MINNESOTA FEED SERVICE

University of Minnesota Agricultural Extension Service, St. Paul — May 31, 1955

Fly Control for Livestock

L. K. Cutkomp*

Although highly effective insecticides are available, they will not do the fly control job alone. Sanitation and management practices still play an important part in keeping down the fly population. This article, however, deals only with control with insecticides.

DAIRY CATTLE

Any effective fly control program should include an insecticide treatment for both the animals and the barn.

Direct Spraying of Cows

For direct spraying of dairy cows, use one of the following materials:

Methoxychlor. Use 50 per cent wettable, 8 pounds per 100 gallons or 5 tablespoons per gallon (effective against horn flies and nonresistant house flies). About 2 quarts total liquid is usually enough per animal.

Pyrethrins plus a synergist. Start with a 1 per cent pyrethrins emulsion concentrate and dilute with 19 parts of water when spraying every day or only 9 parts of water when spraying once or twice a week. The stronger concentration of pyrethrins is also desirable for stable, horse, and deer flies. This is not a residual-type spray; in other words, it is effective for only a short time.

Residual Spraying in Barn

Apply one gallon of one of the spray mixtures given here to 1,000 square feet of painted surfaces or 2 gallons per 1,000 square feet on unpainted surfaces.

When flies are resistant to DDT, methoxychlor, and lindane use:

Malathion, 50-55 per cent emulsion, at the rate of 1 pint for 6 gallons water, or 2½ pounds of the 25 per cent wettable powder per 6 gallons water. For a superior lasting effect, increase the emulsifiable malathion to 1½ pints per 6 gallons water and combine with 3 to 5 cups of sugar. Sugar may also be used with the wettable powder formulations.

A malathion-methoxychlor mixture. This combination will give a longer residual effect than malathion alone. Use the same rates for malathion as already given but add ½ pound of 50 per cent wettable powder of methoxychlor per 6 gallons water.

If house flies are not difficult to kill with methoxychlor or DDT use:

Methoxychlor, 50 per cent wettable, at the rate of 2 pounds per 5 gallons water, or

Lindane, 25 per cent wettable, at the rate of 1 pound per 10 gallons water, or the 20 per cent emulsifiable form at the rate of ⅔ pint per 5 gallons water.

Mixtures of lindane and methoxychlor materials also may be used.

Fly-Bait Applications

Bait-type treatments are fairly cheap and easy to use. To get the greatest benefit start when the first flies appear early in the season. Apply every day for about a week then skip a few days. In some situations you may not have to apply a residual spray if the insecticide-bait combinations are applied early and conscientiously.

Bait-type treatments include the insecticide plus a sweetening agent such as sugar or molasses. To save time and expense they are most commonly applied as spot treatments on the resting places of the flies. These include window frames, support beams, doorways, stanchions, and the floor of the barn. Both sprays and dry preparations (flakes, dry powders, and paper disks) are available. They are very effective in attracting and killing DDT-resistant house flies.

In general, if fly baits are used as spot treatments, the applications will need to be made daily with heavy fly populations until some reduction is noticed.

Do not use diazinon as a spray or bait in dairy barns.

Baits Effective Against DDT-Resistant House Flies Around Dairy and Other Barns

	Amount to use per 3 gallons water	
	Insecticide	Sugar
		pounds
Dipterex, 1 per cent powder	1½ cups	3
Dipterex, I per cent powder	Use dry	—
Malathion, 50 per cent emulsion concentrate	1 cup	2½
Malathion, 1 per cent powder or flakes	Use dry	—

BEEF CATTLE

The spraying recommendations for animals which will be slaughtered within 6 weeks are the same as for dairy cows.

Where resistant flies are a problem, use residual wall treatments of malathion as specified in dairy barns or diazinon as a wall spray. Use 16 pounds of 25 per cent wettable diazinon to 100 gallons of water or 13 ounces per 5 gallons of water. When the 25 per cent emulsion concentrate is used apply 2 gallons or 1½ pounds per 100 gallons of water. The addition of 20 pounds of sugar per 100 gallons of water has a distinct advantage. The lasting period is generally superior to that of malathion.

Baits may also be used in beef barns and other barns. Use any of those suggested in the table listing baits.

USEFUL SPECIALIZED EQUIPMENT

Automatic Treadle Sprayers

Automatic treadle sprayers are available in several models. Most of these operate by having animals walking over a small platform. The sprayer then

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* Associate professor of entomology.

Using Urea in Livestock Rations

One of the most widely discussed topics in the feed world today concerns the use of urea in the ration for livestock. Here University of Minnesota staff members review the use of this nonprotein, nitrogen-rich product which contains 2½ times as much nitrogen as pure protein.

Dairy Cattle . . .

One pound of feed-grade urea has the same amount of nitrogen as 2.62 pounds of protein. Very rich in nitrogen, urea is another source of protein for ruminants. The ruminant animal's rumen bacteria can build proteins from the nitrogen and other parts of the ration.

How efficiently urea is used for protein depends on several factors. Dairy cattle use it most efficiently when rations contain 9 to 12 per cent protein, bringing the total to about 18 per cent. Overfeeding urea results simply in the animal's eliminating any it can't use.

The makeup of the carbohydrate part of the ration also affects urea nitrogen utilization. Conversion of urea is poor when molasses or sugar is the chief energy source. Molasses, however, may be a good carrier of urea nitrogen if it's included in high-starch mixtures. But urea use will be poor if it is fed only with cellulose-rich feeds such as timothy and other low-protein grass hays. For most efficient use, urea should be fed in a ration that contains some readily available carbohydrates such as corn, barley, or other grains. These are needed to combine with the urea nitrogen to form protein.

Urea in pure form is poisonous. Cows have died after eating only a quarter pound of it undiluted by feed. However, much larger amounts have been fed in feed mixtures over long periods without ill effects.

Urea tends to form hard lumps when exposed to air, making it difficult to mix uniformly. This problem makes it a potential danger in cattle feed. For safe and efficient use by dairy cattle, the amount of urea fed should be no more than 3 per cent of the concentrate mixture—on a dry-matter basis—or no more than the amount needed to supply about a fourth of the protein in the ration. It is not recommended for calves under four months.

Whether it pays to feed urea in place of a high-protein concentrate such as soybean oilmeal will depend on prices. Remember: urea, unlike natural feedstuffs, provide no energy. Thus, the other ingredients in a ration must provide energy. Corn or other high-starch feed often is used. It takes about 100 pounds of corn or similar feed plus about 14 pounds of urea to provide as much protein and energy as 100 pounds of soybean oilmeal. Thus, urea's value as a protein replacement for soybean oilmeal or other high-protein concentrates will vary.—**Thor W. Gullickson, professor of dairy husbandry.**

Sheep . . .

Much roughage fed to Minnesota sheep is low quality and results in rations too low in protein for pregnant ewes or fattening lambs.

Pregnant Ewes—The South Dakota and Oklahoma Agricultural Experiment Stations fed pregnant ewes protein supplements with urea.

The supplements with as much as 10 per cent urea caused no bad effects on pregnant or lactating ewes and were not unpalatable. Weight gains during gestation, fleece weight, lambing percentage, weaning percentage, birth weight, and suckling lambs' gains were not affected by the type of protein supplement—whether it contained preformed protein (soybean oilmeal or cottonseed meal) or if urea provided part of the nitrogen. Supplements containing urea did not injure pregnant ewes.

Use of protein supplements containing urea becomes a matter of economics. The feed manufacturer will find using urea in protein supplements most advantageous when the price of soybean oilmeal, cottonseed meal or linseed meal is high in comparison to the grain price. It is not economical to use urea unless 1 pound of urea and about 6½ pounds of shelled corn cost less than 7 pounds of soybean oilmeal.

Urea has no energy, vitamins, minerals, or unidentified growth factors and we should regard it only as a partial replacement for protein-rich feeds.

Where pre-formed protein prices are high or when protein is in short supply, urea lets us stretch natural protein supplies.

Fattening Lambs—Urea-containing protein supplements for lambs is a different story. Nitrogen balance trials show urea can furnish part of the nitrogen in the lamb ration. It increased the ration's digestibility and the amount of nitrogen retained or protein formed in the animals' bodies. Oddly enough, however, in actual farm field conditions, when urea has been added to low-protein rations, the rate of gain or feed efficiency was not improved over that of "control" lambs fed the same low-protein ration without urea.

Eight years of research at the Cornell University Experiment Station found urea inefficient as a nitrogen source for fattening lambs. This was confirmed recently in tests at the Oklahoma Station.—**Robert M. Jordan, assistant professor of animal husbandry.**

Poultry . . .

When urea first came out 15 years ago, research was done on possible benefits of feeding it to chicks. The results were unpromising, probably because the bird's stomach is simple and not capable of using urea as larger animals can.—**Elton L. Johnson, professor and head of poultry department.**

Beef Cattle . . .

Urea nitrogen is most efficiently used by beef cattle when it gives up to—but not more than—a third of the total nitrogen in a ration; that is, about a fourth of the nitrogen in a supplemental feeding mixture. For example, a ration with 7 per cent protein can be brought up to 10 per cent protein by adding 1 per cent urea. Or a supplement with 30 per cent protein can be brought up to 40 per cent protein by adding 3.5 per cent urea.

Urea is poisonous at high levels and must be mixed thoroughly. Thus farm mixing of urea feeds is not recommended. State laws govern its use in commercial-mixed feeds.

Some regard urea as an "abnormal" ingredient, but recent Kansas State College experiments found it as part of the natural total nitrogen in several common feeds—oats, alfalfa, wheat by-products, and to some extent in oilmeals.

Properly made feeds containing urea are excellent for cattle. About 70,000 tons of urea feed supplement will be fed this year.—**Lester E. Hanson, professor of animal husbandry.**

MINNESOTA FEED SERVICE

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Hogs . . .

Since hogs have a different digestive system than cattle it was thought that urea could not replace protein in hog feeds. However, stale cattle feeds are occasionally fed hogs. Increased use of urea in cattle feeds made it necessary to find out how urea affected weanling pigs.

We found that adding 1.5 per cent urea to a low protein (10.6 per cent) ration had no effect on weanlings' eating or rate of gain. Pigs fed urea took 6 per cent more feed per pound of gain, however. Between 125- and 200-pound pigs on low-protein ration with 1 per cent urea ate 6.8 per cent more feed daily.

However, gains were the same for both rations and from 125 pounds up, urea-fed pigs took about 10 per cent more feed per pound of gain. There was no poisoning. Apparently urea does not now have a place in hog rations. However, we need not worry about poisoning pigs with cattle feeds containing low levels of urea, that is, 1 to 1.5 per cent urea. But cattle feeds are not well suited for hogs for other reasons.—**Lester E. Hanson, professor of animal husbandry.**

NEW PUBLICATIONS

The following publications have been recently revised by the University of Minnesota Agricultural Extension Service. Copies may be obtained from your local county agent or the Bulletin Room, Institute of Agriculture, University of Minnesota, St. Paul 1.

- "Home Fruit Spray Guide." Ext. Pam. 184.
- "The Home Lawn." Ext. Folder 165.
- "Weed Control in Minnesota, 1955." Ext. Folder 191.
- "Fruit Varieties for Minnesota." Ext. Bul. 224.
- "Insecticides." Ext. Bul. 263.

Preservatives for Grass Silage

Rodney Briggs*

Feed value can be lost in making grass silage just as easily as when trying to make hay. These losses can be reduced by using a preservative. Start with high-legume forage crops, properly preserved, and a valuable high quality feed is the result.

Silage, either corn or grass, is green material which has been pickled by the action of bacteria on fermentable sugars within the plant. This bacterial action produces acid which stops further fermentation and therefore prevents spoilage.

Under certain conditions good quality silage can be made without a preservative—if there is a high proportion of grass, air tight storage, and proper moisture content, and if it is well-packed. Since it is difficult to insure all these conditions, the use of a preservative is advisable.

Proper fermentation may sometimes be insured by delayed harvesting of forage crops. This practice, however, results in serious quality losses and does not always guarantee good silage.

In addition to insuring a high quality silage, preservatives will eliminate many dry matter losses and improve palatibility and intake.

There are two types of preservatives commonly used today:

1. Chemicals which produce acid, thus inhibiting fermentation.

2. Readily fermentable sugars which insure proper fermentation.

Acid-Producing Chemicals

Sodium metabisulfite, among the chemicals, has proved its great value as a silage preservative and will be widely used this year. Experiments and the observations of many farmers have indicated increased palatability in silage preserved with this chemical.

While it can be handled without danger to the operator, this dry white powder may be irritating to the eyes and nose. Consequently packing and leveling should be done between loads and not while the green material is being blown in.

Sodium metabisulfite must be evenly distributed throughout the green material. A funnel applicator located at the blower has been used successfully by many Minnesota farmers. Field application by attaching a hopper directly to a field chopper has also proved satisfactory.

The recommended rate of application is 8 to 10 pounds per ton of green material, but higher rates have produced no ill effects. The cost of sodium metabisulfite is under a dollar per ton of grass silage.

Fermentable Sugars

Molasses, which is high in carbohydrates and minerals, is in itself a good feed and insures palatibility in grass silage. When used in preserving grass silage, most of its food value is recovered in the silage. It comes in two forms, liquid and dry.

Liquid molasses, applied at 80 to 100 pounds per ton of green legumes or immature grasses, is best pumped to the top of the blower pipe as feeding at the fan or apron of the blower may clog the equipment. It can also be added at the throat of the blower. In a trench silo, it can be added by gravity flow from a container at the edge of the silo. Diluting with warm water or heating will make it flow better in cool weather.

Dry molasses can be spread on top of the load of green material or can be added at the auger or apron of the blower on stationary choppers. It is easier to work with, but the cost is higher than liquid molasses. Use 100 to 125 pounds of dry molasses per ton of high legume green material.

Other readily fermentable sugars used as preservatives are **corn and cobmeal, ground grain,** and **beet pulp.** While they do not preserve carotine or other nutrients quite as well as molasses or sodium metabisulfite, most of their feed value is recovered in the silage, and they do insure high quality silage.

The recommended rates of application of these preservatives depends on the grass and legume composition of the silage. With high-legume green material, use 200 to 250 pounds corn and cobmeal, 150 to 200 pounds of ground grain, and 100 to 150 pounds of beet pulp per ton.

These dry preservatives insure a good fermentation and reduce the moisture content of the green material being ensiled. They can be added on top of the load, on the wagon canvas, or may be added directly to the auger or apron of the blower or stationary chopper.

The preservative you use will depend on the cost of the material and the portion of the cost used in preservation. Eighty per cent or more of the feed value of molasses and dry grains is recovered in the silage; thus the preservation cost is small. Much fermentation is eliminated when sodium meta-

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* Rodney Briggs is associate professor and extension agronomist.

Hormones for Feeding Livestock

The word hormone is from the Greek and means "to excite." Many different hormones are produced by glands in the body. They move to the site of action via the blood stream. In some cases, they act directly and in others indirectly; that is, the hormone produced by one gland stimulates another gland to produce another hormone. There are many interesting inter-relationships between the hormones and they are imperfectly understood at present.

Hormones concerned with reproduction are called sex hormones. Female hormones are called estrogens and male are called androgens. Stilbestrol is a synthetic product with estrogenic activity. Other estrogens include estradiol and dienstrol. Testosterone is an androgen.

Hormone implants have been under study for many years. Only two have been approved by the Food and Drug Administration for use in meat production. One implant consists of di-ethyl-stilbestrol (commonly known as stilbestrol) in pellet form. Its use has been approved only for poultry and it has been used for several years. The other is a combination of progesterone and estradiol and it is approved for lambs only.

In general, estrogen and/or androgen implants stimulate cattle weight gains, but they have produced many disturbing side-effects and usually have reduced carcass value. Estrogenic implants in hogs have not improved gains or feed efficiency.

The feeding of hormones, both synthetic and natural, began more than 10 years ago when iodinated casein, a synthetic product with effects similar to those of thyroxin (the thyroid gland's hormone) was fed dairy cattle and other animals. Its use has been restricted by law and it is not generally fed.

A few years ago, Iowa State College workers demonstrated that several compounds found in feeds such as clover and alfalfa hay have estrogenic activity. They suggested this activity might have a favorable influence on growth and fattening performance of cattle and sheep.—**Lester E. Hanson, professorr of animal husbandry.**

BEEF CATTLE

The Iowa workers followed their findings with experiments in feeding the synthetic estrogen, stilbestrol, to fattening cattle. This led to the use of stilbestrol in cattle feeds. Results of the earlier Iowa experiments were summarized in the March **Minnesota Feed Service.** Further experiments are under way in Iowa's and in many other colleges' experiment stations and in the feed industry.

There have been some complaints that carcass quality is reduced when stilbestrol is fed. In all cases, there were no "control" or untreated animals. Thus, it is impossible to measure how accurate or well-founded such complaints are. A summary of experiments by feed industry researchers with nearly 400 fattening cattle—about half as "controls" and half fed stilbestrol—revealed no difference in carcass grade or yield from feeding stilbestrol. This supports the earlier Iowa results.

Eighteen experiment stations have projects under way and the issue of stilbestrol's effect on carcass quality should be well clarified within a year. Other stations' studies confirm the Iowa findings that cattle fed stilbestrol have no detectable quantity of residue of the substance in their tissues.—**Lester E. Hanson.**

SWINE

There is not much information on feeding these compounds to hogs. Purdue University reported one experiment in 1954 in which stilbestrol, and testosterone was fed to growing pigs. Adding stilbestrol or testosterone made no significant improvement in growth rate or feed efficiency over animals fed antibiotics. Feeding stilbestrol enlarged the teats of both males and females and caused swelling of the vulva in females.—**Lester E. Hanson.**

SHEEP

Stilbestrol given in a lamb fattening ration does not have the "kick" it does in beef fattening. However, both stilbestrol and progesterone-estradiol implants (Synovex) increased lambs' rate of gain about 1/10 pound a day in tests at the University of Minnesota West Central School and Experiment Station at Morris.

We compared stilbestrol and Synovex implants (Synovex contains 250 milligrams of progesterone and 10 milligrams of estradiol) and feeding various levels of stilbestrol in the ration. All the lambs were fed a standard Minnesota fattening ration of about equal parts of corn and alfalfa and a tenth pound of protein supplement. Lambs implanted with stilbestrol gained 33 per cent faster and with Synovex 22 per cent faster. Synovex-treated lambs produced carcasses as good as those of untreated lambs, but lambs receiving stilbestrol implants gave a somewhat lower grade carcass than untreated animals.

Current research at Morris indicates that various combinations of the male hormone, testosterone, and estradiol result in large increases in rate of gain.

Feeding stilbestrol, however, is an entirely different story. Researchers are still seeking the correct level to feed. Adding 0.1 milligram, 0.5 milligram, or 1.5 milligram did not significantly increase rate of gain or feed efficiency of the lambs at Morris. But, lambs fed stilbestrol—regardless of the level—produced higher grading, firmer carcasses that carried more finish.

The Iowa Experiment Station found a significant growth rate increase when 2 milligrams of stilbestrol were fed. But, lambs at the University of Minnesota being fed 2 milligrams stilbestrol each, daily, are gaining no faster than "control" lambs on the same diet but minus stilbestrol.

More research is needed in the field of hormones in livestock production. They show great promise. But, ill-advised and careless use of these substances in animal production can result only in losses to the producer and feed dealer.—**Robert M. Jordan, assistant professor of animal husbandry.**

DAIRY CATTLE

Unless a dairyman wants to induce an abortion in a pregnant heifer, he should be careful not to feed or implant stilbestrol in the animal. In tests at the University, six dairy heifers pregnant from an unknown breeding were injected with stilbestrol at the rate of 20 milligrams every other day. Each received a total of four injections, or 80 milligrams of stilbestrol. They aborted young judged to be about four months old. The animals soon resumed their normal estrous cycles and seemed to suffer no ill effects.—**Philip J. Dziuk, research fellow in dairy husbandry.**

September 12 and 13, 1955 are the dates set for the next Animal Nutrition Short Course on the St. Paul Campus of the University of Minnesota.

More than 200 people attended this outstanding course in 1954. The course is designed to bring the latest in feeding research and techniques to the attention of feed manufacturers, dealers, and others interested in animal feeding.

Feeding Pasture Crops as Soilage

Thor W. Gullickson, R. Dean Plowman, and Curtis Hildebrandt*

Little or nothing was gained in milk production or number of crop acres needed by feeding cows pasure crops as soilage as compared to letting them harvest the crop by the daily rotational plan of grazing.

This is the conclusion we reached in our 1954 experiments at the University of Minnesota Agricultural Experiment Station at Rosemount. These results were unlike those obtained in 1953. The 1954 experiment was slightly different than 1953. The objective was the same—comparison of using pasture as soilage or grazing it on the daily rotational plan.

The experiment ran 84 days, June 5 through August 29. Sixteen purebred Holstein cows, all lactating, were used. They were divided as nearly as possible into two equal groups based on their age, weight, stage of lactation and/or gestation, persistency of milking, and amount of milk produced daily.

One group was fed soilage; the other was rotated daily having access to a new area of fresh forage each day. The soilage group was placed in a dry lot. Once a day the same kind of forage available to the pasture group was cut and brought to them. This freshly cut forage is called soilage.

The plan of operation differed significantly from 1953 in that only one kind of crop—an alfalfa-bromegrass mixture—was used. This crop, unlike some of those fed in 1953, was never over 16-18 inches tall. A total of 9.1 acres of such crop was available to each group.

Utilization of the crop by each group was started along one side of the plot, and each day it progressed toward the other side. When the regrowth on the areas first harvested by either method reached the desired stage of development, the operation was repeated. The crop on the portion of the respective plots not utilized in this manner was cut and made into silage.

A total of 14,864 pounds of dry matter in the form of silage was obtained from the unused soilage plots, while 19,011 pounds, or 4,147 pounds more, were obtained from the unused pasture plots.

Milking cows in both groups were fed one pound of grain per 6 pounds of milk produced daily. Cows in both groups had free access to the same kind of hay the first month; controlled amounts during July; but none in August. In August hay was eliminated entirely for both groups because during hot weather cows in the pasture group preferred to stand and eat hay rather than to go out to graze.

Table 1. Amounts of Hay Consumed by Cows Fed Soilage and by Cows on Pasture

Month	Soilage group	Pasture group
	pounds	pounds
June	270	654
July	617	1,463
August	0	0
Total	887	2,117

Soilage Needed

Due to the wide range in the amount of forage consumed daily by cows (table 1) in the soilage group (100-190 pounds), it was difficult or impossible to provide the exact amount of soilage needed every day. Any excess provided became unpalatable by the next day and was largely wasted. A total of 3,116 pounds of dry matter was lost in this manner during the season. It is probable that losses cannot be eliminated entirely, but percentage-wise they would probably be smaller with a larger herd.

The differences in gain or loss in weight are perhaps not significant; they do, however, show a tendency for cows in the pasture group to lose weight. Table 2 indicates the average weight of cows in each group at the start, each month, and at the end of the experiment.

Daily milk production was nearly the same for cows in both groups at the start, but as the season advanced those fed soilage tended to "hold up" slightly better (table 3). They also produced a total of 1,492 pounds, or 6 per cent, more milk during the season. This amount might be of economic importance if it can be obtained in a herd where the extra costs involved can be distributed over a larger number of animals. The average fat percentage in the milk was essentially the same for cows in both groups.

Table 2. Weights of Cows, During Period of the Experiment

Average weight at	Soilage group	Pasture group
	pounds	pounds
Start	1,309	1,328
End of June	1,372	1,350
End of July	1,347	1,333
End of season	1,329	1,304
Average	1,339	1,329
Gain or loss	+20	—24

Table 3. Average Daily Milk Production per Cow for Animals in Both Groups by Monthly Periods

Item	Soilage group	Pasture group
	pounds	pounds
At start	45.1	44.8
June	42.7	38.5
July	35.8	34.0
August	29.5	28.7
Average	38.3	36.5

The number of acres of crop harvested each month by each group is shown in table 4. Some areas of the 9.1 acres alloted to each group were harvested several times during the season which accounts for the large acreages utilized.

Table 4. Acres of Crop Utilized by Each Group During the Season

Month	Soilage group	Pasture group
	acres	acres
June	3.96	3.12
July	4.88	5.47
August	8.17	8.15
Total	17.01	16.74
Difference	0.27 acre	

In total acres of pasturage 0.27 acre more was required for soilage than for the pasture group. In addition, as mentioned earlier, 4,147 pounds more dry matter was harvested as silage from the pasture group plot. However, this advantage is partly offset by the fact that they ate 1,230 pounds more hay and would, therefore, be expected to eat less pasturage leaving more of it for silage.

Tall vs. Short Crops

The smaller acreage needed by the pasture group agrees closely with results in 1953 during the periods when similarly short crops were being utilized. The great difference in favor of soilage in 1953, in yields of milk per acre and acreage of crops required to feed the herd, was evident only when tall crops, i.e. green oats and sudangrass, were being utilized. In addition, when tall plants were pastured, 50 per cent or even more of the crop was wasted by trampling and selective grazing. When fed as soilage the entire

* The authors are professor of dairy husbandry, research assistant, and herdsman, Rosemount, respectively.

plant was utilized and waste was negligible. The waste from trampling of short crops is comparatively small, and evidently their yields are increased by being grazed down more closely than they can be clipped by a forage harvester.

More Equipment Needed

Considerably more equipment and labor was needed both years for the soilage group than for cows pastured. A direct-cut forage chopper, a mobile feed box, and a three- or four-plow tractor was needed to feed the soilage. The soilage was cut and hauled to the feed lot once daily, the entire operation taking about 20 minutes. On the other hand, only the electrical fencing equipment was needed to confine the pasture group in the area to be grazed each day. Shifting the fence to a new area once daily took about 10 minutes.

Fortunately, unlike in 1953, little or no trouble was experienced with operating any of the equipment involved in the project. Spoilage of soilage in the wagon from heating was also much reduced probably mainly because of the smaller loads fed. The A frame, built the entire length of the feed box, permitted air to circulate through the green forage. This also was a factor. As in 1953 no bloating occurred in either group. Therefore, the experiment offered no information regarding relationship of either system to bloating.

Based on the experiences and results from the past two seasons it appears that nothing is to be gained from utilizing low growing or short crops as soilage instead of as pasture.

It is true that during the 1954 season, cows fed soilage from such crops produced 6 per cent more milk than those on pasture, or an average of 186.5 pounds more per cow. On the other hand, it required more land and considerably more labor and equipment to carry on this operation. Considered on a 25-cow basis, a total of only 4,662 pounds more milk would be obtained during the 86-day period. At $3.00 per hundredweight this would yield 139.88. It is questionable whether this amount is large enough to be economically important considering the greater cost of operating the soilage system as compared with the daily rotational plan of grazing.

FLY CONTROL FOR CATTLE — Continued from page 1

squirts a small amount of spray on the backs and legs of the animals. For effective treatment the platform sprayer must be located where the cattle will pass through it at least once a day.

The usual procedure is to fence off a water tank so that the animals can get to the water only by passing through the sprayer. A lane to the barn may also be used. The spray material may be Crag fly repellent plus ½ per cent pyrethrins or 1.0 per cent pyrethrins plus an additional material, usually known as an activator (piperonyl butoxide, MGK 264, or sulfoxide). These materials are oil sprays containing no water. Water should not be used in this equipment. The cost of treatment usually averages about 1 to 1½ cents per day per animal.

Cable-Type Back Rubbers

This device is merely an improved rubbing device for animals. The back rubber may be entirely homemade with burlap or it may be purchased from certain equipment companies. The rubbing device should be located near drinking water or a salt lick. Too many trees or other rubbing spots will reduce the effectiveness of the back rubber.

The first time about 1 gallon of insecticide will be required to soak the burlap. Replenish with insecticide every 10 days to 2 weeks. Use 5 per cent DDT in fuel oil on beef cattle. The use of repellents is generally too costly unless deer flies, horseflies, or black flies are quite abundant.

Insect Electrocuters

With so many house flies resistant to DDT and chemically related chlorinated hydrocarbons, there has been increased interest in nonchemical control measures. One of these is the use of insect electrocutors on windows and doors of barns. These devices are useful for several years and minimize the need for insecticidal treatment. Their value is dependent to a great extent on proper location and the number of flies in the immediate area. As in the case of chemical control, sanitation measures must accompany the use of insect electrocuters.

PRESERVATIVES

(Continued from page 3)

bisulfite is used, so its cost is offset by decreased fermentation losses in the silage.

It's good business to add preservatives: (1) to add sufficient sugars to insure proper fermentation or inhibit fermentation; (2) to reduce the possibility of spoilage; (3) to eliminate haphazard estimation of wilting, allowing for direct cutting of forage crops; (4) to make the silage taste better and thus the cows eat more; and (5) to reduce losses of total feed value and dry matter.

In This Issue

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