



PASTURE IMPROVEMENT FOR CHEAPER PRODUCTION

(Eastern Canada)

The Importance of Pasture

THE carrying capacity of our pastures has a most important bearing on war time economy of production of such essential products as meats and milk. Pasture constitutes about 41 per cent of the 29,625,137 acres of land devoted to the growing of field crops and grazing in Eastern Canada. Much of this pasture has a relatively low carrying capacity with an average of about one animal to four acres. With correct fertilization and management, under favourable conditions, one animal should be carried on from one to two acres.

Recommendations for Permanent Pasture

Untillable pastures.—One of the first steps in the improvement of rough untillable pastures is to remove shrub and brush growth and this may be done most satisfactorily in the late summer or fall. For this purpose a mowing machine, hay scythe or a short bladed brush scythe or for larger brush, an axe, may be used. All weeds should be kept cut to prevent seed setting.

Where the sward is very thin and very little grass or clover is present, it is often possible to improve the stand of herbage by broadcasting a seed mixture of: orchard grass, 4 pounds, red top, 2 pounds, timothy, 8 pounds, white clover, 1 pound, sweet clover or red clover, 6 pounds. The soil should be stirred immediately after seeding with a disk, spike-tooth or brush harrow in order to provide some covering for the seed. To be successful the work should be done in the very early spring while the ground is soft and moist.

The fertility may be improved and the resistance of the sod to white grub injury increased by the judicious use of commercial fertilizer. Commercial fertilizer or manure may be applied for untillable pastures on the same basis as is recommended below for tillable pastures.

Permanent pastures which are tillable.—The productivity of permanent pastures which are tillable may be maintained or increased by suitable cultural practices, the use of commercial fertilizers or manure and by careful management of the pasture.

Cultural practices

- (a) Mow to prevent weeds from going to seed and to remove coarse herbage and shrubs.
- (b) Harrow with chain or spike-tooth harrow to spread animal droppings.

- (c) Plough when desirable species become thin and weeds make up a great percentage of the stand. The ploughing should be done in August followed by disking to break up the sod and then cultivating with spring-tooth or stiff-tooth cultivator until late fall. The disking and cultivating should be particularly thorough where the sod has been killed by white grubs. Where manure is available it should be applied at this time at the rate of 10 to 12 tons per acre and ploughed in. In the spring the land should be cultivated or disked and after applying a dressing of commercial fertilizer the area may be seeded.

Fertilizer to use when reseeding.—If manure has been applied in the previous fall apply 300 pounds per acre of superphosphate and harrow it in just before seeding. If no manure has been applied, use a 2-12-6 commercial fertilizer at the rate of 500 pounds per acre, broadcast, and harrow in just previous to seeding.

Seed mixtures for hay and pastures.—Where hay is to be harvested the first year or two and the land subsequently pastured for an indefinite period, seed mixtures to meet varying conditions may be sown with a nurse crop of wheat, oats or barley. If desired the nurse crop may be grazed when the crop is six to eight inches high without injuring the new seeding or it may be harvested for hay or grain.

1. *Seed mixtures for soil where alfalfa can be grown successfully.*—Eight pounds timothy, 3 pounds red clover, 4 pounds alfalfa, 1 pound alsike, 3 pounds Kentucky or Canada blue grass, 2 pounds red top and 1 pound wild white clover per acre.

2. *Seed mixtures for acid soil where alfalfa is not adapted.*—Eight pounds timothy, 5 pounds red clover, 3 pounds alsike, 3 pounds Kentucky or Canada blue grass, 2 pounds red top and 1 pound wild white clover per acre.

Manure and Fertilizer for Permanent Pastures

Permanent pastures may be top dressed with eight to ten tons per acre of farmyard manure in the fall. The manure should be harrowed to spread it evenly and work it into the sward. Where pastures are broken up for reseeding a somewhat heavier application may be made in order to promote a prompt and vigorous re-establishment of sod and herbage. A close firm sod is an important safeguard against injury by white grubs. Fertilizers are usually preferable to manure for pasture treatment because of their greater economy of labour in application and also their adaptability to various plant nutrient requirements.

For grass pastures on clay loam soils a fertilizer mixture of 100 pounds of sulphate of ammonia applied annually and 400 pounds of superphosphate and 50 pounds of muriate of potash every four years or equivalent nutrients in other carriers may be used. If preferable 500 pounds of a commercial 2-12-6 mixture may be applied every four years with 100 pounds sulphate of ammonia in the intervening years. On sandy soils the potash may be increased slightly.

Where clovers are prevalent in the sward, 500 pounds of superphosphate alone or an equal amount of 0-16-6 fertilizer may be all the fertilizer necessary.

Lime for permanent arable pastures.—Soil acidity may be lessened by periodic applications of lime. Usually one to two tons of ground limestone per acre once every four years will encourage the growth of red clover and alfalfa. For wild white clover and most grasses, little or no limestone is required except on strongly acid soil.

Management of permanent arable pastures.—Careful management should be planned to provide against any temporary shortage or surplus of pasture in order to secure the maximum production of both pasture and animal products throughout the season. Close grazing is recommended to prevent coarse growth

and thus keep the herbage in as palatable and nutritious a condition as possible. If there is too much growth for the available live stock to graze it uniformly, or if it becomes weedy or patchy the pasture should be mowed. Mowing when the grasses are just beginning to head out will promote an aftermath of tender nutritious herbage as well as prevent a coarse stand of mature plants. The live stock will consume much of the mown grass left on the field.

Pasture in the Farm Rotation

Where there is no permanent pasture or an insufficient area to provide summer feed for grazing stock, provision must be made to utilize part of the regular farm rotation for pasture. For instance under mixed-farming conditions a five-year rotation of hoed crop, grain, hay, hay or pasture, grain, is common. In such a rotation the area in grass and legumes in the fourth year may be used for pasture and also if the first crop of hay in the third year of the rotation is cut early, a good growth of aftermath should be produced, part or all of which may be used for pasture as necessity demands.

Special rotation for pasture throughout the whole summer season.—Where intensive farming is practised and high production of live-stock products must be maintained it may prove economical to provide a special rotation for pasture. A section of the farm, perhaps close to the buildings, may be divided into four fields with crops rotated as follows—1st year, oats and sudan grass seeded to clover and timothy (and alfalfa where it will grow well), 2nd year, clover or alfalfa, 3rd year timothy or alfalfa, 4th year timothy or alfalfa. One quarter of the area must be ploughed, cultivated and seeded each year; thus the production must be sufficiently higher than that from permanent pasture to pay for the extra work of reseeding.

All four crops may be pastured. The clover or alfalfa in the second year will produce early pasture while the timothy or alfalfa in the third and fourth year will come in somewhat later. It may be advantageous to cut part of these areas for hay if the whole area is not needed for pasture in the early part of the season. If the hay is cut early the aftermath will supply excellent pasture for the latter part of the season. About July when the production of perennial grasses and legumes is reduced, the oats and sudan grass should provide good pasture. The mixture may be grazed from the time the oats are about eight inches high and if not pastured too closely the new seeding should not be injured. Following this the legumes and grasses will have made sufficient recovery to provide late fall pasture and thus a uniform all-season pasture may be supplied.

Supplementary Pasture for the Midsummer Period

Under conditions which prevail in Eastern Canada permanent pastures and pastures in a crop rotation are subject to a period of low production in mid-summer. It is necessary to prepare for the shortage of feed at this time by seeding some annual crop or a mixture of annuals. A crop should be selected which is adapted to the soil and climatic conditions of the district and consideration must also be given to the season of the year in which the pasture is required.

Suitable annual or supplementary crops

1. Fall rye seeded at 2 bushels per acre for fall and early spring pasture. Following spring pasturing the land may be ploughed, cultivated and seeded with rape at 3 to 5 pounds per acre for later pasture.
2. Oats seeded alone at 3 bushels per acre may be grazed from 4 to 5 weeks after seeding. The oats may be seeded any time the land is ready but not later than June 10 to 15. The time of seeding may be adjusted to suit the pasture requirement.

3. While oats may be seeded alone it is often more desirable to seed them in a mixture of oats at 2 bushels plus sudan grass at 20 pounds per acre. This mixture may be seeded about the end of May and the oats which grow better in the cool conditions of the early season will provide early pasture while the sudan grass will provide grazing when the production of oats is considerably reduced. When this mixture is used as a nurse crop the rate should be reduced to $1\frac{1}{2}$ bushels of oats plus 15 pounds of sudan grass.
4. Oats at 2 bushels plus sweet clover at 15 pounds.
5. Oats at 2 bushels plus peas at 1 bushel—in the Maritimes and Quebec.
6. Millet at 20 to 30 pounds per acre for dairy cattle.
7. Rape seeded at 3 to 5 pounds per acre any time from early spring to July provides very good pasture in eight to ten weeks after seeding and is suitable for sheep, hogs and beef cattle.
8. Corn may be used also to provide supplementary feed. This crop may be fed as green feed during the pasture season or ensiled in the fall and fed as "summer silage" the following year.

There are many other crops which may be useful as emergency pasture but the above are more commonly used and give good results.

Management of Live Stock on Pastures

Stock should be turned on pasture as early as growth, land and weather conditions will allow. If there is little growth and the land is soft, excessive damage to the sod may result from too early grazing. If the stock is turned out too late, valuable early grazing is lost and the growth gets too far ahead of the animals. The most suitable time is when the grass is about four inches high. Beef cattle and sheep can stand more inclement spring weather than dairy cows. These animals may be pastured together in the proportion of one beef animal to five sheep. In this way the pasture may be grazed more uniformly, resulting in a better utilization of the herbage. Losses in weight due to the laxative effect of the fresh grass may be reduced if the stock can obtain old grass or dry hay to supplement the pasture when they are first turned out.

Dairy cattle should be carefully handled in the early spring. They should be turned out in the daytime only, until the weather becomes warmer. They require an abundance of fresh, green herbage and consequently should have fresh pastures as frequently as possible.

Shelter in the form of shade trees, an adequate supply of good water and salt should be provided at all times. Iodized salt may be used wherever there is an iodine deficiency. The salt should be moved from place to place in the pasture so as to avoid over-grazing and soiling in any one section.

Bloating may cause trouble particularly in the late summer and fall when animals have access to rapidly-growing or frozen aftermath and volunteer crops. As a precaution, animals should be well fed before turning them on such pastures and should not be left on very long for the first few days.

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