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Harold B. Rice
University of Kentucky

Kenneth L. Wells
University of Kentucky

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Basic Steps in Laying Out a Land Tract to Optimize Forage Production and Intensive Grazing Management

Harold B. Rice and K.L. Wells

Start With a Soil Map or Aerial Photograph

Of the four major components of production...land, labor, capital, and management...land (soil) is the one which is the most basic. This is because soil characteristics are largely "fixed" and determine, along with the climatic regime, the crop species which will perform best in a given field. For this reason, it is basic in planning a cropping system to know root-zone physical and chemical characteristics of soils which occur on the tract being planned. With such information, crops can be matched to soil productivity to "make land as least limiting as possible." A good soils map is the best source of this information. These are available from published county Soil Survey Reports or from farm soil maps prepared by the USDA-Soil Conservation Service.

For forage production and intensive grazing management, the land tract should be divided into fields (basic management units) that include soils of similar characteristics. Most often, this will result in separating deep soils from shallow soils, well drained soils from poorly drained soils, ridgetop soils from the steeper sideslopes, and bottomland soils from hillside soils. Field separations in this manner will provide the basis for matching forage species best adapted to the characteristics of the soils. Each field can then be subdivided into smaller paddocks for intensive grazing management, taking into account the availability of water and shade.

Collect Soil Samples

After the land tract has been divided the individual fields should be sampled to determine the lime and fertility requirements for the crop(s) to be grown. Although one can guess at the N-P-K rates to be used without much danger of crop damage, costs of production are often increased by use of unnecessary fertilizers and lime. It is of particular economic importance to know soil pH values before seeding legumes, whose establishment and productivity is directly related to control of soil acidity. Intensively managed fields should be soil sampled every 1-2 years. A field record system should be established to keep detailed information on soil test results, use of lime and fertilizers, and both crop and animal production for use in economically evaluating the system and making management decisions.

Matching Forage Species to Fields

Highly productive fields should be used for highly productive crops. Don't expect fescue and white clover to produce as much dry matter as alfalfa on a field well adapted for alfalfa. And, don't expect high production on unproductive land.

Alfalfa

The most productive soils should be seeded to alfalfa. Soil pH should be maintained between 6.5 and 7.0 and available P and K levels should be in the high-medium to high range. Although alfalfa removes 12-15 pounds of phosphate and 50-60 pounds of potash per ton of forage per year, plant nutrients recycled in manure on grazed fields will reduce maintenance applications of these nutrients.

Clovers

Red clover is the most productive clover and when interseeded into grass pastures alone or mixed with white clover, can greatly improve the quantity and quality of forage production. Although clovers grow well on moderately acid soils (pH 5.8-6.2), they do best when soil pH is above 6.0. When grass fields are renovated with clovers, N requirements of the grass will be supplied by atmospheric N fixation by the clovers. Summer productivity of grass fields can be greatly increased by renovation with clovers.

Cool-Season Grasses

Fescue, orchardgrass, and bluegrass can be grown on steeper and less productive soils than the legumes. These forage species may be utilized more efficiently by beef cows or stocker calves for early spring and late fall grazing. Up to one-third of the available pasture area should be devoted to cool season grasses, preferably fescue, to regulate seasonal production. Pasture should be available by April 1 if fescue is topdressed in late February with 60-100 pounds of nitrogen per acre. If additional forage is needed, another topdressing of up to 50 pounds of nitrogen per acre in early May will provide grazing into the summer. Fescue also has the potential to produce 1 1/2 to 2 1/2 tons of hay equivalent during the fall growing season. Up to 80 pounds of nitrogen per acre should be topdressed in early August and grazing delayed until early November to utilize this production potential. Maintain P and K levels in the high medium range.

Warm-Season Grasses

Stocking rates based on spring forage availability will need to be adjusted by early summer, or supplemental grazing must be supplied from summer annual grasses, renovated fields, or alfalfa. Summer annuals such as sudan, millet, or sudan-sorghum hybrids do best on productive soils suitable for corn production. Soil pH should be 5.8 to 6.4 and P and K levels should be in the high medium to high range. Apply 60 to 100 pounds of N per acre at seeding plus 40 to 60 lb N/A after the first and second grazings.



K. L. Wells, Extension Soils Specialist

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