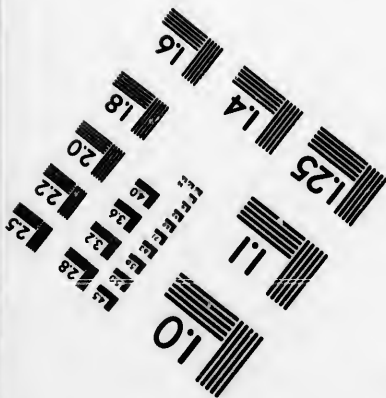
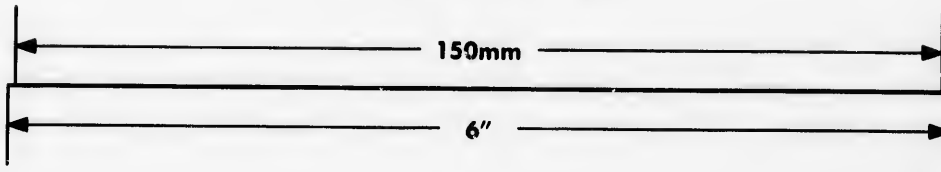
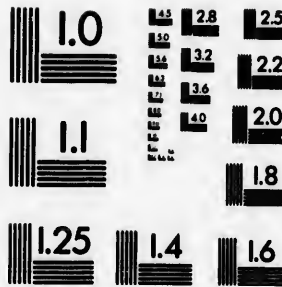
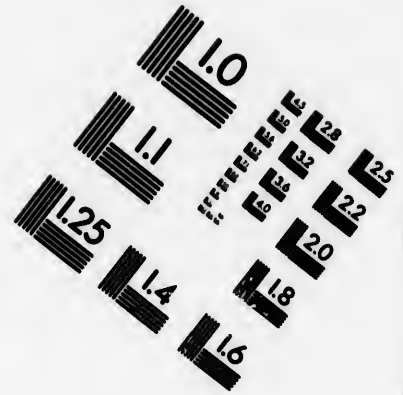
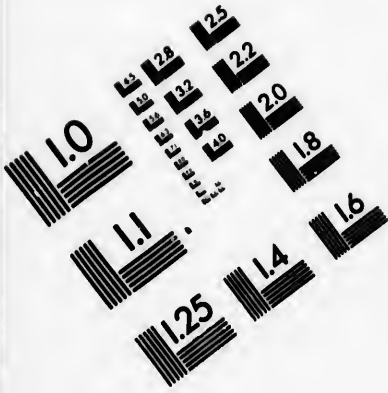


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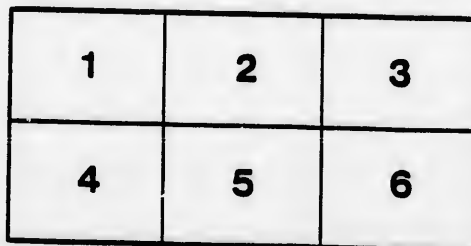
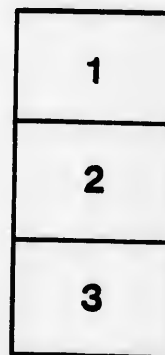
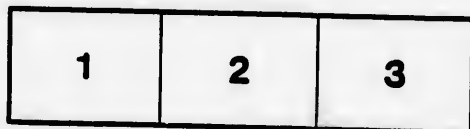
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ONTARIO AGRICULTURAL COLLEGE
EXPERIMENT STATION

BULLETIN LXXIV.

RAPE CULTURE

BY THOMAS SHAW, PROFESSOR OF AGRICULTURE, AND
O. A. ZAVITZ, B. S. A., EXPERIMENTALIST.

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BULLETIN LXXIV

RAPE CULTURE

The principal objects of this Bulletin are: 1. To call the attention of the farmers to the value of the rape crop to the agriculture of Canada. 2. To make known to them the various uses to which it may be put, viewed from the standpoint of our experience with it at this station. 3. To speak of the best modes of growing it under our conditions of soil and climate, so far as we have been able to ascertain these up to the present time. Since Bulletin LX was issued we have gained not a little information in reference to the growth of this plant, the uses to which it may be put and the modes of feeding it; the information thus gleaned is made prominent in the Bulletin.

DESCRIPTION OF RAPE. As many persons do not know what rape is, a brief description of the plant may be necessary. It bears a close resemblance to the Swede turnip in the early stages of its growth, but it usually attains a greater height than the turnip and produces more of stem and leaves. It has a fusiform and stringy root while that of the turnip is bulbous. On average soils, when grown in drills it usually reaches the height of from one to two feet, but on soils very rich in vegetable matter it sometimes attains the height of at least three feet. There are several varieties of rape, but the only kind grown as a pasture in this country is known as the Dwarf Essex.

ADAPTABILITY TO CLIMATE. Like the turnip rape is adapted to temperate climates. In all probability it will be found to grow in temperatures that are inclined to be cool rather than warm. It seems to grow more vigorously in our climate in the late rather than the early summer, and it continues to grow until the time of severe frosts when not matured at an earlier period. It is scarcely probable that rape will live through the winter in this latitude and yet retain sufficient vigor to produce a crop of seed the following summer as in Great Britain. In our experience much of it has perished from the intensity of the frosts.

ADAPTABILITY OF SOILS. The most suitable soils for growing rape are fairly moist, free-working loams, rich in organic matter. Black loams are very suitable after the plants once get a start in them owing to the large amount of humus which they contain. Muck swamps when drained yield magnificent crops, and the rape

grown upon them tends to reduce the excess of organic matter which they contain. Soils that are suitable for growing good crops of turnips and corn will also be found well adapted in most instances to the growing of rape. It will not grow well on stiff clays, poor sands or on any kind of soil deficient in plant food.

PLACE IN THE ROTATION. As rape is an excellent cleaning crop when grown in drills and cultivated, it may with much advantage be placed between two crops of grain. As it luxuriates in soils abounding in vegetable matter it may be grown with much success on an overturned sod, inverted in the autumn or in the spring, or just after cutting the first crop of clover. We have obtained excellent results after sod overturned in August and sown with rye, cut green, and then followed by rape.

PREPARATION OF THE SOIL. The preparation of the soil will to some extent depend upon the rotation. When rape is the only crop grown and the land is not foul, thorough spring cultivation will be found sufficient. When the land requires cleaning autumn cultivation followed by frequent stirring of the soil in the spring will be found effective in reducing weed life and in securing that fineness of tilth and retention of moisture so helpful in the growth of rape. A favorite method with us is to sow a crop of rye in September, to cut it when well out in head with the binder for winter fodder, or when in the blossom, to be made into silage. But it would also serve a good purpose to sow the rye in August and pasture fall and spring until the first of June. After the rye in either case the land is at once prepared for rape. The preparation consists in plowing carefully, rolling as soon as plowed, harrowing once a week and making the land into drills from 22 to 24 inches apart just before sowing the rape. When rape is grown as a catch-crop it may be sown broadcast or in drills after the removal of the previous crop. When sown broadcast the ground may be turned over with the gang-plow, but when grown in drills and cultivated the ordinary plow should be used.

FERTILISERS FOR RAPE. Although rape in an average season will give a fair return from ordinary land, it is unusually responsive to large applications of farmyard manure. In average soils therefore it is more than probable that the application of a complete fertiliser will give good results, but in our experience the largest increase of crop has been obtained from the application of nitrate of soda and the next largest from the application of salt.

SEED AND SOWING. The most suitable time for sowing rape in nearly all parts of Ontario is from June 25th to July 5th, although a fair crop may be obtained when it is sown earlier, and a full crop may sometimes be grown as late as the end of July. For catch crops it should be sown as soon as possible after the previous crop has been removed.

The mode of sowing and the amount of seed used will depend upon the object sought. When the ground does not require cleaning and also on muck swamps and humus soils generally it may be sown broadcast at the rate of 3 to 5 pounds of seed per acre. When sown as a catch crop or for green manure similar amounts will suffice, and the mode of sowing is the same. When sown in drills from 1 to 2 pounds of seed may be used, according to the condition of the ground. The seed is ordinarily sown with a turnip drill which puts in two rows at a time. It may be obtained from any of our leading seedsmen and usually at a cost not exceeding 10 cents per pound.

CULTIVATION. When the rough leaf has made a good start in the rape the cultivator may be introduced. It should run as close to the line of the rows as is consistent with the safety of the plants, and the cultivation should be frequent until the tops of the rape have made a near approach between the rows.

When the land is fairly clean no hand-hoeing is required, but when it is foul it will be necessary to go along the line of the drill with the hand-hoe once or twice to remove weeds which need not of necessity cost more than \$1 per acre. No attention is given ordinarily to thinning rape.

OUR EXPERIENCE WITH RAPE. In 1889 we grew 12 acres of rape at this station for pasture. In 1890 some 54 acres were grown for the same purpose and in 1891 about 40 acres. 10 acres were grown as a catch crop in 1890, and 6 acres in 1891. A large number of plots were also grown each year by way of experiment.

The following are the chief of these experiments: (1) Rape grown on four kinds of soil with and without salt; (2) Rape grown in drills as against flat cultivation; (3) Rape grown in drills as against broadcast seeding; (4) Rape grown in drills at different distances apart; (5) Using different quantities of seed per acre; (6) Thinning the plants to different distances in the drills; (7) Applying different fertilisers to ascertain their respective values; (8) Feeding lambs upon rape grown after fall wheat; (9) Testing the amount of pasture furnished by a single crop of rape grown under favorable conditions; (10) Pasturing lambs upon rape alone, rape with a supplement of oats and rape with access to a grass pasture; (11) Pasturing swine upon rape alone; (12) Feeding rape as a soiling crop.

The results of these experiments we hope to give in summarised detail at some future time. In the meantime we may mention that in our experience flat cultivation in drills has given somewhat larger returns than ridge cultivation; that larger crops can be obtained from rape grown in drills than broadcast; that salt and nitrate of soda are serviceable as fertilisers for rape; that oats do not seem to render much service when fed along with rape that is being pastured by lambs, and that rape and old meadow pasture are superior to rape alone as a pasture for lambs.

THE USES OF RAPE. Rape is valuable as a pasture ; as a catch crop ; as a green manure, and as a cleaning crop.

1. Rape as a *pasture*. Rape is an excellent pasture for sheep and lambs and for cattle that are being fattened, and so far as we can judge from our limited experience, it will also furnish good pasture for swine. The nutritive ratio of green rape as given by Wolf is 1:2.9, while that of red clover in blossom is only 1:5.7. All things considered the value of rape for fattening is from two to three times greater than that of one cutting of a crop of clover of a similar area.

In 1889 we pastured 48 lambs on rape ; in 1890, 537 head, and in 1891, 666 head. A number of these in each instance were carried on into the winter after the season for pasturing was over, and it was found that they fed well when taken off the rape and put into winter quarters.

In our experience of three years in growing rape we find that one acre will pasture on an average 10 to 16 lambs from 2 to 2½ months when rye grown for fodder, has preceded the rape the same season. When grown on ground that had not been cropped previously the same season, all the conditions being favorable, we found that one acre of rape would pasture 36 to 37 head of lambs for 2 months, and that it increased the live weight of the lambs 762 pounds, which at 5 cents per pound would put the food value of the rape at \$38.10 per acre. In our experience the lowest average gain made per month by any considerable number of lambs pasturing upon rape alone was 7.80 pounds, and the highest 12.60 pounds.

In 1890 the average price paid for 48 lambs when bought October 9th was \$3.85 per head. They were sold the following March for the Halifax market at \$7.71 per head. In 1890 the average price paid for 537 lambs when delivered at this station in September and October was \$3.76 per head. The average price received for 364 head shipped to Buffalo on December 19th was \$5.54. The following May 100 head shipped to Liverpool sold in that market at \$11.79 per head. A limited number of choice ones were selected and fed on through the summer. Two of these were taken to the American Fat Stock Show at Chicago and won first and second prizes respectively in their classes in continental competition.

Last year 666 head were purchased in Prince Edward Island, eastern Ontario and Toronto. The average price paid was \$3.15 when laid down at our station. The average price for which they were sold in the months of January, February, March, April and May was \$5.73. They went to the markets of Ontario, the United States and England. The profits on the lambs bought in 1889 and 1890 were highly satisfactory as may be gleaned from the reports already published concerning them. The same is also true of those purchased in

1891 as will be shown in the bulletin to come after this one, although they were considerably below the average of Canadian lambs in quality and breeding.

2. Rape as a *catch* crop. The extent to which rape may be grown as a catch crop is only limited by the desires of the farmer and the nature of the season as to the presence or absence of moisture. It may follow any grain crop that has been reaped early and that has been sown with grasses or clovers. In 1891 we grew rape in drills on 2.18 acres of land which had already produced an extraordinary crop of wheat. 60 lambs were pastured on the rape grown upon it for 25 days without any additional food. The aggregate increase in live weight was at the rate of 179 pounds per acre, which at 5 cents per pound gives \$8.95 as the food value of the rape without considering the increase in value of the original weight of carcass.

3. Rape as a *soiling* crop. Our experience with rape as a soiling crop is somewhat limited, but we have found that when it is cut before the snow falls and put up in heaps of some size in the field it will keep for several weeks. It may then be drawn from these heaps when wanted and fed to animals indoors. Although milch cows cannot be pastured upon rape owing to the taint which it would give the milk we have good reasons for believing that if it is carried and fed to the cows after each milking the results will be satisfactory.

4. Rape as a *green manure*. Although our experience in growing rape as a green manure is limited, there need be no doubt as to its pre-eminent adaptability for that purpose especially when grown as a catch crop. The roots permeate the soil and the plants when not matured will continue to grow until the time of hard frost.

5. Rape as a *cleaning* crop. As a cleaning crop we have found none that will compare with rape in all round effectiveness. On soils suitable to its growth almost any of the more noxious forms of weed life can be eradicated in a single season, with wise management, except in so far as the seeds of the same remain in the ground without germination.

PRECAUTIONS TO BE OBSERVED IN GROWING RAPE. Cattle and sheep should never be turned upon rape when hungry lest they eat too freely of it. When sheep are put upon it they may be left there, but when they have free access to a pasture they will probably do better. They should have salt at will but usually do not require grain. On very frosty mornings, they should be kept off the rape for a time. The owners of pure-bred stock should use much care when pasturing valuable animals on rape.

CONCLUSIONS.

1. That in nearly all the cultivable portions of the Dominion the climatic conditions will be found suitable to the growing of rape.
 2. That a large proportion of the soil of Ontario is well adapted to the growth of rape.
 3. That rape is specially valuable as a pasture for fattening sheep and lambs owing to the season of the year at which it grows, and to its high feeding value.
 4. That it is an excellent food when preparing lambs for winter fattening.
 5. That one acre of rape grown in drills immediately after a crop of rye cut as a green food will pasture from 10 to 16 lambs for from 2 to 2½ months, and that when grown as the sole crop of the season under favorable conditions it will sustain a much larger number.
 6. That ordinary grade lambs when pastured on rape without any other food supplement will make an average gain of 10 pounds per month.
 7. That rape is admirably adapted for growing as a catch crop to be fed off or plowed under as a green manure.
 8. That rape as a cleaning crop is probably without a rival in our present system of agriculture.
 9. That much care and prudence must be exercised in pasturing animals on rape or serious losses may follow.
 10. That rape is not an exhaustive crop on the soil when pastured off, as what has been taken from the cultivable area is returned to it and something in addition.
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