

## News Article

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## Improving Pastures by Renovation

In Indiana, pastures are generally relegated to land that is too steep and rocky for row crops. The soils tend to be shallow, low in fertility and droughty. The dominant plant species are often Kentucky bluegrass, endophyte-infected tall fescue and weeds. The result of this combination of conditions is usually low yields of low-quality forage.

Purdue Extension experts have said in a similarly-titled publication that one of the best ways to improve both forage yield and animal performance on these low-producing grass pastures is to periodically renovate them. Pasture renovation means "renewing" a pasture by the introduction of desired forage species into present plant stands. It usually involves partially destroying the sod, liming and fertilizing according to soil test, seeding a legume or legume-grass mixture, and controlling weeds.

Historically, it has been said that pasture renovation or hay field seeding can be done in the fall. Technically, that is incorrect. "August is THE month, the second opportunity of seeding cool season grasses and legumes," said Purdue forage specialist, Dr. Keith Johnson. Overseeding pastures in very late winter or establishing new cool-season grass/legume stands by May 1 are other dates to consider. "I despise the words 'fall planting' because that infers that one could be planting successfully perennial legumes after Sept. 21, which is the fall start date," Johnson said. He added that seeding is preferably done by mid-August in the upper counties of the state for adequate establishment before freezing temperatures arrive in the fall.

To fulfill the above requirements for establishing and maintaining a good legume stand, the following steps are suggested by the Purdue Extension authors:

1. Overgrazing and soil testing. In this instance, livestock should be allowed to overgraze the pasture so that tillage is more effective at tearing the sod. Even if tillage is not done, the grass should be overgrazed so the mulch will not interfere with legume establishment. The soil should be tested, then limed and fertilized according to test results, preferably before tillage. Do not apply nitrogen since that will only promote grass growth and retard legume establishment.
2. Disturbing or suppressing the sod. If erosion is not a hazard, disk or field-cultivate to disturb the grass sod. To minimize soil loss, do not overwork the seedbed. The sod should be disturbed 50-70 percent if seeding red or white clovers and 80-90 percent if seeding alfalfa and birdsfoot trefoil. It is not necessary to reseed the grass, since the undisturbed tillers will begin to grow the following spring.

On sloping land with highly erosive soils where tillage is not practical, the grass stand can be "knocked back" with paraquat (trade name Gramoxone), which has been cleared for such use. However, the grass must be actively growing for paraquat to be effective. This herbicide must be used with extreme caution as it is very poisonous and can only be applied by a certified applicator.

3. Seeding the legumes. On paraquat-treated sod, legumes can be seeded immediately after application. Seeding is best accomplished after paraquat treatment with a no-till drill, because it places the seed in direct contact with the soil at the proper seeding depth (1/4 - 3/8 inch).

The publication lists the legume species, alone or in mixture, considered best for renovation and their proper seeding rates. Alfalfa should not be used on soils that heave severely. Annual lespedezas should not be sown in the northern half of Indiana and would only be seeded in early spring. Birdsfoot trefoil complements bluegrass pastures very well. Always select "improved" varieties.

4. Grazing newly legume-seeded pasture. In the spring once the grass is growing and the ground has dried out enough to support livestock, graze the pasture until the 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 grazing from spring to fall favors the legumes. To rotate, use several fields or divide a field into paddocks with an electric fence. Adjust the stocking rate per field or paddock to defoliate grass-legumes within a five to seven-day period if possible. Do not overgraze, and plan on providing plenty of recovery time (usually from 21 to 35 days, depending on time of season and rate of regrowth). An average of seven-day grazing periods with 28-day rest periods will require five fields or paddocks.

One suggested grazing system is to: (a) harvest one or two hay crops in the spring and summer, (b) allow 30-35 days for recovery, (c) graze off in seven-ten days, (d) repeat the resting-grazing cycle if only one hay harvest occurred, and (e) allow at least four weeks of plant recovery before the first killing frost. Grazing can then occur on the stockpiled pasture growth.

6. Fertilizing. Topdress annually with phosphorus and potassium according to soil test.

7. Re-renovating. Plan on it when the legume disappears and the cool-season grasses take over.

For more information, find "Improving Pasture by Renovation" at Purdue's Education Store, [www.edustore.purdue.edu](http://www.edustore.purdue.edu).

*Keith Johnson, Purdue Forage specialist, contributed directly to this article.*