

# Michigan Technical Note

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Technical Note -MI Biology 15

Oct. 1, 2001

Subject: Guidelines For Herbaceous Stand Evaluation

The common method of determining plant density is the frame count technique. This technique allows fairly quick and somewhat objective evaluation of plant stands and can be used for documentation purposes. Correct plant identification using vegetative characteristics is necessary to ensure accuracy. If the field is sampled soon after emergence, a plant can often be uprooted with the seed attached to aid in identification.

A one square foot frame is a good tool to use for evaluation. This frame can easily be constructed from 1/2 inch pvc pipe, or a circular one square foot frame can be constructed using 42.5" of 3/16" plastic covered cable. The ends can be joined with a short section (one inch) of 1/4 inch outside Diameter copper tubing.

For accurate measurement, a pre-determined number of steps should be taken, at a diagonal or perpendicular to the direction of machinery travel, and the frame dropped at the end of your foot on the final step. Count only those plants that are rooted within the frame, and only those species that are part of the planned seeding.

At least 10 samples should be taken per 10 acres. Avoid sampling in end rows or turn around areas that may have been double seeded. Do not be biased in sampling, but sample in a systematic manner. It often works well to select a landmark on the horizon to walk towards in a straight line. The sampling pattern should be such that a "representative" plant density is obtained.

This method for evaluating herbaceous stands should be used where it is not obvious that the stand is adequate for the intended purpose.

Early establishment of a stand intended for productive use or for erosion control is more critical than a stand that is intended for idle land.

## Adequate Stands

In order for a stand to be considered adequate, the number of seedlings should be as shown in the appropriate column in Table 1 and seedling emergence should be relatively uniform over the entire area.

## Marginal Stands

In those cases where stands fall between definitely adequate and definitely not adequate, other factors which must be incorporated into the evaluation include: past weather, evaluation date, level of weed competition, planned use of the site, type of vegetation. It may be better to wait and evaluate a stand next year rather than reseed.

Seedlings which contain a high percentage of "hard seed", are more likely to produce new seedlings during the second growing season. Warm-season grasses may need to be evaluated after the third growing season.

Inadequate stands should be re-established.

### TABLE 1

#### Herbaceous Stand Evaluations

Seedlings Needed per Square Foot  
(At end of first growing season)

Species	Land Use	Critical Areas		Forage		Wildlife -CRP	
		A	N	A	N	A	N
Big Bluestem, Indiangrass Sideoats Grama		>4.0	<1.0	>2.0	<0.5	>1.0	<0.25
Switchgrass		>4.0	<2.0	>2.0	<0.5	>1.0	<0.25
Little Bluestem		>6.0	<1.5	>3.0	<0.75	>1.5	<0.38
Smooth Bromegrass, Reed Canarygrass		>4.0	<2.0	>2.0	<1.0	>1.0	<0.5
Tall Fescue		>4.0	<2.0	>1.0	<1.0	>1.0	<0.5
Crownvetch, Ladino Clover, Orchardgrass		>8.0	<4.0	>4.0	<2.0	>2.0	<1.0
Kentucky Bluegrass, Redtop Timothy		>10.0	<5.0	>5.0	<2.5	>2.5	<1.25
Alfalfa, Birdsfoot Trefoil, Alsike Clover, Red Clover		>12.0	<6.0	>6.0	<3.0	>3.0	<1.5

> = greater than	< = less than	A = adequate	N = not adequate
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This table is based on pure stands; if a mixture of grass and legume is planted, reduce the numbers by the ratio of each specie planted.

## Wildlife plantings

Legumes will not be counted toward adequacy of stand. Also, because of the weed competition and the long-term status of these plantings, if legume seedlings exceed the number of grass seedlings per square foot, the stand will be considered questionable and will be reevaluated after the second growing season.

## Worksheet

A sample worksheet is included for your information. The information obtained from sampling plant density can be used as a reference point when making management decisions. A new seeding with a low plant count will require more intensive management, in order to be successful, than a new seeding with a high plant count. If "spot" seeding is necessary because of a non-uniform stand, the sketch diagram indicating how the field was sampled should help define the areas in need of reseeding. As the field is sampled, the technician has the opportunity to spot weed infestations which can be controlled before they can cause seedling mortality. The stand evaluation worksheet should be used as a management tool as well as a means of documenting stand establishment.

Adapted from Wisconsin Agronomy Technical Note 1

# HERBACEOUS STAND EVALUATION

Landowner:  
by:

Evaluated

Tract:

Field(s):

Acre(s):

Date:

Practice:

	Species/Variety						
Count							
1							
2							
3							
4							
5							
6							
7							
8							
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45							
46							
47							
48							
49							
50							
Total							
Ave.							

DENSITY OF SEEDED SPECIES:

PLANT VIGOR:

WEED COMPETITION:

OTHER COMMENTS:

RECOMMENDATIONS TO COOPERATOR:

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MAP SHOWING FIELD LAYOUT AND SAMPLING PROCEDURE