

Managing Yearlings On Pasture

Robert Hand

Take Home Message

- ✓ Forage is utilized by yearling cattle to achieve gains of over 2.5 pounds daily and produce up to 400 pounds of animal gain per acre.
- ✓ The factors involved in achieving these weight gains relate to the choice of stock including:
 - body condition;
 - type and quality of pasture;
 - pasture or range management;
 - whether supplemental feed is provided. and;
 - other aspects such as use of growth implants and good health management.

This fact sheet discusses which stock perform best on pasture, the effect of forage availability, protein and energy supplementation and mineral feeding on pasture.

Choice of Stock

Healthy cattle gain the best. Follow the vaccination program recommended by your veterinarian. It will likely include vaccination for clostridial diseases, IBR and others. Pinkeye and footrot cases should be treated as soon as possible since gains are decreased with extended sickness. Watch for pneumonia and water belly problems.

Expect steers to gain 0.1 to 0.2 lb per day more than equivalent heifers on pasture. Large breed animals tend to grow more rapidly than those of the smaller breeds. Implanting yearlings will increase pasture gain and reduce cost of gain. Pasturing heavier large frame cattle (greater than 900 pounds at entry) will produce large carcasses that are subject to discount. These cattle may be better placed in a feedlot than on pasture.

Choose lean, growthy calves. Lean cattle experience catch-up gain especially during the first 60 days on high quality pasture. The Agriculture Canada Research Centre at Melfort found that for every one pound per day increase in winter gain, there was a subsequent decrease of 0.7 lb per day on pasture. Alberta data shows a minimum 0.2 lb/day reduction in gain and an increased cost of at least three cents per pound gain for

yearlings condition scoring 3.5 versus 2.5. In another central Alberta trial cost of gain on pasture was 25 to 30 cents for thin condition score 2 yearlings versus 37 to 43 cents per pound for slightly fatter condition score 3 yearlings.

The most common weight onto pasture is between 675 to 800 pounds. Cattle in this weight range tend to gain better than those of lesser or greater weight. For example a 900 pound heifer may gain 0.2 lb/day less than an 800 pound heifer of similar back fat thickness at entry. That is equivalent to a 3 to 6 cents difference in cost of gain. Small cattle will gain well provided they are healthy.

Excitable cattle can be calmed by working through good handling facilities in a quiet manner. Less handling stress can relate to better performance.

Some Pasture Factors Affecting Animal Gain

Gains are dependent on pasture species and management. For short grass prairies, gains of 0.8 to 1.5 lb/day are common. On tame dryland pasture, gains range from 1.25 to 2.5 lb/day. Cattle on irrigated pasture could have gains in excess of 2.5 lb/day as could cattle on properly managed oat or fall rye pastures. Expect animal gain to be 15 to 20% greater if cattle are grazing mixed legume stands than straight grass pasture.

Gains vary throughout the season, declining with decreasing forage nutrient value and availability. For yearlings grazing a good legume grass pasture, expect 36% of summer gain in the first quarter of the grazing season and 16% in the fourth quarter, under a put and take stocking system. If rotational grazing is used, gain will remain constant throughout the season provided dry matter availability during the latter part of the season is adequate.

Forage must be four to six inches high for maximum dry matter intake. Intake will be restricted as will gain when dry matter availability is less than 1000 pounds per acre (Table 1).

Stocking rate influences individual animal gain. Individual animals gain more rapidly when grazing underutilised pastures. As stocking rate increases to the point where an

animal cannot preferentially select its diet, the individual's gain

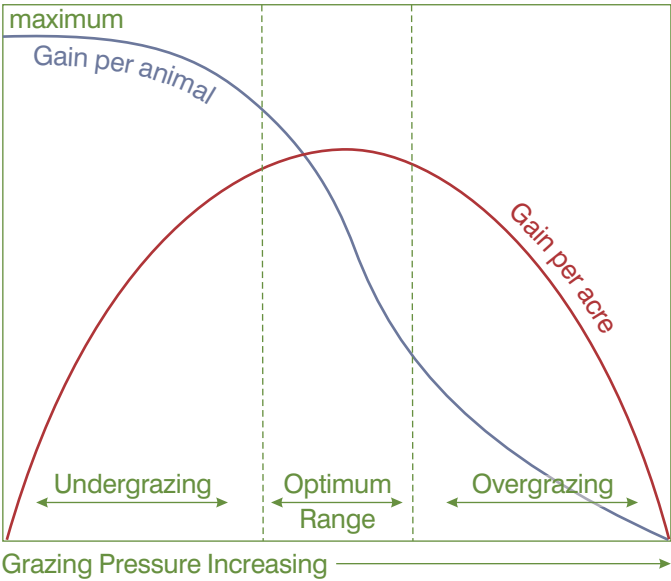
Table 1. Effect of Forage Availability on Dry Matter Intake.					
	Forage Mass Available for Grazing				
Kg/hectare	250	500	750	1000	1150
Lbs/acre	220	445	670	890	1020
% of relative dry matter intake	40%	69%	88%	98%	100%
Source: Rayburn, 1992 as quoted by NRC, Beef 1996					

declines but gain per acre continues to increase. As stocking rate continues increasing such that pasture dry matter becomes restricted, gain per acre also declines (figure 1). Rotational grazing systems try to optimize pasture productivity with animal requirements. By moving cattle before cattle regrow already grazed plants, pasture growth is increased and cattle continue to graze high quality vegetative stands.

Supplemental Feeding on Pasture

Animal gain is a function of intake and digestibility of feed. Forage intake is dependent upon forage availability and the amount and type of fibre in the plants. High fibre feeds take longer to digest, reducing intake. The animal cannot eat more because its rumen is full. A high quality immature forage containing low fibre levels has a fast rate of passage through the digestive tract. The result is that animals can eat comparatively larger amounts of low fibre forages, perhaps 80% more than high fibre feeds. Digestibility is also higher with low fibre feeds. Increased intake and digestibility result in more energy being available for growth.

Figure 1. Influence of grazing pressure on animal gain and unit area gain (4).



Feeding supplements on pasture can increase daily gain by 0.7 to 1.0 lb per day, allow for easier introduction of feedlot diets and cause cattle to finish sooner. There are two types of pasture supplements: protein and energy. Protein supplements are effective in

improving energy balance by increasing intake and digestibility of the forage. Grain (energy) supplements decrease forage intake and digestibility. But both have the potential for improving pasture gain. The question is when to use which supplement, since supplementation must complement forage availability and nutrient content. The economics of supplementation will depend on the effect the supplement has on forage utilization.

Protein Supplements

Protein is required by the rumen microorganism and by the animal itself. Meeting the rumen microorganisms protein requirements is crucial to the rate and extent of digestion. Rate of passage will slow as protein drops below requirements since low protein, high fibre diets are not

digested as fast as high protein, low fibre diets. A high quality hay may pass through the rumen in 40 hours but a medium or poor quality hay might take 55 or 80 hours to pass through the rumen. Forage intake decreases as crude protein level drops below 8%. The addition of protein to low protein diets will increase rate of digestion and result in a faster movement of feed through the digestive tract. The result is a higher feed intake which supplies more nutrients, including energy, for growth.

Limit feed protein supplements if forage is available but of low protein content. Protein supplements can give dramatic responses when fed in small amounts as illustrated in the following trial (3). Yearling steers grazing native range from July to October in Oklahoma were offered either 0, 0.8 or 1.5 pounds of an 88 to 95% soybean supplement or 3.0 pounds of a 93% corn supplement daily. Period gains (and pounds of additional gain per pound of supplement consumed) were 1.09 (-), 1.83 (1.8), 1.50 (2.8) and 1.71 (8.8) lb/day for the 0, 0.8, 1.5 and 3.0 supplemental levels, respectively.

Supplemental protein sources should be those that degrade predominantly in the rumen since it must stimulate the rumen microorganism. Example supplements would include canola meal, soybean meal, peas, alfalfa pellets, etc. Urea is degraded rapidly in the rumen to ammonia but by itself is not considered an acceptable nitrogen source for low or medium quality forages. There is no available carbohydrate to capture the ammonia produced by urea degradation in the rumen.

High protein feeds can be fed every two or three days with no effect on efficiency of use. The body recycles nitrogen.

In one trial (6) mid protein (17% CP) levels of concentrate mixes or long stemmed hays fed at 0.6% of body weight resulted in substitution of supplement for forage. Higher protein content (30% CP) supplement or pelleted alfalfa fed at similar protein amounts to the mid protein supplements did not result in substitution of supplement for forage.

Energy Supplements

Grain supplements are appealing because they are generally less expensive than protein supplements. Grain can be fed on a free choice basis or restricted, however cattle make more efficient use of grain and pasture when intake is restricted. Other supplemental feedstuffs which can be fed on pasture include roughage such as hay, silage, greenfeed and/or fresh cut green oats.

An animal can only consume a limited amount of dry matter daily. Feeding supplemental protein feeds can increase intake but feeding energy feeds such as grain will decrease forage consumption. It can happen with as little as 2 pounds of grain per day. Research (3) suggests that grain can be fed at levels up to 0.4% of body weight with minimal influence on fibre digestion. That is, 2 pounds for a 500 pound calf or 3.2 pounds at 800 pounds body weight. At higher supplemental grain levels, there is a substitution effect with forage. Every one pound of grain consumed reduces forage consumption by 0.3 to 0.8 lb of forage. This implies reduced grazing intensity.

Pasture stocking rates could be increased by up to 25% for yearlings receiving 1% of their body weight as grain. If stocking rates are not increased and pasture is available, then feed to gain ratios will be high. When stocking rates are adjusted, then feed to gain ratios are slightly higher than equivalent animals in the feedlot. The difference relates to the extra energy utilized in grazing, the trampling of forage, and a reduction in fibre digestibility when grain is fed.

Energy supplements must be fed daily in smaller amounts to minimize the drop in fibre digestibility and forage substitution. One trial (1) indicates afternoon supplementation is more efficient than morning energy supplementation due to possible reduced maintenance requirements (morning supplemented animals grazed more) and decreased dry matter intake of morning supplemented animals.

Self feeding grain on pasture is done to prepare cattle for entering a feedlot or if using the pasture as a drylot pen. Yearlings self fed grain on good pasture will consume about 1.5% of body weight daily as grain. Thus, an 800 lb animal will consume about 12.5 pounds of grain daily. Self feeding grain on pasture will increase gain by 0.4 to 1 lb/day. Feed conversion will be in the 7 to 10:1 range for the additional grain supplement after accounting for the drop in forage consumption.

Mineral Supplementation

Salt and calcium-phosphorus minerals are commonly fed on a free choice basis to yearling cattle on pasture. Loose or block forms are suitable. Expect higher intakes when fed in the loose form. Consumption of salt and mineral will be dependent upon season, type of forage, soil conditions and animal preference. Intake could vary from zero to 150 grams daily.

At minimum, feed a trace mineral salt containing copper, manganese, zinc, iodine, cobalt and selenium throughout the pasture season.

Calcium and phosphorus may not be required throughout the grazing season. Feed a high calcium mineral mix if grain is fed at levels greater than 1% of body weight or if grazing cereal pastures. Phosphorus tends to be adequate for gain when plants are vegetative and declines as the plants mature. Phosphorus supplementation may be required late in the season and is fed in mixes containing equal parts of calcium and phosphorus for yearlings grazing legume or grass pastures. Salt at 25% of the mineral mix will allow for reasonable intakes of calcium and phosphorus.

Often the salt and mineral are placed near watering areas, however frequent moving of mineral feeders will distribute grazing pressure throughout the pasture. Alternatively, place salt near water locations when you want to increase salt or mineral intake.

Other Considerations

Alberta data suggests increased gains when cattle are provided with clean water rather than when cattle are forced to drink from a dugout.

Insecticide impregnated ear tags and back oilers have proven effective in enhancing grazing patterns and gain. See fly control factsheet for specific information. Follow manufacturers directions in the use of these products.

References

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