

# Palatability of Grasses

## Grown at Mandan, North Dakota

H. L. WALSTER, Director

**WHICH** Grasses do steers graze down first and to the greatest extent? To get the answer to this question George A. Rogler<sup>1</sup> has just reported a series of observations made on some well established stands of different grasses at the Northern Great Plains Field Station<sup>2</sup> at Mandan, North Dakota. The grasses included nine "cool season" grasses, namely crested wheatgrass, western wheatgrass, slender wheatgrass, brome grass, Russian wild-rye, Indian rice grass, reed canary grass, and feather bunch grass, and nine "warm season" grasses, namely big bluestem, sandhill bluestem, little bluestem, side-oats grama, blue grama, buffalo grass, sand reedgrass, weeping lovegrass, and switch grass.

As an average of the four year period 1940-43, bromegrass was grazed down most closely—using a rating of 80 for bromegrass, the other cool season grasses were rated as follows, 60 for standard crested wheatgrass, western wheatgrass, slender wheatgrass, and feather bunch grass, 50 for Canada wild-rye and Indian rice grass, 40 for Russian wild-rye, 20 for Fairway crested wheatgrass and 10 for reed canary grass.

In three years trials with various warm season grasses based on a rating of 80 for bromegrass, the highest rated cool season grass, the various warm season grasses were rated as to relative palatability as follows: big bluestem 100, sandhill bluestem, little bluestem, side-oats grama, and switch grass, each 90, blue grama and sand reed each 70, and buffalo grass 10.

Some investigators hold that this matter of palatability is largely a matter of the coarseness or fineness of the herbage. Rogler notes however, that steers will often prefer coarse-appearing grasses near maturity of such grasses rather than young and succulent growth—but he does call attention to the fact that mature standard crested wheatgrass is only sparsely grazed whereas it is closely grazed when young. Rogler lists 10 factors affecting palata-

bility of pasture grasses namely: (1) maturity of forage, (2) intensity of grazing (if animals get hungry they will graze down species not previously touched), (3) rate of recovery (species which renew fresh growth after grazing are preferred), (4) amount in mixture with associated species (cattle will eat a little of the less palatable along with much of the more palatable), (5) drought resistance (cattle prefer grasses that stay green longer), (6) previous feed or grazing activity (if the cattle have had a previous one-grass diet they are not so likely to choose other grasses even though they are available), (7) individual differences in animals, (8) nitrogen fertilization appears to increase palatability, (9) kind of livestock, and (10) local conditions.

In summary, referring particularly to the better known grasses, Rogler concludes "Bromegrass was preferred to all other species of cool-season grasses under early and continuous grazing. Fairway crested wheatgrass was much less palatable than strains of standard crested wheatgrass under early grazing. Russian wild-rye was low in palatability in the early season but was preferred later. Big bluestem was the most palatable species tested. Little bluestem was palatable in the early season but was avoided when

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<sup>2</sup>Cooperative investigations between the Division of Dry Land Agriculture and Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture and the North Dakota Agricultural Experiment Station.

it became mature. Buffalo grass was the last species to be eaten of the warm-season group. Mature crested wheatgrass was low in palatability and did not rate above reed canary grass."

This reviewer emphasizes the following quotation from the second paragraph of Mr. Rogler's article: "Palatabilities or preferences in themselves are sometime misleading. Cattle will show a preference for certain grasses if they have a chance for selection, but if restricted to a more or less unpalatable grass they will ordinarily do as well as

those restricted to a more palatable one, providing, of course, that both are of equal nutritive value and productivity. On the other hand, palatability studies are useful in determining when certain grasses become palatable or unpalatable and give an indication of what might be expected when a certain combination of grasses are used together in mixtures." (Abstract of an article by George A. Rogler, on "Relative Palatabilities of Grasses Under Cultivation on the Northern Great Plains" in the "Journal of the American Society of Agronomy 36; 487-496. 1944.)

## The Cattle Grub Problem in North Dakota

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**N**EARLY 75 percent of the cattle in the United States are infested with from 1 to about 100 cattle grubs' each. This, according to the U.S. Bureau of Entomology, represents an annual loss to the livestock industry of from about \$50,000,000 to upwards of \$120,000,000. The grubs cause this loss in various ways, including lowered milk production, reduced gains in weight, damage to hides from "grub holes," and waste of meat which must be cut away from the infested carcasses.

The most apparent injury is to the hides. Any hide which contains five or more grub holes takes a lower grade and a depreciation of about 75 cents. The grub holes are in the central part of the hide, thus seriously interfering with its future use as leather.

Such holes are made by the grubs during the winter and serve as (1) breathing holes during the approximate 2-month period that the grub spends in the back of the animal and (2) provides an exit or means of escape when the grub reaches maturity in late winter or early spring. While in the back of the animal the grub causes constant irritation. Such irritation stimulates the flow of secretions from the surrounding tissue which nourishes the grub. At maturity, with the aid of its spines, the grub

works its way through the hole it has previously made in the back, falls to the ground, and soon burrows just underneath the surface of the soil. The mature grub is dark gray in color, stout bodied, about 1 inch in length and encircled with rows of sharp spines. Upon entering the soil it becomes black and transforms to the pupa stage; here, after about 5 weeks it emerges as a large dark hairy fly. The flies, commonly known as "heel flies" begin to appear in this northern area in late spring.

The "heel flies," so named because of their habit of laying their eggs mostly on the hair of the heels of the cattle, are seldom seen, although evidence of their presence in the herd is often noticed by the disturbance they cause. The flies do not bite or sting the cattle,

<sup>2</sup>There are two species of cattle grubs which are common in most cattle raising areas of the United States. They are *Hypoderma bovis* De G., and *Hypoderma lineatum* (DeVill). Both species cause the same type of injury to cattle and may be controlled in the same manner. The Red River Valley is an outstanding example of a large area that is free of this pest.