



Energy Enhancement Activity—KS-ENR12 Use of legume cover crops as a nitrogen source

Kansas Criteria for National Energy Enhancement Activity—ENR12

Refer to Conservation Practice 340, Cover Crop, to select legume cover crops as a nitrogen (N) source.

The following method can be used to estimate the amount of N to be credited to the next crop:

To estimate yield, take cuttings from several areas in the field then dry and weigh them. Using a yardstick or metal frame, measure 2 sq ft and clip the plants at ground level within the known area. Dry them in the sun for a few consecutive days, or use an oven at about 140° F for 24 to 48 hours until they are “crunchy” dry. Use the following equation to determine per-acre yield of dry matter:

$$\text{Yield (lb.)/Acre} = \frac{\text{Total weight of dried samples (lb.)}}{\text{\# square feet you sampled}} \times \frac{43,560 \text{ sq. ft.}}{1 \text{ Acre}}$$

The following rule-of-thumb can be used to estimate total N contained within the dry matter:

Estimates of Percent N in Plant Tissue

Legumes: Non-woody

Above ground	Pre-flowering	3.5 – 4.0
	Flowering	3.0 – 3.5
Below ground	Roots	2.0 – 2.5

Legumes: Woody

Above ground	Leaves only	3.0 – 3.5
	Leaves + stems	2.0 – 3.0
Below ground	Roots	1.5 – 2.5

$$\text{Total N in cover crop in (lb/acre)} = \text{yield (lb/acre)} \times \frac{\% \text{ N}}{100}$$

Keep in mind that these are *rough estimates* to give you a quick guide for the productivity of your cover crop. To know the exact percent N in your plant tissue, you would have to send it to a lab for analysis.

To estimate the amount of N that will be available for your current crop, take the estimated total N in the cover crop times 30 to 50 percent to be used as credited N.

Select two or more plant species from the following list to design the cover crop mix:

Cover Crops 1/ 2/ Cover Crop Seeding Rates Drilled 3/

Cowpea	50 lbs/ac
Crimson clover	17 lbs/ac
Hairy vetch	17 lbs/ac
Alsike clover	8 lbs/ac
Red clover	8 lbs/ac
White clover	6 lbs/ac
Sweetclover	10 lbs/ac
Subterranean clover	15 lbs/ac
Woollypod vetch	20 lbs/ac
Sunn hemp	30 lbs/ac
Lespedeza	35 lbs/ac
Austrian winter pea	30 lbs/ac
Chick pea	100 lbs/ac
Mung bean	15 lbs/ac
Lentils	15 lbs/ac

1/ Cover crops are to be established early enough in a growing season to provide adequate cover. Winter annual (WA) grasses will be seeded by October 15. Annual (A) grasses, legumes, and forbs will be seeded by July 31. Winter annual (WA), biennial (B), and perennial (P) legumes and forbs will be seeded no later than September 25. Dates may be adjusted up to 2 weeks by local technicians as necessary to address local moisture and heat unit concerns.

2/ Planted legumes must be inoculated for adequate nitrogen fixation. Follow the recommendations of seed dealers.

3/ Increase the seeding rate by at least 25% if broadcasting the seed in lieu of planting with a drill. Small-seeded species (<20 pounds [lbs] per acre[ac]) will be increased by 50% when seeded by broadcast methods.