

Tiller Development of Pasture Species

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Knowing the growth stage of a grass population is critical to many pasture or forage management decisions. Many growth stages are represented, posing challenges to deciding when to graze, fertilize or even renovate. Pasture grasses are mostly open pollinated having variations within the same species or cultivar. A method of quantifying a mean growth stage of the grass population makes it easy to objectively communicate measurements relative to growth and development. Mean stage by count (MSC) is an index used to quantify the average morphological growth stage of forage plants, weighted by the number of stems present at each growth stage. This article shows how MSC is used to quantify growth stages of a diverse grass population and how this is associated with utilization.

Have you wondered why you see more smooth brome grass heads in a pasture than orchardgrass or other species? The answer resides in the inherent ability of that grass to produce reproductive tillers. These natural differences in tiller development can be exploited by seeding a mixture of species. From a grazing standpoint, it is desirable to provide as much leaf material as possible for livestock. Having a variety of grasses in a pasture allows animals to select the best diet on any given date. Figure 1 shows tiller development of a pasture mixture over the summer. The staging system index from 1.0-1.9 represents tillers that have not elongated (no stem), 2.0-2.9 represents tillers that are elongated (jointed), 3.0-3.9 represents tillers in the reproductive phase (inflorescence visible), and 4.0-4.9 represents seed ripening phases.

In May, smooth brome grass begins to elongate before intermediate wheatgrass and orchardgrass. By June, intermediate wheatgrass tillers rapidly elongate; the majority of tillers are in the reproductive phase by July. Orchardgrass remains mostly vegetative throughout the summer. This tiller development diversity allows animals to select the best diet. Early in the growing season, cattle usually graze smooth brome grass then switch over to intermediate wheatgrass. As smooth brome grass and intermediate wheatgrass enter rapid elongation phase, cattle switch to grazing orchardgrass. In continuously grazed pastures, cattle usually select a variety of grasses as the summer progresses, especially if orchardgrass has been grazed close to the ground. Rotational grazing systems help protect areas from overgrazing by using natural differences in tiller development, providing grazing livestock a continual supply of leafy forage from a variety of grasses.

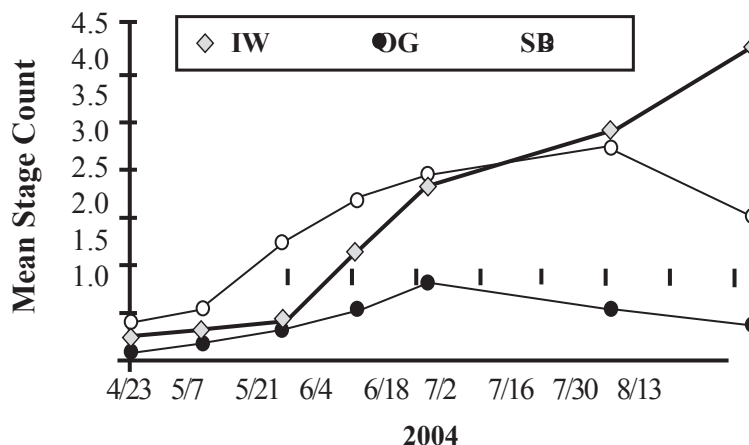


Figure 1. Mean stage count of intermediate wheatgrass (IW), orchardgrass (OG), and smooth brome grass (SB) tillers from a seeded pasture near Brookings, SD. (Unpublished data Smart, 2004).