

Range Health Assessment

Field Worksheet for Tame Pasture



Density Distribution				
Class	Description of abundance in polygon	Distribution	Weeds Score	Regrowth Score
0	None		5	4
1	Rare		3	
2	A few sporadically occurring individual plants			
3	A single patch			
4	A single patch plus a few sporadically occurring plants		1	2
5	Several sporadically occurring plants			
6	A single patch plus several sporadically occurring plants			
7	A few patches			
8	A few patches plus several sporadically occurring plants		0	0
9	Several well spaced patches			
10	Continuous uniform occurrences of well spaced plants			
11	Continuous occurrence of plants with a few gaps in the distribution			
12	Continuous dense occurrence of plants			
13	Continuous occurrence of plants with a distinct linear edge in the polygon			

Litter Examples

450 lb/ac

250 lb/ac

125 lb/ac

What is tame pasture health?

Tame pastures are developed with the intention of replacing native vegetation and introducing (seeding) specialized tame (non-native) forage species such as smooth brome or alfalfa. Tame pasture health refers to the ability of the pasture to perform important functions that contribute to long term stability. These functions include:

- maintain tame plant vigour and forage production,
- maintain site potential by protecting soil from erosion and degradation,
- capture and beneficially release water, and
- cycle nutrients and energy.

Healthy tame pastures are able to optimally perform these functions whereas unhealthy cannot. For livestock producers, healthy tame pastures provide sustainable grazing opportunities along with watershed and soil protection.

Why should I consider tame pasture health?

Health assessments provide an indication of sustainability and resiliency. They are a snapshot in time of how management is affecting a particular site. Monitoring range health can highlight the impacts of disturbance, indicate management issues, guide management changes and evaluate outcomes. Assessments provide a means of tracking and communicating successes or arising issues. Good management will help maintain the productivity and extend the life of tame pastures, as well as reducing costs associated with fertilizer, weed and brush control and re-seeding or rejuvenation.

What can this tool assess? How do I assess my tame pasture?

This is an abridged version of the tame pasture health assessment from the Rangeland Health Assessment for Grassland, Forest and Tame Pasture (Adams et al., 2016). It focuses on evaluating the level of impact that disturbances are having on range health. Although the wording of the tool has an emphasis on grazing disturbances, any disturbance such as wildlife use and human activities (e.g., off road vehicle use, camping, etc.) could be evaluated.

This assessment should only be used on areas that were originally developed for, and currently managed as, tame pasture. Do not include areas that were left native or use in regenerating cutblocks. Assessments can be used on tame pastures throughout the province. If the land was not cultivated, or if it is not managed as a tame pasture and has a significant amount of woody regrowth, consider using the native grassland or forest health assessments.

This assessment involves answering a series of questions associated with key characteristics and functions important to tame pasture health.

Observations are compared to scoring criteria in order to determine the appropriate scoring category for each question. The Alberta Rangeland section has developed guides that provide further information about tame pasture plant communities and the sites you may be evaluating (available on the Government of Alberta website).

An assessment is completed within a single pasture/management unit and on a site/area of uniform potential. A pasture unit may contain a variety of sites with different plant communities as a result of pasture development practices/conditions or site potential. If required, map the pasture unit subdividing areas of differing site potential and assess each separately.

Health categories

The range health score is a cumulative measure of 6 indicators of key characteristics and functions and is classified in one of the following health categories:

Healthy:

- A health score of 75% or greater
- All of the key functions are being performed
- Grazing (disturbance) is balanced with site capabilities

Healthy with Problems:

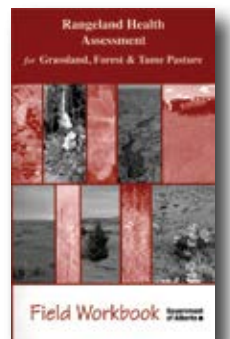
- A score of 50 to 74%
- Performance of one or two of the key functions may be impaired
- This score is an early warning that adjustments to management are needed
- Recovery to a healthy category can normally occur within a few years

Unhealthy:

- A score of less than 50%
- Few of the functions are being performed
- Significant management changes are required to address unsustainable grazing pressure or other types of disturbance
- Recovery to a healthy category may take many years or may require pasture rejuvenation

Need more information?

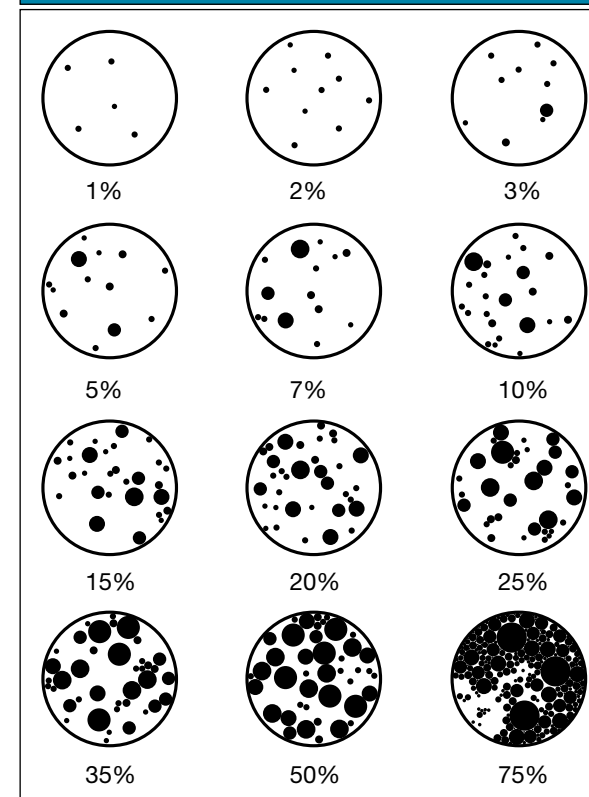
For more discussion on this tool, range health concepts and evaluation techniques, please refer to Adams et al. 2016, "Rangeland Health Assessment for Grassland, Forest and Tame Pasture" available at a Government of Alberta Rangelands office or website.



Natural Variations of Bare Soil Found in Alberta

Natural Subregion (soil zone)	Percent naturally occurring bare soil on native range sites
Boreal	5 (0 to 5)
Foothills Fescue, Foothills Parkland, and Montane	Loamy sites 5 (1 to 5)
Central Parkland	Loamy sites 5 (1 to 5)
Mixedgrass (Dark Brown)	Loamy sites 7 (3 to 7) Sandy sites 6 (4 to 6) Blowout sites 12 (6 to 12)
Dry Mixedgrass (Brown)	Loamy sites 10 (1 to 10) Sandy sites 12 (5 to 12) Blowout sites 15 (5 to 15)

Percent Cover Examples



Tame Pasture Health Questions

Question #1 Do introduced forage species dominate the site?

Only answer question 1A (TAME pasture) or 1B (MODIFIED TAME pasture). Evaluate the impact that management is having on the observed plant community composition. The primary goal of developing tame pasture is to successfully establish and maintain a high proportion of productive introduced forage species. Introduced forage species include seeded and volunteer species such as timothy, brome grasses, alfalfa, clovers, creeping red fescue, quack grass and Kentucky bluegrass. An absence of seeded forages may be an indication that the health of the tame pasture is declining. Consider the pasture to be a **TAME** pasture if 50% or more of the vegetative cover in the pasture is from introduced forage plants, and answer question **1A**. Consider the pasture to be a **MODIFIED TAME** pasture if less than 50% of the vegetation cover in the pasture is from introduced forage plants, and answer question **1B**. The mix of tame and native species in modified tame pastures make effective management difficult due to differences in maturity rates and requirements for rest intervals following grazing.

Score: (Answer only 1A or 1B; see the percent cover examples on the back page.)

1A Tame pasture (> 50% of the cover from introduced plants)

Estimate the cover (%) of all introduced species **relative** to the total percent vegetation cover (live vegetation excluding noxious weeds and woody regrowth) found in the assessment area. In other words, estimate how much introduced forages contribute to the total vegetation cover.

Score: 12 = ≥ 90% 9 = 75 - 89% 5 = 50 - 74%

1B Modified tame pasture (< 50% of the cover from introduced plants)

Estimate the cover (%) of introduced and desirable native species **relative** to the total percent vegetation (live vegetation excluding noxious weeds and woody regrowth). Examples of desirable native species include peavine, vetch, hairy wild rye, marsh reed grass, native wheat grasses, Parry's oat grass, and rough fescue. In other words, estimate how much of the included forages (introduced and desirable native species) contribute to the total vegetation cover.

Score: 9 = ≥ 75% 5 = 40-74% 0 = ≤ 40%

Question #2 What kind of plants are on the site?

Evaluate this question in two parts: forage species shift in 2.1 and weedy or disturbance induced species shift in 2.2. Moderately grazed tame pastures that are given effective rest maintain taller, more productive forage species such as alfalfa, brome grasses, timothy and wheat grasses. When grazing pressure increases and effective rest is not provided, a change or shift of dominant plant species occurs. This shift is in favor of grazing resistant forage species such as Kentucky bluegrass, quackgrass, meadow foxtail, creeping red fescue and white clover. Under continued long term heavy grazing, the cover of weedy or disturbance induced species can increase. Weedy species includes nuisance weeds such as dandelion, hawk's-beard, flixweed and mustards (noxious or prohibited noxious weeds are not included in this question). Disturbance induced species include foxtail barley, strawberry, pussy-toes, yarrow and rough hair grass.

Score: (Answer both 2.1 and 2.2; see the percent cover examples on the back page.)

2.1 Forage Species Shift

To score this question, determine the cover of tall, more productive species (both introduced and native) **relative** to the total cover of all forage species.

- 14 = ≥ 75% forage cover from tall, productive introduced and native forage species. Minor amounts of grazing resistant forage species.
- 7 = 40-74% forage cover from tall, productive introduced and native species. Plants may be declining in health and vigour. Grazing resistant forage species may be replacing tall, productive species.
- 0 = ≤ 40% forage cover from tall, productive introduced and native species. Plants may be weak and have reduced vigour. Taller, more productive species may have been largely replaced by grazing resistant forage species.

2.2 Weedy Disturbance Induced Species Shift

To score this question, determine how much of the total area (i.e., **absolute** cover) is covered by weedy and disturbance induced species.

14 = ≤ 25% 7 = 26-49% 0 = ≥ 50%

Tame Pasture Health Questions

Question #3 Is there enough litter?

Evaluate by comparing the amount and distribution of litter present to what is normally expected for the site. Litter is plant residue from previous years' production. Litter protects soil from erosion, retains moisture and stores and cycles nutrients and minerals.

Score: (Observe litter distribution and sample (hand rake) several 1/4m² frames; compare to the litter examples on back page.)

- 25 = A thick, distinct litter layer is visible with uniform distribution. Litter cover reduced on < 5% of the site. Average litter yield is about 1 handful (≈450 lb/ac).
- 16 = Litter is somewhat patchy; 5-25% of the site has inadequate litter. Average litter yield is ½ - 1 handful (≈250 - 450 lb/ac)
- 8 = Litter is a thin layer or small scattered patches with acceptable cover; 25-67% of the site has inadequate litter. Average litter yield is ¼ - ½ handful (≈125-250 lb/ac).
- 0 = Litter is sparse or absent for the majority of the site (> 67%). Average litter yields are < ¼ handful of litter (< 125 lb/ac).

Question #4 Is the site stable?

Site stability is evaluated in two parts (4.1 and 4.2) by comparing erosion and bare soil to expected (natural) levels for the site (see bare soil chart on the back page). Eroding or exposed soils are clear indicators of loss of key functions. Human-caused erosion and bare soil can result directly from pasture establishment methods, grazing, wildlife use or equipment use or indirectly from rodent burrowing.

Score: (Answer both 4.1 and 4.2; see the percent cover examples on the back page.)

4.1 Erosion

10 = no erosion 7 = slight amounts 4 = moderate amounts 0 = extreme amounts

4.2 Human-caused Bare Soil (Answer only 4.2a or 4.2b based on what natural subregion the site is in.)

4.2a for any mixedgrass natural subregion 5 = ≤ 10% 3 = 11-20% 1 = 21-49% 0 = ≥ 50%

4.2b for any other natural subregion 5 = ≤ 5% 3 = 6-10% 1 = 11-15% 0 = ≥ 16%

Question #5 Are noxious weeds present?

The degree of noxious weed infestation is evaluated in two parts (5.1 **absolute** percent cover and 5.2 density and distribution). Management strives to maintain tame plant vigour and dominant cover. The risk of weed invasion is minimized when this is achieved. Low tolerance and early detection of noxious weeds can help limit their spread and reduce control costs. Include weeds listed as prohibited noxious and noxious in the Alberta *Weed Control Act*, or any problem weeds elevated by the local government (e.g., Municipal District).

Score: (Answer both 5.1 and 5.2 using the percent cover and density distribution (DD) classes on the back page.)

5.1 Cover (cumulative cover of all noxious weeds)

5 = no noxious weeds 3 = < 1% cover 1 = 1 to 15% cover 0 = > 15% cover

5.2 Density Distribution (DD) (cumulative DD of all noxious weeds)

5 = no noxious weeds 3 = low level infestation (DD class 1-3) 1 = moderate infestation (DD class 4-7) 0 = heavy infestation (DD class 8-13)

Question #6 Is woody regrowth a problem?

Woody regrowth is evaluated in two parts (6.1 **absolute** percent cover and 6.2 density and distribution). Woody regrowth can be complementary forage or significant competition for tame forage plants. If woody regrowth is significant, some method of control and/or management changes should be considered. Only assess areas that were originally developed as tame pasture. Do not include areas left as native vegetation such as buffers or any riparian area. [Note: In the Dry Mixedgrass or Mixedgrass natural subregions, where the presence of woody plants may be beneficial, N/A can be recorded as the score and the total site score adjusted to be out of 90 points.]

Score: (Answer both 6.1 and 6.2 using the percent cover and density distribution (DD) classes on the back page.)

6.1 Cover (cumulative cover of all woody species)

6 = < 5% woody regrowth cover 3 = 5-15% 0 = > 15% cover N/A = not scored

6.2 Density Distribution (DD) (cumulative DD of all woody species)

4 = low woody regrowth density (DD class 0-3) 2 = moderate density (DD class 4-7)

0 = high density (DD class 8-13) N/A = not scored