

Pasture and Hay Field Renovation

By: David Trotter

Perhaps one of the most ignored fields on a farm are pastures and hay fields. As long as they do their job of producing green plants for ruminant animals to consume, we tend to put their management and care on the “back-burner”. However, from an economic standpoint, these fields should be at the forefront of a livestock producer’s management plans. In this article, one of the simplest, yet one of the more economically sound, forage management practices, **renovation**, will be discussed.

Research and practical experience has shown time and time again that one of the best ways to improve both forage production and animal performance on predominately grass fields is to periodically renovate them. To make it simple, renovation means “renewing” a pasture or hay field by introducing another desirable forage species into an existing plant stand. Renovation usually involves 4 basic steps: 1) partially destroying or suppressing the current stand, 2) liming and fertilizing the field according to a current soil test, 3) seeding a legume or legume-grass mixture, and 4) controlling weeds.

Experienced producers tell us that introducing legumes into Kentucky bluegrass, tall fescue, or even orchardgrass sods produces some significant economic benefits:

- * Elimination of the need for nitrogen fertilizers
- * Better seasonal forage distribution (legumes are more productive in mid-summer than are cool-season grasses)
- * Improved forage quality (more protein content because of the legumes)
- * Improved forage digestibility and palatability
- * Legumes contain higher mineral concentrations than do grasses alone (especially calcium and magnesium)
- * Improved animal performance (more milk, more wool, higher average daily gains)
- * Improved beef breeding performance (legumes in the diet of sheep during some portions of the breeding/gestation periods have been shown to be detrimental because of estrogenic compounds)

However, pasture and hay field renovation isn’t a one-time cure all for improvement of your economic bottom –line. Renovation needs to be done on a regular basis. The reason is that legumes, as compared to most grasses, tend to be short-lived in a forage stand. In fact, legumes will disappear rather quickly in the face of such “adversaries” as nutrient deficiencies, plant diseases and insect damages, overgrazing, drought, or grass/weed competition.

Renovation isn’t without a few potential problems. The two primary concerns associated with introducing a legume into a forage stand are the possibility of bloat (mainly in a pasture) and the difficulty of getting the legume established. Potential bloat problems can be minimized by seeding a non-bloat legume species (birdsfoot trefoil or lespedeza), by introducing animals slowly to legume-containing pastures, by feeding hay before turning animals into legume-containing pastures, or by supplement-feeding a bloat preventing compound, or combinations of these practices. As for the other potential problem, legume establishment, success will depend on the producer’s ability to meet two requirements: 1) sufficiently suppress the existing vegetation to allow the legume seed to germinate and emerge, and 2) after emergence, management the stand to favor the legume and not the grass.

Steps to a Successful Forage Stand Renovation

1. Overgraze and Soil Test

In a pasture situation, allow livestock to overgraze the pasture in the fall. This makes tillage more effective and will assure that mulch won’t interfere with legume establishment. A current soil test (3 years old or less) is needed and lime/fertilizer applied according to the test results, preferably ahead of any tillage. Don’t apply nitrogen since it will promote grass growth and retard legume establishment.

2. Disturb or Suppress the Sod

If soil erosion isn’t an issue, disk or field-cultivate to disturb the current grass sod. Late fall tillage will tend to make the renovation more successful than a spring tillage. Don’t overwork the field; the goal should be for 50-70% sod disturbance if clovers are to be seeded and 80-90% disturbance if seeding alfalfa, birdsfoot trefoil, or

lespedeza. It won't be necessary to re-seed the grass, since the undisturbed tillers will begin to grow the following spring.

On sloping land with a greater potential of erosion where tillage isn't practical nor advised, the grass stand can be "knocked back" or suppressed with a knock-down herbicide which has been cleared for such use. However, the grass must be actively growing for the herbicide to be effective.

3. *Seed the Legumes*

Frost-seeding inoculated legumes in the late winter has provided good results in tillage-disturbed sod. For sites treated with a knock-down herbicide, inoculated legumes can be seeded immediately before or after the herbicide application. In the case of herbicide suppressed sod, seeding is best accomplished with a no-till drill rather than by broadcast or over-seeding. Always select "improved" legume varieties and always inoculate legume seed. Seeding rates will vary based on species selected, legume combinations, seeding methods, and seed quality (germination and purity); check with the local NRCS/SWCD Office or the local Extension Service for recommended seeding rates and varieties. Some possible legume choice for renovation are: red clover and ladino clover, alfalfa, alfalfa and red clover, annual lespedeza, annual lespedeza and clovers, or birdsfoot trefoil. Alfalfa shouldn't be used on soils that heave severely. Lespedeza shouldn't be sown in the northern half of Indiana. Birdsfoot trefoil complements bluegrass very well.

4. *Grazing Newly Legume-Seeded Pastures*

In the spring, once the grass is growing and the ground has dried sufficiently to support livestock, graze the pasture until animals start to defoliate the legume seedlings. Then remove the livestock and rest the pasture 8-10 weeks for the legumes to establish.

5. *Grazing Established Grass-Legume Pastures*

Rotationally graze from spring to fall to favor the legumes in the stand. To effectively rotate, use several fields or divide a field into paddocks using an electric fence. Adjust the stocking rate per field or paddock to defoliate grass-legumes within a 7 to 10 day period. Don't overgraze. Plan on providing plenty of recovery time (usually from 21 to 35 days, depending on the time year and the rate of re-growth). Example: A 7 day grazing period and a 28 day rest period will require five fields or paddocks. Be sure to allow for a 4 week plant recovery following grazing before the first killing frost in the fall.

6. *Annual Fertilization*

Topdress annually with phosphorus and potassium according to current a soil test.

7. *Re-renovate*

Plan on re-renovating fields when the legume disappears and the grass species takes over.

Adapted from: University of Kentucky publication AGR-26, "Renovating Hay and Pasture Fields" and Purdue University publication AY-251, "Improving Pastures By Renovation"