

# Don't Let Your Pastures Waste Money



by Ann Gooding

*The typical pasture in this country is not producing to its full potential. However, the use of a few simple techniques can boost pasture productivity. And to the cattleman, that means dollars saved.*

**E**conomic necessity today more than ever requires the livestock man to rely heavily on natural resources, especially his pastures. Unfortunately, pastures and grazing lands (which account for almost 835 million acres—more than 44% of the continental U.S.) don't often produce to their full potential. In fact, most are producing much less than that, says Myron Fuerst, Rhinebeck, N.Y.

The know-how and the mechanics for boosting pasture productivity exist, claims long-time cattleman Fuerst, but for probably numerous reasons many livestock producers don't use them. Furthermore, he says, when most people think of pasture management, they think only of renovation. And renovation doesn't do much good unless followed by a sound maintenance program.

## Renovate First

Renovation usually has to be considered first. Because they respond more rapidly, he advises starting with the best fields that have the best soils. He provides some renovation guidelines:

- (1) Test the soil. (Land grant colleges, the extension service, fertilizer companies and private concerns can do this.)
- (2) Apply lime and fertilizer as indicated.
- (3) Determine what grasses or legumes are best suited to the area and the opera-

tion. (Fuerst suggests following recommendations made by the local extension service or land grant college.)

- (4) Use quality seed and inoculate legume seeds for nitrogen fixation.
- (5) Make room for the new plants by shortening or eliminating existing vegetation.

"Although it's been more than 50 years since I heard about the importance of soil tests and the soil's need for lime in most of the eastern half of the U.S.," Fuerst says, "there are still some people who ignore this most important first step in land renovation. They often prefer to use chemical methods to destroy existing turf, then turn to expensive equipment for re-seeding without stopping to consider what the new plants actually need in the way of nourishment."

If the field needs lime, apply it if at all possible. The results, he claims, will be amazing. Back in the old days when only

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pull-type equipment was available, lime application (and, for that matter, fertilizer application) was sometimes impossible on rough land; but with today's mounted spreaders, if a tractor can get over the pasture, lime and fertilizer can be applied.

## Re-seeding Methods

Once lime and fertilizer requirements have been met and the cowman has decided what to plant, there are a number of re-seeding methods from which to choose. Fuerst lists several:

- (1) Use a chemical (Paraquat) to destroy existing growth, then seed with a pasture seeder. (This is the most expensive method, in Fuerst's opinion, because it requires a sprayer and an expensive seeding tool. And there is hazard associated with use of the chemical.)
- (2) Plow, disc, prepare a seed-bed: seed with a grass drill and then cultipack or use a combination seeder-cultipacker. (This method, says Fuerst, subjects hillside pastures to erosion and is costly in terms of machinery.)
- (3) Scarify with a specially designed harrow to prepare soil for contact with seed, then seed with a cyclone-type seeder. (Fuerst believes this method has many advantages. It doesn't destroy existing turf and it uses low-cost equipment that will work over almost any type of rough ground.)

- (4) Scarify with a harrow. Then, after using a cyclone seeder, let cattle walk seed in. (This method, Fuerst says, has not yet been advocated by extensive research but some people do like it. Seed, particularly clover, can be sown on top of soft ground and then tramped in by cattle.)
- (5) Scatter seed on frozen ground; as it alternately freezes and thaws, the ground cracks, putting seed in contact with the soil. (This method, according to Fuerst, is not the most reliable.)
- (6) Allow trefoil to go to seed in a pasture, graze it, then transfer the cows to another pasture. (Fuerst claims an amazing amount of the trefoil, carried in cows' droppings, will take hold in the new pasture.)

Of all the methods, Fuerst strongly recommends the third. It is, he says, both economical and efficient.

#### Maintenance Follows Renovation

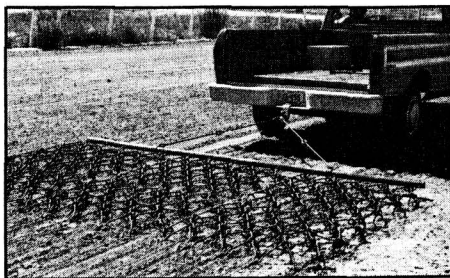
After renovation, maintenance then becomes essential for land to produce to full potential. Maintenance really doesn't take extra equipment: The cyclone seeder can spread fertilizer, lime, seed; the mower can control weeds and coarse growth; the pasture harrow can aerate and scatter droppings. All are low cost or relatively so, and all have multiple uses.

Almost everyone, he believes, is familiar with both mowers and seeders. Fewer people, though, know about the pasture harrow. He explains: "These harrows were invented approximately a century ago in England, the home of some of the world's greatest pastures. They are constructed from a series of linked-together tines that are completely flexible and consequently can follow the contours of the land. There is probably scarcely a livestock farmer in Britain today who doesn't own and religiously use a pasture harrow to keep his pastures in tip-top condition, year after year."

The pasture harrow serves several purposes in renovation as well as maintenance. It is useful when lime is applied; at best, lime reacts slowly with soil, and the pasture harrow can open the soil just enough (without destroying existing turf) to allow lime to penetrate. And it can also be used to scarify the soil for seed-bed preparation.

#### Aeration

When pastures become sod-bound, aeration becomes a necessary part of maintenance. Fuerst explains: Here the pasture harrow works on the same principle as the lawn rake. And anyone who has raked a lawn has seen the overnight greening and growth resulting from the rake's cultivation and loosening of dead material. Harrowing pastures as soon as you can get on them in the spring will advance turn-out time from at least several days to as much as two weeks, depending on the circumstances and weather. Harrowing hay will produce similar results, and at a time of the year when winter feed supplies are running short, this can be a big savings.



Fuerst's Flexible Tine Harrow

Other types of equipment can be used for aeration; but none, Fuerst claims, work quite so well as the pasture harrow. The renovator or chisel plow digs into the ground several inches, actually ripping open turf and tearing sod, leaving furrows into which water can penetrate and roots can expand. This, however, destroys some existing turf and leaves the surface rough, causing problems in close mowing. The chisel, in fact, may even dip into subsoil or break hardpan.

A spike- or peg-tooth harrow or a shallow-set spring-tooth harrow can also be used for aeration, but that's like using a lawn rake with half its teeth missing. There are not enough points of contact to do the job properly, he says; besides, those points are too blunt, too harsh for grass work.

#### Manure—Both Bane and Boon

Then there are livestock droppings—both bane and boon to pasture management. Fuerst quotes an old-time cattleman: "Manure's the most wonderful grass grower in the world but not when it's stacked in one spot. You have to spread it around. Look at that tall clump of grass over there. Came right up through a dunghill that never got broken up, so it's bitter as gall. Cattle won't touch it. And you can't blame 'em either." Livestock simply will not graze on or around their droppings, no matter how luxuriant the growth there may be.

Once again the harrow can be used—it simply spreads the droppings. The value of this operation, though, cannot be fully appreciated until one appreciates the value of the droppings.

#### Nutrients Return to Land

As both horses and cattle graze, they remove nutrients from the land in exactly the same way they would be removed if the pasture were hayed. The big difference is that, when hay is removed, nutrients are lost. In the case of the grazing animal, most of the nutrients go right back into the land. To illustrate this point, Fuerst refers to an old issue of Morrison's FEEDS AND FEED-

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ING for the daily production of manure per 1,000 lb. liveweight:

	Cow	Horse
Feces (lb.)	52	39
Urine (lb.)	22	10
Total Manure (lb.)	74	49

"Morrison," Fuerst says, "took this data from VanSlyke's FERTILIZER AND CROPS. Remember that this data is at least half a century old, but I doubt that it has changed very much."

According to the same source, manure translates itself into the following annual yield of fertilizing constituents per 1,000 lb. liveweight:

	Cow	Horse
Nitrogen (lb.)	156	128
Phosphoric Acid (lb.)	38	43
Potash (lb.)	127	103
Present Value	\$68.89	\$59.56

Dollar values are calculated using estimated current costs—27¢ per lb. for both nitrogen and phosphorus, 13¢ per lb. for potash.

And here, also from the same source, are the proportions of these fertilizing constituents contained in urine and in feces:

	Cow	Horse
Nitrogen		
Urine	51%	38%
Feces	49%	62%
Phosphoric Acid		
Urine	0%	0%
Feces	100%	100%
Potash	85%	44%
Feces	15%	56%

#### General Accuracy

No one agrees exactly on percentages of the fertilizing constituents passed back to the land, Fuerst explains, but Prof. Emeritus Dr. John I. Miller of Cornell University confirmed the general accuracy of the Morrison figures in a 1978 report researched for Fuerst. Dr. Miller found the total percentage of nitrogen excreted (40-90% of intake) averaged 70%. Of this amount, he found usually slightly more than 50% excreted in the feces. Phosphorus excreted is roughly 80% of that consumed, with about 99% of that contained in feces. Similarly, the figures for potassium are approximately 90% of intake, with about 80% of that excreted in urine. With calcium, 65% of the amount consumed is passed, about 97% in feces.

Dr. Danny Fox of Cornell substantiated those numbers, basing his calculations on nutritional value of a combination of pasture grasses at a specific stage of growth and estimating how much of these a cow would consume per day.

Applying present estimated prices for nitrogen, phosphorus and potassium to Dr. Fox's figures (which do not consider any value provided by supplemental feeding), Fuerst finds fertilizing constituents returned to the land in feces alone are worth approximately \$4.50 per month per cow. To be

conservative and to allow for losses from aging, run-off, etc., reducing this figure by half still amounts to \$2.25 per cow per month. And that's \$13.50 a head for six months or \$1,350 per 100 cows in six months. Of course, the more productive the pasture, the more intensive the grazing and the greater the advantage of spreading the droppings.

And, Fuerst adds, since many cattlemen run cattle on pasture all year long, supplemental feeding is often provided. With that the value of the fertilizer jumps to around \$26 per cow or \$2,600 per 100 cows over a 6-month period.

No matter whose figures are used, the point Fuerst makes is that a large proportion of important fertilizer constituents are passed back into the land by livestock. Every mature cow produces almost a ton of manure each year. Unless this manure is spread over pastures, cattlemen are throwing away a lot of valuable fertilizer—and money.

#### **Grazing Patterns**

Both cattle and horses have a more or less standard grazing pattern. Cattle graze over most areas of a pasture reasonably evenly, avoiding only those spots where they have defecated or areas where they congregate to rest or to drink. And horses, although prone to graze certain areas more intensively than others, still cover an entire pasture.

If the horse or cow would spread its droppings evenly, pastures would benefit evenly, but they leave droppings in more or less irregular patterns. And where droppings are heavy, they tend to kill herbage rather than nourish it.

Obviously, then, to get those valuable fertilizer constituents where they will do the most good, they must be spread.

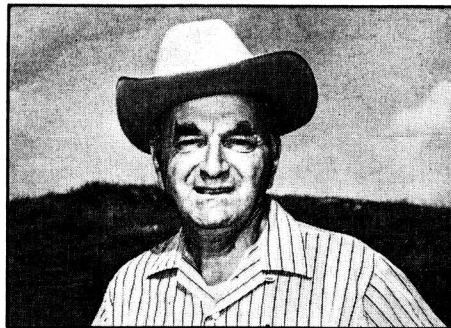
And Fuerst makes another point: In almost all parts of the country cattle need some winter feed, and this feeding should be done in fields that need fertilization. If cattle are fed on the ground, feed should be put in a different place every day; if a feeder is used, it should be moved regularly. These measures will at least partially spread the droppings. Then when cattle are moved off winter pastures (which Fuerst recommends as soon as spring growth starts), harrowing can be done immediately.

#### **Parasite Control**

There is a corollary to the fertilizing value of scattering droppings, one that Fuerst feels is becoming increasingly important—the control of parasites. Many internal parasites from both horses and cattle are passed in droppings; and if undisturbed, they continue to develop and complete their life cycles. Harrowing curbs that problem. It also cuts down on breeding places for flies.

Fuerst firmly believes that both pasture renovation and maintenance are economic necessities. And many people, he feels, do recognize the value of mowing, fertilizing, re-seeding. Comparatively few, though, rea-

lize how much a harrow can do. "Put a teenager on a low-horsepower tractor," Fuerst advises, "hook up a pasture harrow and scatter droppings two, three, four times a year. Then add up the value of the fertilizer spread by the harrow, the value of the pasture that previously went untouched, the stimulation of grass growth in the spring, the aeration of the land in the fall, the parasite control. Can you afford not to do it?"



*Myron Fuerst's association with Angus cattle began in 1934 through Fuerst Stock Farms, Pine Plains, Dutchess County, N.Y., where he specialized in importation and breeding of registered Percheron horses and Angus cattle. His original herd was dispersed in 1952 for what was then a breed record. Two years later Fuerst went back into the Angus business at Pine Plains, then moved a small herd to Rhinebeck in 1956, where he worked closely with Lee and Les Leachman and Allan Ryan of Ankony. He joined that organization in 1964 and was treasurer and vice president in charge of marketing until 1971.*

*Fuerst's Angus-related activities have never been confined to his own or Ankony's pastures. His cattle were exhibited successfully at major shows. He managed record-breaking heifer consignment sales in Dutchess County from 1939 to 1951. He served on the American Angus Assn. Board of Directors for six years, and it was while he was public relations chairman that the association put out its first brochure directed toward commercial breeders. Then in the early 1970s, Fuerst did some consulting work for the association.*

*Fuerst also has been president of the Eastern Angus Assn. (predecessor of the New York, New Jersey, Pennsylvania and New England Angus Assns.) and now sits on the New York Angus Assn. Board of Directors.*

*Fuerst, a graduate of Cornell University with a B.S. in agriculture, augmented his formal education with extensive travel that enabled him to study agriculture in Argentina, in Europe as far east as Hungary, in Israel and in East, Central and South Africa.*

*After World War II while in England for the Perth sales, Fuerst saw and became interested in the pasture harrow. His subsequent import and personal use of the harrow led to the Fuerst Bros., Inc., marketing system, one that provides the Fuerst Flexible Tine Harrow nationwide.*