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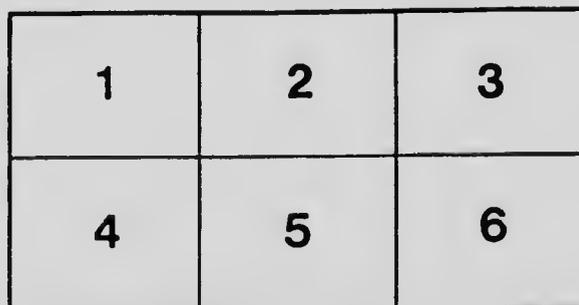
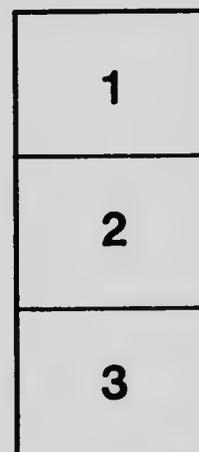
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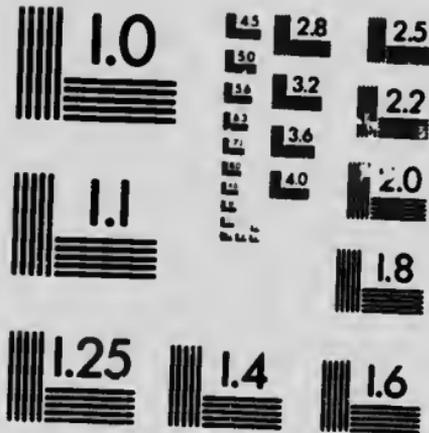
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DEPARTMENT OF AGRICULTURE  
CENTRAL EXPERIMENTAL FARM  
OTTAWA, CANADA

# THE RAPE PLANT

*(Brassica napus, Linn.)*

ITS CULTURE, USE AND VALUE

BY

J. H. GRISDALE, B. Agr.  
*Agriculturist of the Central Experimental Farm*

BULLETIN No. 42

MAY, 1903

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Published by direction of the Hon. SYDNEY A. FISHER, Minister of Agriculture, Ottawa, Ont.

To the Honourable  
The Minister of Agriculture.

SIR,—I have the honour to submit for your approval, Bulletin No. 42, which has been prepared by Mr. J. H. Grisdale, Agriculturist of the Central Experimental Farm.

In this bulletin the cultivation, use and value of the Rape plant is discussed and its usefulness for forage purposes for most classes of stock demonstrated. The best methods of cultivation are submitted, also the cost of growing this crop. Some particulars are also given as to the results obtained at the Central Experimental Farm in the feeding of this plant to swine and steers.

It is hoped that the information given in this bulletin will be useful to farmers and stockmen throughout the country.

I have the honour to be,  
Your obedient servant,

WM. SAUNDERS,  
*Director Experimental Farms.*

OTTAWA, May 20, 1903.

# RAPE

(*Brassica napus*, Linn.)

## THE RAPE PLANT, ITS CULTURE, USE AND VALUE

(By J. H. GRIDALE, *B. Agr., Agriculturist.*)

Among all forage plants possible and profitable of cultivation in Canada none seems worthier of a more extensive use than rape. It is simple of culture; it makes a strong, rapid growth; it adapts itself quite readily to different soils and to various climatic conditions; it responds vigorously to fertilizer and to good cultivation; and, most important of all its good qualities, it is a palatable, wholesome and nutritious green food for all kinds of live stock on the average Canadian farm.

### THE PLANT.

Rape stems and leaves resemble those of Swedish turnips or ruta-bagas, but the roots are like those of cabbage. The leaves are numerous, smooth, more or less fleshy, irregular in outline and covered with a fine bluish bloom. The plant grows to a height of from one to four feet, according to soil and season.

### VARIETIES.

The variety most commonly used in Canada is the Dwarf Essex. Several other sorts, most notably Dwarf Victoria and Broad Leaved, have been brought forward, but have not, on trial, been found to equal the Dwarf Essex in yield or in power of resistance to drought or flood.

### SEED.

Two varieties used as forage plants are biennial, but do not, generally speaking, through the winter in Canada, unless it be in certain parts of British Columbia. Seed, therefore, is imported and is generally good. Occasionally, however, seed of the annual variety, or Bird Seed Rape, is sold in the place of the Dwarf Essex or other biennial sorts, causing considerable loss to the stockman. The seedsman from whom the rape seed is secured should, therefore, be required to guarantee it as being that of Dwarf Essex.

### SUITABLE SOILS:

Rape in the farm economy may be classed with root or hoed crops. It will grow on almost any kind of arable land. It does best, however, on soils rich in plant food and full of humus or vegetable matter. It should, therefore, be sown on fields prepared as they would be for roots or corn. Sod, to give a good crop of rape, must be left to rot for some time after ploughing before sowing rape. It should be harrowed at frequent intervals and the field be in a state of perfect tilth when seeded. New land may be most profitably used to grow this crop for a year or two immediately after being cleared. Large crops of rape are practically certain on such land, and stumps or roots interfere but slightly with the harvesting.

Black soil or muck gives good returns when put under rape and may be expected to give better returns with rape than with most other crops.

## TIME OF SEEDING.

The seeding season extends from the first week in May until the end of August, subject, of course, to local climatic conditions. The crop, growing under favourable weather and soil conditions, may be fit for pasture in about five weeks. From this fact the stockman can decide for himself how late he may venture to sow in any given district in order to ensure a sufficiently long feeding period to make it worth while. The plant will stand a quite heavy frost without suffering appreciable injury.

## METHODS OF SEEDING.

*Broadcast.*—Rape may be sown broadcast or in rows. Where intended to be used for soiling, a thin broadcast seeding may be expected to give satisfaction. The quantity of seed required per acre when sown broadcast is about four pounds. A larger quantity of seed may be used when it is intended to cut as soon after seeding as possible; a lesser quantity where it is intended to permit the plants to attain their full growth. The leaves and small stems are the most nutritious and palatable parts of the plant, hence the above conditions of seeding.

When cutting for soiling, care should be taken to cut not lower than four or four and a half inches from the ground. By observing this precaution, a second, and even a third, crop may be expected from the same area without any further seeding.

## ROWS.

Where sown in rows, less than 4 pounds per acre may be used. The quantity is, of course, affected by the space between the rows. Anywhere from 20 to 30 inch spaces give more or less satisfaction, but 22 inch spaces are probably the most profitable. Less space than 22 inches makes horse cultivation inconvenient; greater space means a slight decrease in the yield per acre. In dry soils or droughty areas, level culture should be practised; in badly drained fields or rainy districts, it is advisable to sow on ridges.

The method of seeding in rows is, generally speaking, much to be preferred over the broadcast. The principal reasons for such preference are: (1) greater proportion of leaf to stem, (2) more rapid and vigorous growth, (3) less waste when pastured as animals naturally walk between rows and do not, therefore, trample so many leaves or plants as when sown broadcast, and (4) permits of cultivation, which insures conservation of moisture in dry seasons, and destruction of weeds in wet times.

## AS A CATCH CROP.

Rape is sometimes mixed with grain and sown in the spring. It makes a slow growth till harvest time, when after the removal of the grain it rapidly shoots up. This is a rather uncertain method and more or less objectionable when it does succeed, on account of the amount of it harvested with the grain, and so retarding the curing of the sheaves.

Clover will, generally speaking, do better than rape under such conditions.

Rape is sometimes sown in cornfields just before the last cultivation. The results are seldom satisfactory, however, as the corn takes nearly all the available moisture and sunlight.

## USES OF THE CROP.

As already indicated, rape is an exceedingly valuable food. It is especially well fitted for sheep, swine, young cattle, and steers. It has been fed to dairy cows with good results.

*Sheep on Rape.*—Breeding ewes do well on it in summer, and it constitutes a capital feed for 'flushing' or putting them into good condition for breeding in the fall. Lambs thrive upon it, but in their case it is possibly even more imperative than with older sheep or cattle to provide some other pasture (preferably other than clover) in addition to the rape.

*Pasture for Pigs.*—It makes a very good pasture for brood sows. A little corn or barley fed in conjunction helps to balance the ration.

For fattening and growing pigs it cannot be surpassed. They sometimes need to be trained to eat it, but once taught they consume it most freely. An acre sown on good land and handled carefully may be expected to carry from 25 to 40 pigs from June 15 to October. The exact number an acre will carry depends upon the season, the soil, and the method of handling. To get the best results, the field should be divided into three or four equal parts and the pigs changed over to a fresh part each week or ten days.

*Soiling Pigs.*—Of course, greater returns in pounds of pork produced may be secured by cutting the rape and feeding it to pigs in pens, but more labour is required and so, in a measure at least, the advantage is lost.

*Young Cattle and Steers.*—Calves relish a small amount of rape at a very early age, and do well on it when fed judiciously. Young cattle thrive on it when it is fed in connection with natural grass pasture. Steers intended for stall feeding or late fall marketing cannot be better cared for than to be allowed the run of a good field of rape.

*Dairy cows.*—Dairy cows respond well to a rape ration, but judgment must be exercised in feeding or evil odours may find their way into the milk pail.

#### DANGERS.

In feeding rape to cattle and sheep care should be taken to prevent bloating. They should never be allowed to enter a rape field when very hungry; more especially should this precaution be observed if the rape is wet from dew, rain or frost. Once accustomed to the feed, however, and having access to it at all times, little danger may be anticipated. Pigs are not affected in this way.

#### HARVESTING.

On account of its very juicy nature, it is practically impossible to cure rape, and when cured it is not so palatable nor so valuable a food as when green. It is not much used in making ensilage.

In sections where rather steady frost maintains (once the hard frosts come) rape may be cut and put in small piles to freeze. It should be taken to the stable the day before required for feed and allowed to thaw out completely before being fed. Repeated thawing and freezing spoil it for forage.

#### COMPOSITION.

In chemical composition and feeding value rape resembles clover. It is even richer than clover in flesh-forming constituents, and is exceedingly succulent. Analyses show its water-content to run from about 59 to about 94 per cent. The nutritive ratio or proportion of digestible protein (flesh-forming constituents) to digestible carbo-hydrates and fats (heat-producing constituents) is about 1 to 3.37. Such a large proportion of digestible protein accounts for the great feeding value of the plant. Then, since average, growing animals require a ration of a nutritive ratio of about 1 to 5.5, it is easily seen why most animals require some other food not so

rich in protein, along with rape. Timothy or a mixed grass pasture would be suitable for this purpose.

COST TO PRODUCE RAPE AT OTTAWA.

*One Acre.*

Ploughing in spring.....	\$2 00
Harrowing (4 times) team, 3 hours.....	75
Rolling, $\frac{1}{2}$ hour.....	20
Seed, 3 lbs. at 8c.....	24
Sowing, 3 hours at 13 $\frac{1}{2}$ c.....	40
Hand wheel hoeing, once, 4 hours.....	53
Cultivating, 3 times, single horse, $\frac{1}{2}$ day at \$2.....	1 50
Hoeing, once, 1 day.....	1 33
	\$6 95

If the rent of land be considered, and any commercial fertilizer or barnyard manure, be applied, the cost of production would of course be increased. As already indicated, however, barnyard manure may be most profitably applied to land used for this crop.

RESULTS FROM FEEDING RAPE AT OTTAWA

Lambs and sheep have been fed with most excellent results. No exact record was kept of the amount consumed, however, as they were pastured.

Steers have been pastured here on rape and good results secured. A bunch of 22 steers made an average of 50 pounds gain, live weight, in 3 weeks on an area of 2 acres. About 30 sheep had been allowed to pasture on part of this same area for 10 weeks. The sheep had had at the same time access to a limited area of natural grass pasture.

EXPERIMENTS WITH PIGS.

A great many pigs are fed annually on rape on the Experimental Farm at Ottawa. The following record is submitted to illustrate the part taken by rape in pork production. In one instance six pigs were pastured from August 14 till snow in 1900 on three-sixteenths of an acre of rape.

LOT OF SIX PIGS ON RAPE PASTURE.

No. of Pig.	WEIGHTS.							
	Aug. 14.	Aug. 23.	Sept. 11.	Sept. 25.	Oct. 9.	Oct. 16.	Oct. 30.	Dec. 6.
	Lbs.		Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
279.....	61	76	80	85	96	108	129	175
280.....	60	73	80	95	105	121	147	195
281.....	64	73	91	103	111	127	150	201
282.....	60	73	90	99	109	120	143	171
283.....	60	72	82	99	114	135	157	203
284.....	53	68	76	90	105	118	141	182
Total.....	358	435	499	571	640	729	867	1,127
Total gain.....		87	64	72	69	89	138	260
Daily rate of gain in lbs.....		1.03	0.76	0.85	0.82	2.12	1.64	1.20
Daily grain ration.....		1	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	3	4	5

During the latter part of November and December the pigs had no rape.

A study of the above table shows that to produce 100 pounds of pork, only 260 pounds of meal was required in addition to the rape. The average amount of meal required for 100 pounds of pork is 425 pounds. The use of rape, therefore, saved 158 pounds of meal on each 100 pounds of pork produced, or about 1,210 pounds of meal saved by three-sixteenths of an acre of rape. All pig weights mentioned are live weight.

Many other lots have been fed similarly with similar results. In 1902, 60 pigs were fed on an acre and a half. In addition to the rape pasture, about 500 pounds of meal were required for each pig from weaning time to an average of 185 pounds live weight in October or November.

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