

# Pastured Poultry

*Jacquie Jacob and Tony Pescatore, Animal and Food Sciences, and Ray Smith, Plant and Soil Sciences*

There has been an increased interest in pasture-raising poultry for both meat and egg production in the last decade. Raising poultry on pasture was a common occurrence until the latter half of the twentieth century. Fresh forage provided an important ration-balancing factor during the years before poultry nutritionists fully understood the required essential vitamins and minerals for growth and optimum meat and egg production. With balanced rations, poultry no longer require access to pasture, and year-round production of meat and eggs is possible; however, pasture provides benefits from the lush forage, invertebrates, and exercise that it provides. In addition, we continue to learn more and more about the positive influence that fresh grasses and legumes have on fatty acid profiles and general bird health. As a result, there is an increased interest in pasture-raised poultry for both meat and eggs.

## Breed Selection

### Meat

A limited selection of breeds is available for chicken meat production. Most chicken meat producers in the United States are using the fast-growing Cornish Cross. This is a commercial meat breed (referred to as a broiler) originally developed by crossing the large-breasted Cornish and the White Plymouth Rock breeds. The Cornish cross can be grown to different sizes depending on the purpose. They can reach 4 to 5 pounds in 6 to 8 weeks and 6 to 10 pounds in 12 weeks, depending on the management conditions, especially housing and nutrition.

Europe has several slow-growing meat-type chickens. They take about 12 weeks to reach the same weight that a Cornish Cross can obtain in 6 to 8 weeks. Because they are marketed at an older age, they are closer to sexual maturity than the typical Cornish Cross. As a result, they are said to have more flavor. Some of these breeds are being imported into the United States. One of



**Figure 1.** Cross-section of a Cornish Cross (left) and Red Ranger (right) chicken carcasses

the first was the Red Ranger (also known as Freedom Ranger or Rainbow Ranger, depending on the hatchery). The Red Ranger has a much smaller breast yield than the Cornish Cross, despite the longer growth period (see Figure 1). A more recent introduction is the Hubbard Redbro chicken. Because of the slower growth, the amount of feed required for each pound of gain is higher. While Cornish Cross can be raised on pasture at 2 pounds of feed per pound of gain, it may take 3 or 4 pounds of feed per pound of gain for the slower growing breeds. The Freedom Rangers and Redbro chickens are both well adapted for pasture production systems but have colored feathers. The colored feathers make it harder to produce a clean appearing carcass. Dark-feathered, slower-growing breeds are popular in Asian cuisine. Although the Australorp was developed as an egg-producing breed in Australia, it is grown in parts of the United States as a meat bird for sale in live-bird markets.

For those raising turkeys, the commercial large white turkey is fast-growing and the most feed efficient. They have been raised well on pasture systems. Some producers, however, have switched to “heritage” turkey varieties. Two common alternative varieties include the Bourbon Red and the Narragansett. The Bourbon Red is named for Bourbon County, Kentucky, where they were developed in

the late 1800s. They are said to be good natured, making them suitable for small flock production. The Narragansett variety is named for Narragansett Bay in Rhode Island. It was developed from a cross between the Eastern Wild turkey and the domestic turkeys brought over by the early colonists. The Narragansett was the foundation of the early turkey industry in New England. They are an excellent variety for small flocks since they have a calm disposition and are good foragers. These heritage varieties will have a much smaller final carcass and considerably less breast meat than the commercial-type varieties but tend to have more flavor and can bring a premium price. For more information on selecting a turkey variety, refer to publication UK extension publication *Selecting Turkeys* (ASC-197) available at <http://www2.ca.uky.edu/agcomm/pubs/ASC/ASC197/ASC197.pdf>.

### Eggs

Chickens are the main poultry species raised for table egg production. The Leghorn chicken is the breed used in the commercial production of table eggs in most of the United States. They are prolific and highly efficient producers of white-shelled eggs. Leghorn-based breeds, however, tend to be flighty and are not suitable for the pasture production system without some intervention

for flight control (e.g. wing trimming). In the northeastern United States brown-shelled eggs are preferred over white-shelled. Breeding companies have developed commercial egg-producing strains specifically for this brown-shelled egg market. More recently, as the interest in free-range and pasture-raised system increases, breeding companies have been developing strains specific for these alternative systems.

Small-scaled egg producers may find it difficult to get access to these new commercial varieties. Most hatcheries in the United States, however, have a sex-link cross available for chicken egg production purposes. Sex-linked crosses are produced using specific breeds or strains of chickens that, when crossed, make it possible to tell male and female chicks apart based on their physical appearance, often plumage color. This practice results in fewer cockerels in a laying flock due to sexing errors. While such crosses have relatively good egg production, their production does not reach the level of the commercial strains developed for alternative egg production systems.

Another alternative is the use of dual purpose breeds such as New Hampshire, Plymouth Rock, and Rhode Island Red. These breeds do not produce eggs at the levels common with commercial strains and sex-linked crosses but may be more suitable for pastured systems (Figure 2). For more information on selecting chicken breeds, refer to the publication UK extension publication *Selecting the Right Chicken Breed* (ASC-190) available at <http://www2.ca.uky.edu/agcomm/pubs/asc/asc190/asc190.pdf>.

## Housing

Several poultry species are raised for meat or eggs. Production systems will be different depending on the species and final product raised. A variety of systems has been used for pasture-based production systems. To be truly pasture-raised, they need access to well-maintained pasture crops. It is difficult to maintain such pastures when the birds are confined in buildings with attached runs. The pasture vegetation is quickly denuded by the birds, especially the areas closest to the building. An alternative is to use a hub and spoke system where paddocks surrounding a central building are grazed in a rotational sequence using different doors to the central building.

For those truly pasture-raising, three production systems are available. The first includes the use of movable pasture pens (Figures 3 and 4). These enclosures can be used for chickens as well as turkey and are easily adapted to laying hens. The birds remain confined in the bottomless pens and are moved on the pasture as required. The

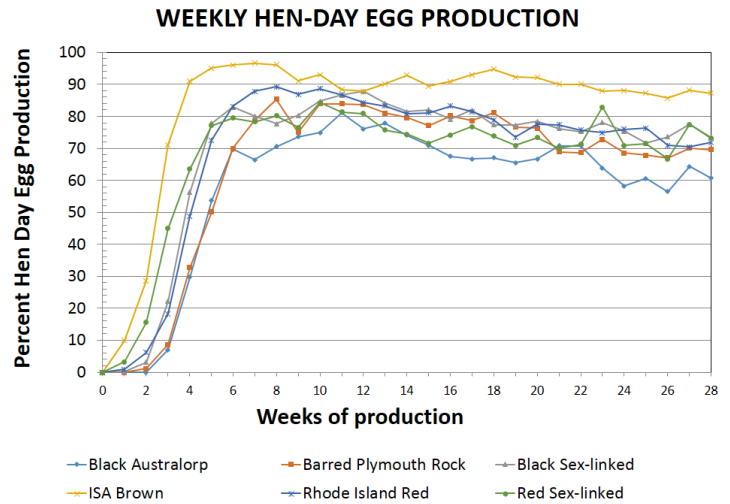


Figure 2. Egg production



Figure 3. Movable hoop pens used for pasture production



Figure 4. Movable Salatin-style pens used for pasture production but which do not allow for good ventilation of the birds



Figure 5. Day-ranging pens

use of hoop pens is popular because it is easier to enter the pens to access equipment and birds (Figure 3).

Some have used the shorter pens made famous by Joel Salatin (Figure 4), but they result in reduced air flow in the pen and, with the sheet metal coverings, have resulted in overheating of the birds in many parts of the United States.

Day ranging involves having the flock confined to specific areas and rotating the flocks regularly, whether that be per flock for meat birds or on a regular schedule for egg producers. The area is often denuded by the end of the flock and requires replanting before a new flock can be placed.

True free-range systems have a centralized housing system, which may or may not be movable, and the birds are allowed to roam freely (Figure 6).

## Feeds and Feeding

While on lush pastures, poultry have access to forage, insects, and worms. However, chickens are not ruminants; they cannot get as much nutrient content as would be expected with ruminant animals such as cattle, sheep, or goats. As a result, poultry cannot exist solely on what they can consume from pasture. For most operations, feeding a complete poultry feed is the best option. The feed given should be specific for the type of birds being raised and their production level. Feeding diets to laying hens that were designed for meat birds will provide excess protein and insufficient calcium to support egg production. Similarly, feeding layer diets to meat birds will provide excess calcium and insufficient protein. Pullet chicks destined for egg production do not need the high protein levels typically found in meat bird-type diets.

Some producers have experimented with choice feeding as an option for pasture-raised meat chickens. Such systems are only possible after the initial brooding period. While on pasture the chickens are offered a cereal (such as cracked corn) and a protein concentrate containing additional vitamins and minerals. The protein concentrate is usually made of materials such as roasted soybeans, fishmeal, and a mineral and vitamin premix. Live weight gains and carcass and breast weights are lower with



**Figure 6.** Centralized housing for a true free-range system

such feeding systems, but feed conversion ratios are improved and total costs are reduced. This practice is an option when using farm-raised feeds, and it reduces the cost of expensive organic feed.

## Pasture Crop Selection

Several factors need to be considered with selecting pasture crops for poultry including how long the pasture will be available, how well the crops tolerate grazing, the type of insects attracted to the pastures, the pasture soil-type, and the other intended uses of the pasture forage.

### *Pasture Availability*

The ideal pasture for poultry is one that provides forage for as much of the year as possible. Certain forage species have longer growing seasons than others,

depending on the region. The best pasture is also one that contains perennial species that come back year after year.

Incorporating legumes into grass pastures provides the added advantage of free nitrogen (from nitrogen fixation) and high protein levels. Legumes are also ideal for attracting insects to the pastures. In Kentucky, the best adapted perennial legumes are alfalfa, white clover, and red clover. White clover will tolerate more frequent grazing periods but is not as productive. Alfalfa and red clover have high productivity, but the pasture should be rested 25 to 30 days between grazing periods. The best adapted perennial cool season grasses in Kentucky are tall fescue, Kentucky bluegrass, and orchardgrass. The tender leaf structure of orchardgrass makes it the most palatable to grazing animals,

but it thins rapidly under frequent and close grazing. Tall fescue and Kentucky bluegrass both tolerate grazing well, but bluegrass is lower yielding and only endophyte free or novel endophyte varieties of tall fescue should be planted.

As mentioned above, establishing and maintaining thick stands of perennial forages is the preferred option for pastured poultry, but often animal numbers are high and land area is limited. In these cases, annual or short-lived forages provide a viable option. The ryegrasses, perennial and annual, are the most vigorous cool season forages. Annual ryegrass has the fastest emergence and growth but usually dies out mid-summer. Perennial ryegrass is nearly as fast to emerge as annual ryegrass and will survive for two years under Kentucky conditions. A mixture of annual and perennial ryegrass provides a good option for vigorous short term stands of nutritious forages. Perennial ryegrass can have an endophyte similar to that in tall fescue so choose only forage-type endophyte-free varieties. Crabgrass is usually considered a summer annual weed, but it is actually a highly nutritious forage. Either an improved crabgrass variety can be seeded or the soil can be lightly tilled to stimulate germination of crabgrass seed in the soil. When using crabgrass, make sure to allow it to “go to seed” every year in the early fall, so that natural reseeding can occur. By allowing crabgrass to naturally reestablish each summer and then overseeding with annual and/or perennial ryegrass, high quality pastures can be maintained on farms where high stocking rate limits the ability to maintain perennial forages.

### **Tolerance to Poultry Grazing**

One of the most important aspects in choosing a forage species for poultry is how well it holds up to biting and scratching. In other words, is the species tolerant to grazing? Grazing tolerance refers to the ability of the forage to recover from grazing and trampling. Plants that withstand grazing generally have a high leaf to stem ratio and new root growth is initiated following defoliation.

One of the perennial grasses most tolerant to poultry grazing is Kentucky bluegrass. This species is well adapted in

the central states of Virginia, Kentucky, and Missouri, and northward where it often occurs naturally in well managed pastures. Tall fescue and perennial ryegrass also show good tolerance to grazing, but the majority of naturally occurring tall fescue is the variety KY 31, and it is infected with a toxic endophyte. An endophyte is a bacterium or fungus living within a plant for at least part of its life without causing apparent disease. Some fungal endophytes (like the one in KY 31) are shown to improve plant growth and increase their tolerance to stress, but the toxins they produce are detrimental to animals grazing on them. Most of the research on endophytes and grazers has dealt with ruminants (cattle, sheep, and goats). There is limited research on the impact on poultry, but there is some evidence to show that laying hens consuming tall fescue infected seeds (seeds have high levels of the toxin) are more likely to produce shell-less eggs. An endophyte only grows within the plant tissue so it is necessary to submit a sample to a laboratory to test for endophyte occurrence. In Kentucky endophyte testing is conducted by the Division of Regulatory Service on the UK campus (they also test seed, soil, and animal feeds). Simply follow the guidelines in the UK extension publication *Sampling for the Tall Fescue Endophyte in Pasture or Hay Stands* (PPA-30) available at <http://www2.ca.uky.edu/agc/pubs/ppa/ppa30/ppa30.pdf>.

Fortunately, when KY31 tall fescue is managed at a leafy stage (not seed heads), the toxicity level is much lower. In addition, all grass seed companies now sell tall fescue varieties that are endophyte free or contain beneficial (novel) endophytes that do not produce toxins. Make sure to ask for these varieties when planting tall fescue. Avoid turf-type tall fescue and turf-type perennial ryegrass because they have been developed to have extra high levels of toxins to reduce insect and grub damage.

The legume with the greatest tolerance to grazing is white clover. Alfalfa and red clover are very productive legumes in terms of forage production but do not have the fibrous root system and low growth habit of white clover so are as resistance to grazing. When planting alfalfa and red clover for poultry, it is very

important to provide at least 25 to 30 days before moving birds back onto the same pasture that they have just grazed. Grazing tolerant or so-called “traffic tolerant” alfalfa varieties are recommended when planting stands for poultry grazing.

### **Able to Attract a Variety of Different Types of Insects**

An important benefit of pasturing poultry are the invertebrates that they consume while foraging. There is very limited research on the effect of pasture type on the insect population attracted, other than the problems created when certain insects damage the forage stand itself. Preliminary research at the University of Kentucky has shown that different kinds of insects are attracted to grass pastures versus alfalfa pastures, though in this particular study the numbers of insects trapped were low and not likely to be of nutritional importance to foraging poultry. Further research is definitely needed in this area.

### **Match Plants to Soils**

It is important to select pasture crops that grow well in the soils that you have, as indicated in the UK extension publication *Establishing Forage Crops* (AGR-64) available at <http://www2.ca.uky.edu/agcomm/pubs/agr/agr64/agr64.pdf>.

According to the *Forage Identification and Use Guide* (AGR-175), “There is wide variation in soil capabilities on almost every farm. Soils differ in their capacity to supply water and nutrients, and they vary in slope, internal drainage, and other factors that affect establishment, production, and persistence of a given forage crop. In addition, grasses, legumes, and grass-legume combinations vary widely in their ability to become established, produce, and persist on different soils. It is important to match the plant species or mixture of species to the soils so that the greatest returns can be realized and the soil is protected. The best use of level to gently sloping, deep, and well-drained land is to plant the highest-producing crops such as alfalfa or alfalfa-grass mixtures. Steeper land should be maintained in sod-forming or thicker grasses, such as tall fescue, perennial ryegrass or Kentucky bluegrass, to minimize soil erosion. Alfalfa should only be used where soil is

at least two feet deep and well drained. On soils that are less than two feet deep or are poorly drained, clover-grass mixtures or pure grass stands may be used. Legumes, especially clovers, may be established in grass dominant sods through renovation." The *Forage Identification and Use Guide* (AGR-175) is an excellent guideline for the perennial forage species adapted to Kentucky and surrounding states and is available at <http://www2.ca.uky.edu/agc/pubs/agr/agr175/agr175.htm>.

### **Match Plants to the Intended Use**

Similarly, it is important to match pasture crops to the intended use. If the pasture is to be used for other purposes besides grazing poultry, plan for maximum quality and versatility in the forage program. As discussed in *Establishing Forage Crops* (AGR-64), "Select plants that produce high-quality feed, and use each field for hay, silage, and/or pasture as weather and feed needs dictate. Legumes generally produce higher quality feed than grasses. Taller-growing legumes, such as alfalfa and red clover, are more versatile than a legume such as white clover, which is used primarily for grazing. Grasses such as orchardgrass, perennial ryegrass, tall fescue, and timothy are higher yielding than Kentucky bluegrass for hay and silage" (<http://www2.ca.uky.edu/agcomm/pubs/agr/agr64/agr64.pdf>).

## **Pasture Management**

### **Forage Establishment**

Successful pasture poultry production requires careful planning and detailed attention to establishment, production, and utilization of forage crops. As discussed in *Establishing Forage Crops* (AGR-64), "Establishment of a good stand is essential for a successful forage program. Several steps are of vital importance in the establishment and maintenance of good forage stands. It is difficult to predict the probability of success in establishing forages when so much depends on weather. The steps outlined below do not guarantee success, but if followed, they can increase the probability of obtaining thick, vigorous forage stands" (<http://www2.ca.uky.edu/agcomm/pubs/agr/agr64/agr64.pdf>).

**Apply any needed fertilizer amendments.** A current soil test will indicate the amount of lime, phosphorus, potassium, and other nutrients (except for nitrogen) needed for the species to be seeded. Legumes are especially sensitive to low nutrient and pH levels. Contact your county extension agent on how to properly take a soil sample. For complete details on soil testing and the fertility requirements for forage species, see *Taking Soil Test Samples* (AGR-16) available at <http://www2.ca.uky.edu/agcomm/pubs/agr/agr16/agr16.pdf> and *When to Apply Lime and Fertilizer* (AGR-5) available at <http://www2.ca.uky.edu/agcomm/pubs/agr/agr5/agr5.pdf>.

**Use a high-quality seed of an improved variety.** Many varieties of commonly established grasses and legumes, such as Kentucky bluegrass, orchardgrass, tall fescue, ryegrasses, clover and alfalfa, are available for pasture in Kentucky. It is recommended to seed varieties that have been proven to be the top performers under Kentucky conditions. University forage yield trials from Kentucky or surrounding states are excellent sources of this information (<http://www.uky.edu/Ag/Forage/ForageVarietyTrials2.htm>). The University of Kentucky testing program also evaluates the survival of different forage varieties under grazing. High quality seed has high rates of germination and is free of contamination from seed of other crops or weeds. Look for this information on the seed tag and remember that a blue certified seed tag is a guarantee of seed quality and purity.

**Plant enough seed at the right time.** Seeding rates are affected most by the forage species being established (Table 1). When sowing a mixture, less seed of each component is used than when sown alone. The seeding rates in Table 1 show a range from the minimum amount needed to a higher rate that will provide a better guarantee for a thick stand. For a full listing of forage species and seeding rates and dates, see *Grain and Forage Crop Guide for Kentucky* (ARG-18) available at <http://www.uky.edu/Ag/Forage/AGR%2018%20BookletFinal%20Revisions1.pdf>. Grasses and legumes can be seeded in either spring or fall. However, cool-season grasses (Kentucky bluegrass, orchardgrass, tall fescue, and ryegrasses)

are most easily established in the late summer and early fall. Seeding legumes works equally well in the spring and early fall, but clover is most easily established through frost seeding in February.

**Use the best seeding method available.** In general, planting into a conventionally tilled seedbed is more effective than no-till seedings, especially when a cultipacker or a modified roller is used to firm the seedbed before and after seeding. No-till seeding is preferred on sloping land and when seeding into pastures without disturbing the existing soil. A common, but less accurate method is to disk or harrow or otherwise disturb the soil and then broadcast the forage seed with a spinner type seeder or even by hand. With this method, a roller or cultipacker is recommended after seeding to achieve good soil-to-seed contact. If a roller is not available, then drag the pasture with a heavy board or chain or even a piece of chain link fence with weights on top. For small areas, forage seed can even be raked into the soil with a garden rake, covered with straw to retain moisture, and then irrigated with a lawn sprinkler. All three methods (till, no-till, broadcast) can be successful if the seed is placed in firm contact with moist soil at a depth from which the seedling can emerge. The forage crops listed in Table 1 should never be seeded deeper than one-quarter to one-half inch.

Frost seeding refers to the practice of casting seed on top of the ground during winter and relying on the freeze/thaw cycle of late winter to work the seed into the soil. Frost seeding is recommended only for clover seed sown onto very closely grazed or clipped sod during late January or February. Seeding grasses via frost seeding is not recommended, since the success rate for grasses varies greatly depending on environmental conditions. The only exception is annual ryegrass, which will often germinate and establish even when broadcast on the soil surface.

**Control competition.** When overseeding into existing pastures without tearing up soil, mow or graze close before seeding to reduce existing vegetation. Many new seedings fail due to competition from weeds and the existing grasses. Herbicides can be used to control weeds when no-till seeding. Always read and follow

**Table 1.** Common seeding rates and optimum seeding dates for forage species used in poultry pastures

Species	Seeded alone (lb/A)	In mixtures (lb/A)	Optimum seeding dates
Tall fescue	20 - 40	10 - 20	Aug 20 - Oct 1
Orchardgrass	15-30	10 - 15	
Kentucky bluegrass	15 - 30	10 - 15	Aug 15 - Sept 15
Perennial ryegrass	20 - 40	5 - 15 <sup>a</sup>	Aug 15 - Oct 1
Annual ryegrass	20 - 50	5 - 15 <sup>a</sup>	Aug 15 - Oct 15 Mar 1 - Apr 1
White clover	3 - 5	1 - 3	Feb 1 - Mar 1 (if frost seeding <sup>b</sup> )
Red clover	8-12	6 - 8	Mar 1 - Apr 1 Aug 15 - Sept 15
Alfalfa	15 - 25	10 - 15	Mar 15 - May 1 Aug 1 - Sept 5

<sup>a</sup> Never seed perennial or annual ryegrass more than 25% of a seeding mixture. Ideally, only 10 to 15% of these grasses is needed to provide quick cover without outcompeting the desirable long-term perennial grasses.

<sup>b</sup> Winter seeding of clovers, often called frost seeding, can be made on closely grazed or mowed pastures in late January or February.

label directions. For example, most herbicides have a waiting period after spraying and before seeding. The University of Kentucky has a publication on grass pasture weed control called *Broadleaf Weeds of Kentucky Pastures* (ARG-207) available at <http://www2.ca.uky.edu/agcomm/pubs/AGR/AGR207/AGR207.pdf>. Broadleaf weeds can be controlled with herbicides on newly established stands only after the forage seedings are well established (4 to 5 inches tall). Otherwise, herbicide damage to the new seedlings is possible. Mowing is effective on erect, upright weeds taller than the seedling grasses, but low growing weeds, such as dandelions and plantain, are not effectively controlled by mowing. Some weeds, such as dandelions and henbit, are very nutritious for chickens. Their limitation is that they do not produce as much vegetation as the above-mentioned grasses and legumes.

**Allow the immature seedlings to become established before putting the pasture back into full use.** It can take six months to a year for a perennial grass pasture to develop a strong, resilient sod. Overgrazing newly seeded areas is a major cause of seeding failures. A few brief grazing sessions can be tolerated. It is best to allow the new grass seedlings to mature before gradually returning the field to full pasture use. When it is not possible

to keep animals off the pasture while the grass is becoming established, consider splitting the field and seeding half the field at a time to allow time for proper establishment.

### Specific Seeding Situations

When re-establishing grasses alone, the best method is to till the field in late July or early August. Make a fine, firm seedbed and seed in late August or early September. Seed may be planted into a tilled seedbed using a Brillion seeder or it can be broadcast and cultipacked. If seedbed firmness is in question, roll with a cultipacker before and after seeding. Make sure that the grass seed is not planted deeper than one-quarter to one-half inch deep. No-till seed drills are also a good option when seeding into existing sod, but a limitation to most no-till seed drills is that they can easily place seed over 1 inch deep unless carefully adjusted. Plant seeds at the recommended rate shown in Table 1.

If the goal is to kill the existing pasture and replace it with another grass without tillage, use multiple applications of a broad-spectrum herbicide containing glyphosate (Roundup or other glyphosate containing product). For example, use the pasture in the early spring and then suppress the existing grass with herbicide in the late spring/early summer, followed by a second or even third application in

the late summer fall before seeding. Alternatively, a summer annual grass can be grown on the field during the summer as a transition crop.

Generally, avoid spring seeding of cool-season grasses. Planting at this time can be successful if there is adequate moisture and mild temperatures during the summer, but the failure rate is greater than fall seedings. If seeding in the spring in Kentucky, especially cool season grasses, plant early (early to mid-March) to increase the chance for success.

When choosing a grass for pasture in Kentucky and surrounding states, remember that pasture grasses differ in their tolerance to close grazing and traffic. Kentucky bluegrass and bermudagrass form tight surfaces and are the most tolerant of close grazing and traffic. Orchardgrass is the least tolerant, and tall fescue is intermediate between orchardgrass and Kentucky bluegrass or bermudagrass. (Note: Kentucky bluegrass is adapted for central, eastern, and northern Kentucky, but less adapted to southern and western Kentucky).

### Pasture Rotation

As previously indicated, chickens cannot digest the fiber in forage like ruminant animals (i.e. cows, sheep and goats). If properly managed, however, poultry can gain important nutrients from the forages they consume. It is important that the pastures are rotated on a regular basis so that the birds have access to fresh, lush growth. If the forage growth is over mature, poultry will get limited nutrition from the grass because of the thick, indigestible cell wall that occurs with older growth. For example, laying hens on pasture will eat very little mature Kentucky bluegrass, but will consume new growth. Early studies showed that young succulent spring KY bluegrass pastures reduced consumption of a complete feed by 20%, but with mature pastures chickens were not able gain any nutrition from the forage. The only benefit of mature forage growth is that it can harbor insects and poultry can consume the seeds (Note: KY31 tall fescue seed is harmful to poultry because it can contain high levels of toxins).

Poultry are not able to manage a pasture by themselves. Development of an effective forage program requires time and thought. The key to effective pasture management is to coordinate forage quality with the nutritional needs of grazing animals. A multi-species grazing program, especially integration with ruminant animals, allows for maximum utilization of pastures without the need to mow pastures. Pastures that have been allowed to become over mature should be mowed or grazed by other animals to help recondition the grasses and legumes to a more palatable state for poultry.

Keeping good written records will facilitate proper management and decision-making with regards to maintaining pasture. The important things to control and record include:

- **Timing:** When the pastures are used for grazing
- **Frequency:** How often the pastures will be grazed or mowed
- **Intensity:** How much forage will be removed
- **Stocking rate** and **type of livestock** to allow to graze

For more information on pasture management in general, refer to the publication AGR-64, Establishing Forage Crops (AGR-64) and Establishing Horse Pastures (ID-147) available at <http://www2.ca.uky.edu/agcomm/pubs/id/id147/id147.pdf>.

## In Conclusion

Pastured poultry production will likely increase in coming years. Managing and replanting pastures will improve productivity, nutrient recycling, and animal health. Follow the simple guidelines in this publication to be successful with pasture poultry production.