F. Follow up about two to three weeks later with a contact herbicide before planting soybeans. It is important to recognize that control of tall fescue with Roundup Ultra or Touchdown may require several weeks to achieve maximum response, and that cool temperatures or other stress factors may limit control with these herbicides. If rapid control of the sod is needed, or when temperatures are less than ideal, consider using Gramoxone Extra as the initial treatment, followed with another treatment about ten to 21 days later.

Preemergence and Postemergence Herbicides

Other components of the weed management program involve soil residual and postemergence herbicides. Soil residual herbicides may be needed to aid in the control of ragweeds, foxtails, and pigweeds in corn or soybeans. Scout the field periodically after these crops are planted to evaluate the success of killing the sod and weedy vegetation and to determine if a postemergence herbicide treatment is warranted. See the Extension publication *Chemical Control of Weeds in Kentucky Farm Crops* (AGR-6) for herbicides recommended for weed control in grain crops.

Voles

Jim Herbek, Extension Grain Crops Specialist

The number one pest problem on perennial sod land to be cropped is a rodent called the prairie vole. Voles need food and a full canopy cover for protection from predators. Established grass sod fields provide an ideal food and cover habitat for development of a large vole population. Heavy damage can occur to no-till planted crops if vole populations are not controlled.

Scout fields to identify active vole populations at least 30 days prior to planting no-till crops. If five or more active vole colonies per acre are found, damage prevention control measures should be planned. Several vole damage control techniques for no-till crops can be utilized. The degree of control achieved with any of the following options will depend on the vole pressure and management (planning, timing, and effectiveness of options).

Predators

Natural predators include snakes, hawks, owls, coyotes, and foxes. Reducing the cover will discourage vole movement and permit more accessibility to predators.

Toxicants

Hopkins Agricultural Chemical Company has produced zinc phosphide bait pellets for in-furrow application use in field corn. Special application equipment for planters is needed. Kentucky received registration approval for its use in 1997. Check the label for usage guidelines and restrictions. Check yearly to determine if label registration and clearance for use still exist in Kentucky.

Alternative Feeding

Supplying an alternative source of food just prior to planting can be effective if it distracts the vole from the planted crop seed and is applied in sufficient amounts to feed the vole population for at least three to four weeks. Alternative feeding should be considered where no other control options have been used and/or if active vole colonies exist just prior to planting.

Feed grains such as whole or cracked corn, wheat, rye, and oats, as well as soybeans, are all possible alternative foods. Broadcast the grain into an established perennial sod within two days prior to planting. The following are suggested rates:

- Whole kernel corn at 2 bushels per acre is effective even with large vole populations. (Volunteer corn can be a problem if significant rainfall occurs shortly after planting.)

- Coarse cracked corn at 2 bushels per acre may be effective with small vole populations, and 4 bushels per acre is required for large vole populations.
- Wheat at 2 bushels per acre is effective with small vole populations.
- Soybeans at 2 bushels per acre may be effective with small vole populations.

Cultural Control

Tillage is very effective in destroying the vole's colony, cover, and food supply. Disadvantages include the loss of soil and moisture conservation benefits due to loss of residue cover.

Habit Modification

These techniques can be effective with no-till plantings. Voles live where they have adequate cover from predators and a sufficient supply of food (grass or legume sod). Reducing the amount of cover or food available to the vole forces the population to move from the field before the no-till crop is planted. Good planning is the key to effective use of these techniques. All of the following habit-modification techniques are aimed at either reducing the cover, reducing the food supply, or both.

- **Hay Removal.** Removes protective cover for the vole. This should be done at least two to three weeks prior to planting.
- **Close Mowing.** Reduces protective cover, benefiting predators that then thin the vole population. Mowing can be done in the fall, spring, or both.
- **Controlled Burning.** Burning of existing sod cover reduces the vole's protective cover and its food supply. Fall burning may be more effective than spring burning because of the winter period without cover and food. Check local regulations on burning before this technique is used.
- **Applying Early Preplant Herbicides.** This has been a very effective technique for vole control in no-till. Killing the vegetative cover with the application of early preplant herbicides at least 30 days prior to planting the no-till crops reduces the cover and food supply of the vole, forcing the population to migrate out of the field.

It is important to plan well in advance and to start control options early. This allows you to:

- use more than one control option,
- evaluate the control achieved,
- repeat an option or use other options,
- redirect your planned options if needed.

Nitrogen Requirements for Corn

Lloyd Murdock, Extension Soils Specialist

Land that has been in the CRP or a long-term sod for ten years will have experienced at least a 1 percent increase in organic matter in the plow layer of the soil. Nitrogen is in the organic matter and may be released as the organic matter decomposes. However, the release of this nitrogen is subject to the carbon-to-nitrogen ratio in the residue, tillage method, and weather. Most of the CRP fields in Kentucky are dominantly fescue and have almost no legumes. This results in residue that has a high carbon-to-nitrogen ratio, which releases nitrogen slowly or may actually immobilize added nitrogen under some conditions. Conventional tillage places the residue in the soil for more rapid decomposition, while no-till conditions result in slower decomposition.

First-year Corn after Sod

If the corn is planted using tillage, the nitrogen recommendation should be reduced by 50 pounds per acre compared to that recommended in a long-term cropping system. No-tillage planted corn should only be reduced by 25 pounds per acre or less.

Effect of First-year Tillage on Second-year No-till Corn

The nitrogen recommendations for no-till corn grown the second year after sod should be the same as

in a long-term cropping situation and should not be adjusted for the sod grown previously or the type of tillage used the first year of cropping.

Crop Rotation Effects on the Second-year Crop

The second year after sod, more nitrogen is found in the soil if soybeans were planted during the first year than is found after a first-year corn crop well fertilized with nitrogen. This increased soil nitrogen is available to the microbes for additional decomposition of organic matter, which causes a release of even more nitrogen for the succeeding crop. The nitrogen demands for corn would be more easily met in this high-residue situation if corn were planted the second year, after soybeans.

Wheat after Sod

Wheat planted no-till into a killed fescue sod needs additional nitrogen due to the slow decomposition of organic matter and/or nitrogen immobilization. It appears that 30 to 40 pounds per acre of nitrogen should be added in the fall. If prospects for an excellent crop exist the next spring, 90 to 120 pounds per acre of nitrogen should be applied, with 40 to 60 pounds per acre being applied at greenup in early to mid-February and the remainder in March.

Fertility Status of Long-term Sods

Lloyd Murdock, Extension Soils Specialist

The nutrient status of fields that have been in a long-term sod change with time. To better understand the changes, 50 fields which had been in sod due to enrollment in the Conservation Reserve Program for eight or nine years were surveyed for their nutrient status in 1995. The results varied from field to field, but trends were found.

Organic Matter

The organic matter (O.M.) was high in most fields. The average O.M. content was 2.3 percent. The fields that had the lowest O.M. content usually had a poor fescue stand. Based on previous studies, the O.M. content of these fields had increased about 1 percent over this period of time.

pH

The soil pH levels for most fields were in a favorable range. Almost 80 percent of the fields had a pH

between 6.0 and 7.0. Only 8 percent of the fields had a pH below 6.0.

The pH levels were well maintained throughout the eight- to nine-year period. The accumulating organic matter at the soil surface seemed to have little effect on the pH. Not adding nitrogen is probably the key to the stable pH.

Phosphorus

There was a wide range in the amount of phosphorus (P) found in the fields. Most of the fields (62 percent) were in the low range, and 90 percent were found to be in either the low or medium range. This appears to be the most limiting nutrient in most of these fields. There was also a substantial decrease in the phosphorus soil test values over the years that the fields were in the unfertilized sod. This occurred because the phosphorus slowly moved to a more unavailable form.

Potassium

The potassium (K) content of the fields was higher than expected. Only 10 percent were in the low category, and 42 percent were in the high range and would require no potassium fertilizer the first year of production. This is probably due to growing plants that over the years deposited potassium at the soil surface without any removal. The potassium soil test values were similar or slightly increased over the years the fields were in the unfertilized sod.

Conclusions

The survey indicates that the fields in the CRP had a reasonably good fertility status when placed into the program and that changes since then have not been great. The phosphorus was low in most fields and had decreased over the time of the program, which will make it one of the most limiting nutrients in most fields. A significant amount of phosphorus fertilizer will be required for the best production.

There are high amounts of variability between fields, so each field must be tested and treated separately to assure adequate fertilization and liming for good production.

Preparing for Hay or Pasture

Monroe Rasnake, Extension Agronomist

Land that has been left idle for several years, such as CRP fields, may still have good stands of tall fescue or other cool-season grasses. However, most will have very few legumes, such as red or white clover, which are necessary for producing high yields of good quality forage. The greatest need in these situations is to renovate these fields by establishing clovers.

Several steps need to be followed to establish good stands of clovers in grass fields that have been idle for several years:

1. Weeds

If weeds are bad enough, it may be necessary (or easier) to control them before clovers are seeded. This usually means starting to work on them the summer before. It may be possible to do this with herbicides that will not harm the existing stand of tall fescue. In very bad cases, it may be better to use a grain crop for a year or two in order to get weeds under control and then come back to forages.

2. Fertility

Fields should have soil samples taken in the autumn before clovers are to be seeded. If lime or fertilizer is needed, it can be applied in autumn while the weather is good. This is especially important in the case of lime since several months are needed for it to dissolve and raise the soil pH.

3. Residue

Mowing fields for several years without removing cuttings will result in a thick layer of plant residue on the surface. This must be reduced in order for clover seeds to get to the soil and germinate and for the new seedlings to receive light. Grazing with livestock is the most efficient way to reduce residue. Close mowing with a rotary mower also works. Burning the residue will work in areas where it is safe and legal.

4. Seeding Method and Time

Seeding red and white clovers can be as simple as just broadcasting the seed on the soil surface from mid-February to mid-March. A light disking followed by broadcast seeding in late March can help in heavy residues or later seedings. A good no-till drill is very effective through late March as well.

5. Control Competition

One of the most frequent causes of failure when renovating grass fields with clovers is competition from the grass. Cool-season grasses, such as tall fescue, start growing rapidly in spring and can shade out the clover seedlings. This problem can be reduced by not applying nitrogen fertilizer and by doing one of the following:

- using a herbicide,
- mowing grass if it gets more than 6 inches tall, or
- grazing with livestock until clover seedlings are about 3 inches tall.

Following these steps closely and getting a little help from the weather should result in good stands of clover in cool-season grass fields. This will return them to productive pastures or hay fields.

Agroforestry Options for Idle Lands

Deborah B. Hill, Extension Forest Management Specialist

Agroforestry may be a new term to many people. It involves a series of techniques for raising animals and/or agronomic crops in association with trees. It has been practiced, formally and informally, in many of the tropical areas of the world, where farmers often have very small acreages to farm. They therefore use all possible areas—vertical as well as horizontal, belowground as well as aboveground.

The five agroforestry options or techniques are alley cropping, silvopasture, windbreaks, riparian buffer strips, and forest farming. With lands that are currently open (rough pasture) and do not include a stream or other watercourse, the most appropriate agroforestry options are alley cropping, windbreaks, and silvopasture.

Alley Cropping

Alley cropping involves planting single rows of trees (high-value hardwoods or Christmas trees) and leaving wide “alleys” between them for growing another crop.

Windbreaks

Even though Kentucky does not have the wind problems of the Plains states, research indicates that windbreaks (multirow plantings of hardwood and conifer trees and bushes) significantly reduce water loss in crops planted on the lee side.

Silvopasture

Silvopasture is the *intentional* mixture of a tree crop and animals. The trees are planted on a wide spacing (conifers or orchard trees are possibilities), and between the trees are pasture grasses of some type. Time of year, age/size of trees, number/density of animals, and length of time on site are all critical factors for success. Animals can be controlled by movable electric fences.

Riparian Buffer Strips

Riparian buffer strips are planted along watercourses and include planted bands of trees, shrubs, and native grasses, with the trees closest to the water’s edge.

Forest Farming

Forest farming is management of existing forest land to yield products other than timber, such as medicinal plants, crafts materials, bee products, mushrooms, and maple syrup.

Any one of these options, or a combination of one or more, depending on the landowner’s natural resources, can bring improved income. However, forest farming, more than the other options, can bring income on an annual basis.

Wildlife Habitat Enhancement

Brian Clark, Wildlife Biologist, Kentucky Department of Fish and Wildlife Resources

Landowners wishing to improve wildlife habitat on CRP or other idle lands should focus on establishing beneficial vegetation that is compatible with other farm objectives. One vegetation type that is beneficial to wildlife is our native prairie grasses. These grasses grow during the spring and summer, and they are excellent for holding soil, for summer haying or grazing, and for wildlife food and cover. Big bluestem, switchgrass, Indian grass, eastern gammagrass, side-oats grama, and little bluestem are important prairie grasses in Kentucky that once dominated our open lands. These grasses can be planted on entire fields or pastures. They also can be used in buffer strips, along drainage ditches, and in fencerows.

Livestock producers are wise to crop 20 percent to 30 percent of their fields in native prairie grasses for quality summer grazing. These grasses can grow tall and produce a lot of forage, they need relatively little fertilizer to sustain good production, and they can yield 2 to 4 pounds of steer weight gain per day. For fall to

spring pastures, farmers should avoid tall fescue; incorporate timothy, redtop, orchardgrass, and clovers instead; and avoid overgrazing. Prairie grasses should be separated from other fields by fencing and should be grazed only to about 8 to 12 inches in height.

Tall fescue should be killed with herbicide before other cover types are established. Otherwise it will out-compete other vegetation. Fescue is detrimental to wildlife because of its thickness (it allows small animals no room to move on the ground) and low height (it provides little upright cover). In addition, fescue’s harmful root fungus is known to cause poor weight gains, heat intolerance, and poor reproduction in livestock.

Landowners can connect isolated woodlots by planting the proper tree species to increase a forest’s size and thus enhance forested habitat. Areas (preferably 150 feet or wider) adjacent to rivers, streams, or creeks can be planted to trees to protect our water resources and all the wildlife that depend on aquatic habitats.

Another beneficial vegetation type is shrubbery. Patches (15 feet or wider) of blackberry, crabapple, hawthorn, or other thick brush left along crop field edges or in field margins provide critical nesting and escape cover for small wildlife. Such cover can be planted or allowed to grow up naturally. It can be maintained with bush-hogging or selective cutting.

Disking a fallow field or edges in strips during February stimulates annual, seed-producing plants that feed birds. Mowing a grown-up field in alternate strips

on a two- to three-year rotation creates habitat diversity and increases lush ground-level plant growth. Prescribed burning of a field with disked firebreaks in February likewise encourages beneficial plant growth.

Technical assistance is available to landowners free of charge or obligation. Contact the Kentucky Department of Fish and Wildlife Resources at (502) 564-4858 or at a local office for assistance with enhancing wildlife habitat on CRP or other lands.

The Economics of Converting Idle Land to Productive Uses

Richard L. Trimble, Extension Economist

Changing governmental farm policies (such as the Federal Agricultural Improvement and Reform Act [FAIR] and Freedom to Farm) and the expiring Conservation Reserve Program contracts have the potential for adding a large amount of idle land to Kentucky's productive land base. As this idle land becomes available, producers are going to be looking for ways to convert the acres to productive uses in their farm businesses.

The general assumption is that the landowner will want to use all available resources to maximize profits for the farm business. However, the landowner/producer may not want to adopt this strategy with this released acreage. He or she may want to investigate more resource-conserving uses for this land.

The producer has many options, both traditional and nontraditional, for using this newly available land resource. The most obvious option seems to be produc-

ing the more traditional crops of corn, soybeans, or wheat since this is most likely the historical use of the land. However, the producer may want to consider other crops, such as tobacco, vegetables, and fruit. In addition, the producer may wish to consider other more typical uses, such as forage production for beef, sheep, or horses.

The producer may want to investigate nontraditional uses of the land that would possibly be more resource conserving than the more traditional land uses. These might include the establishment of a forestry enterprise that could prove lucrative in the long term. The landowner might also want to explore the establishment of forages primarily for the attraction of wildlife.

The ultimate land-use decision is the prerogative of the landowner. It must be consistent with the overall goals of the farm business and/or farm family and help the landowner achieve these goals.

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