BARE SOIL

Little to no soil cover
0% desirable grass
0% undesirable cover

What: Essentially bare ground with no vegetative cover of any kind

Where:

- horse gathering or loafing areas—hay racks, waterers, shade, gateways and exercise or "sacrifice" lots

Why:

- severe overgrazing—allowing horses to graze the plants too short
- overstocking– too many horses per unit of land area
- soil compaction
- droughty soil
- overly wet soil
- high soluble salts from manure & urine

Management:

- relieve compaction with tillage—best done when the soil is dry
- incorporate organic matter
- soil test and fertilize & lime accordingly
- reseed a cool-season grass or resprig with an adapted bermudagrass variety
- allow new planting to fully establish before returning horses; may be as long as 12-18 months

HALF AND (NOT-SO-BETTER) HALF

50% soil cover
- 25% desirable grass
- 25% undesirable cover

What: Bare soil and cover in equal parts. In this case, the cover is half cool season perennial grass and half weeds—mostly broadleaf weeds, with a little yellow foxtail and annual crabgrass.

Where:
- heavily grazed pastures

Why:
- severe overgrazing—allowing horses to graze the plants too short
- overstocking– too many horses per unit of land area

Management:
- soil test and adjust pH and soil nutrient levels as soon as possible
- broadcast small amounts of fertilizer and lime, then seed with a no-till drill
- for extensive renovation, completely till and incorporate fertilizer and lime for seedbed preparation
- seed with a single grass species or a mix with no more than three species (up to two grasses and one legume)
- avoid “horse pasture mixes” and other complex seed mixes
- allow new planting to fully establish before returning horses to graze; may be as long as 12-18 months

WELL-COVERED BUT WEEDY

100% soil cover

50% desirable grass

50% broadleaf plants (about a third of the cover is from white clover)

What: Some weeds are present along with white clover and desirable grasses.

Where:

- older grass pastures
- pastures not recently treated with broadleaf herbicides to control weed encroachment

Why:

- slightly overgrazed pastures
- stocking rate a bit too high
- low nitrogen fertility
- high phosphorus and potassium (potash) soil test levels help legumes outcompete grasses
- too-short grasses allow clover to over grow

Management:

- apply nitrogen fertilizer to encourage grass growth over legumes
- allow growth to reach 10 to 12 inch before grazing again
- graze no lower than 3 to 4 inches to promote vigorous grass regrowth and discourage white clover
- horse pastures should contain no more than 15% clover (red or white)
- apply broadleaf herbicides to help control excessive clover
- maintain soil pH near 6.5 in the top 2 inches of soil
- maintain phosphorus and potassium (potash) levels in the medium range
- soil test regularly, every 2 or 3 years

GETTING THERE

75% soil cover
    75% desirable grass
    0% undesirable species

What: A 1- to 2-year-old horse pasture seeding of a friendly endophyte tall fescue and Kentucky bluegrass that is slowly developing good stand density and soil coverage

Where:

- any new pasture prior to full stand development

Why:

- Kentucky bluegrass is slow to germinate and is less competitive than other forages
- unfavorable rainfall and temperatures delay stand establishment

Management:

- seed MaxQ tall fescue mixed with Kentucky bluegrass in the fall; allow at least 18 months for establishment before grazing
- closely monitor the pasture to avoid overgrazing
- allow growth to reach 10 to 12 inch before grazing again
- graze no lower than 3 to 4 inches to allow grass regrowth
- apply nitrogen fertilizer in late summer or early fall to encourage grass growth
- avoid very late spring and summer fertilization
- soil test regularly, every 2 or 3 years
- maintain pH near 6.5 in the top 2 inches of soil

OVERGRAZING S.O.S.

95% soil cover

about 50% desirable cover (grass)

about 50% undesirable cover (white clover)

What: The prevalence of white clover with small leaves signals overgrazing.

Where:

- any cool-season grass pasture

Why:

- heavily grazed cool-season grass pastures
- too-high stocking rate
- short grass allows sun-loving white clover to outcompete the grass
- white clover seeds freely, so it easily invades overgrazed pastures

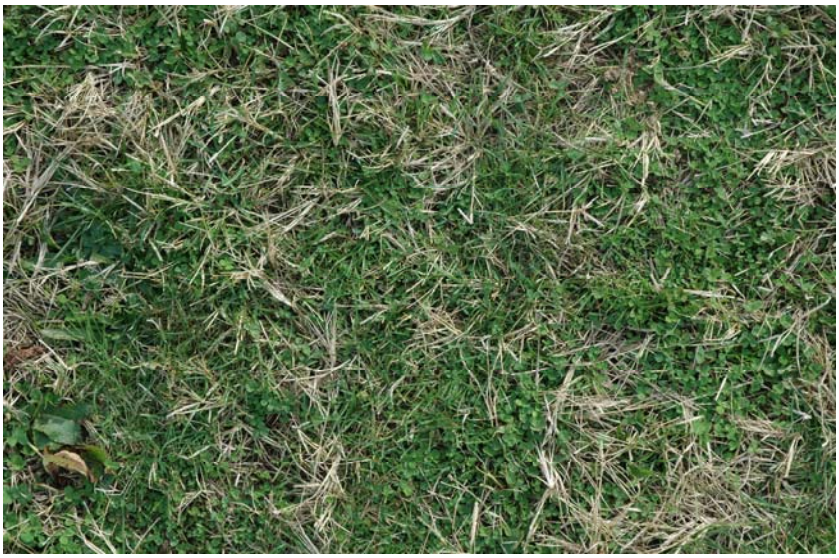
Management:

- reduce grazing pressure—lower stocking rate, less time on the pasture, more time to regrow between grazing cycles, let horses "fill up" on hay before turning out to graze
- early spring and early fall nitrogen applications over several growing seasons can help grass outcompete clover
- apply broadleaf herbicide—pay close attention to label directions and restrictions
- if necessary after herbicide application, overseed with grass seed
- apply nitrogen to boost grass growth
- soil test every 2 to 3 years
- adjust pH and fertility levels as needed

DOWNWARD SPIRAL

Summer: 100% soil cover
50% mixed desirable grasses and broadleaf plants
50% undesirable grasses and broadleaf plants
Fall: 75% soil cover

Winter: 40-50 % soil cover



What: Summer annual grasses invade an overgrazed pasture; the dead plants are goosegrass, a summer annual, after a fall frost); this situation raises risk of soil erosion over the winter.

Where:
any overgrazed pasture
Why:

- crabgrass germinates in late spring and goosegrass germinates once soil temperature remains above about 70 degrees—both can provide dense green growth
- overgrazing, especially during the early summer, encourages summer annual grass invasion
- goosegrass sets seed prolifically, even when heavily grazed
- soil compaction can be a contributing factor

Management:

- reduce grazing pressure—lower stocking rate, less time on the pasture, more time to regrow between grazing cycles, let horses "fill up" on hay before turning out to graze
- soil test and correct pH and soil nutrient levels before planting relieve soil compaction with tillage where needed for complete renovation, kill off existing vegetation with Roundup® and reseed with a no-till drill, preferably in the fall
- soil test and fertilize & lime accordingly
- nitrogen fertilizer in the spring and early fall can encourage cool-season grass growth

A WEAK START

50 to 65% soil cover

40-55% mixed desirable grass

5% white clover and broadleaf weeds

What: A spring-seeded horse pasture that was prevented from filing in well due to summer drought ; at risk for weed encroachment.

Where:

heavily grazed pastures

Why:

- drought conditions following the spring seeding
- grazing too soon after seeding the pasture
- unfavorable weather and soil conditions can slow establishment, especially of non-spreading grass species such as orchardgrass, timothy, perennial ryegrass, and tall fescue

Management:

- reduce grazing pressure—lower stocking rate, less time on the pasture, more time to regrow between grazing cycles, let animals “fill up” on hay before turning out to graze
- maintain pH near 6.5 in the top 2 inches of soil
- overseed orchardgrass or other compatible cool-season grass with a no-till drill

- fall is the best time to seed to a longer establishment time before summer drought and heat arrive
- unavoidable spring seeding should be done as early as possible

RECIPE FOR DISASTER

Summer: 50 to 60% soil cover
Undesirable plants: 50 to 60%
Winter: <25% soil cover
Desirable grass: 0% (all the annual goosegrass dies back)

What: A pasture at serious risk for soil loss from erosion, especially during the winter months once any annual warm-season grasses die back

Where:

- soil compaction
- droughty soil
- overly wet soil
- low soil fertility

Why:

- poor conditions favor growth of tough, adaptable weeds
- overgrazing, especially over several years
- overstocking
- overgrazing makes room for annual weeds to established and produce more seed

Management:

- soil test and adjust pH and soil nutrient levels as soon as possible
- relieve soil compaction with tillage—best done when the soil is dry
- seed with a single grass species or a mix with no more than three species (up to two grasses and one legume)
- avoid “horse pasture mixes” and other complex seed mixes
- for complete renovation, kill off existing vegetation with Roundup® and reseed with a no-till drill
- incorporate organic matter
- soil test and fertilize & lime accordingly
- reseed or resprig
- allow new planting to fully establish before returning horses; may be as long as 12-18 months