GREEN FEED OR SOILING CROPS FOR WESTERN OREGON

by

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Western Oregon's soil and climatic conditions are well suited to the production of soiling crops.

Soiling crops are those crops grown for forage that are harvested and fed in a fresh or green condition to farm animals. Other methods of keeping succulent feed for livestock consist in providing it in the form of pasture or in harvesting and storing it in a silo.

We do not recommend generally any one of the three systems (soiling, silage, or pasture) to the exclusion of the other; we believe that on a large number of well-managed stock farms they may supplement one another.

The important thing is that whatever the system used it shall provide cheap succulent feed for the stock at all times.

Where rich, high-yielding pasture is available it is certainly the cheapest type of feed. Where conditions are favorable for the development of silage crops, there are times during the year when silage presents many advantages over other systems. But there are times when feed may be harvested and advantageously fed directly to the stock. In the case of many people who do not have silos and whose acreage is so small that it must produce a larger return than pasture, the soiling system is necessary. This system therefore becomes a valuable supplement to pasture in such instances; in other instances it affords a means of providing succulence without the investment in a silo; and in other cases is a substitute for both. There are still other cases where the pasture, silage, and soiling system supplement each other during seasons of the year when each may be used to the best advantage.

The following crops are grown for soiling purposes: (1) vetch and rye, (2) Crimson clover, (3) oats and vetch, (4) Red clover, (5) Mammoth Red Clover, (6) Alsike clover, (7) peas and oats, (8) turnips, (9) buckwheat, (10) corn, (11) kale, (12) mangels, and (13) rutabagas and carrots. For each crop are given cultural directions and a brief statement as to its desirability.

Vetch and Rye. A crop of vetch and rye sown early in the fall, August 20 to October 1, is one of the earliest that may be harvested for
spring green feeding. It is usually seeded at 60 to 80 pounds of vetch with 70 pounds of rye as early as possible in the fall, after there is sufficient moisture for sprouting the seed.

Under many Western Oregon soil conditions an application of land-plaster in the fall or early in the spring may stimulate a much more rapid development of the vetch. This crop is usually available in late March or early April. At first it consists principally of green rye. Later as the vetch develops it becomes better feed and the yield is heavier. As the rye becomes woody rather early the acreage planted to this crop should be somewhat limited.

Rye and vetch are well suited to practically all the reasonably well drained lands of Western Oregon but thrive best on soils that are mellow, warm, and rich in fertility.

Crimson Clover. On some of the soils that are sandy, warm, and well drained, Crimson clover is an excellent soiling crop. Crimson clover should be started some time in the late spring or early summer preceding the spring it is to be harvested. If planted in May, June, or early July, so that the seed germinates before the dry summer period, usually the fall rains give Crimson clover sufficient growth so that it may be harvested in April and early May at about the same time as the rye and vetch or after they are exhausted.

Crimson clover is very palatable and nutritious and as a green feed has much to commend it. Owing to the hairy character of the leaf and stems it is not considered a very desirable hay plant. It thrives best on soils that are sandy and mellow but does fairly well on some of the heavier lands that are well drained.

Crimson clover is usually seeded 20 pounds to the acre. Care should be taken in buying seed, as practically none is produced in the Northwest and the seed obtainable is of poor quality.

Oats and Vetch. Following the rye and vetch or Crimson clover come oats and vetch. Usually 60 to 80 pounds of common vetch are seeded with 40 pounds of Gray winter oats. Seeding takes place from about September 15 to October 15. It is best suited to soils reasonably well drained and free from standing surface water for any extended period of time during the winter months. As with rye and vetch, this crop often responds to a light spring application of land-plaster.

Oats and vetch are exceedingly palatable and the crop makes good silage, hay, and seed. There is no risk of planting too much of this crop.

Red Clover. Common Red clover is probably one of the cheapest of the soiling crops produced under Western Oregon conditions. It is adapted to all of the well-drained soils of Western Oregon except some that may be very light and gravelly. It does not thrive on wet land. Red clover is usually available for soiling purposes throughout the latter part of May, all of June, and part of July if pastured back in the spring. It is a good yielder and often if cut early there is an excellent second crop which may be used for late feeding or for seed purposes.

Mammoth Red clover is another variety of the Red clover that yields more, is available somewhat later, and grows more rank. It is not as good as Red clover for hay purposes but for soiling and for pasturing has some advantages. Its feeding may be extended somewhat later into the summer than Red clover.
Both Red and Mammoth clover are usually seeded at about 10 to 12 pounds of seed an acre.

Alsike clover is adapted especially to soils that are rather heavy, not very well drained, and somewhat sour. Its feeding period is usually from about the middle of May until the latter part of June. It is usually seeded at about 5 to 8 pounds an acre. It is earlier than Red clover and makes practically no second growth.

Fig. 1. Vetch and rye, the early green feed for medium to heavy land.

Common Red, Mammoth Red, and Alsike clover are all seeded in the same manner and usually by one of the following five methods.

(1) Clover is seeded in the latter part of February on land that was seeded to fall grain or, in some instances, fall vetch. The seed is broadcasted on the field; if dry enough it may be harrowed in. Usually freezing and thawing or the rains cover the seed sufficiently. It is important to sow at a time favorable for as prompt germination as possible so that the plants get started before the rapid spring development of the fall-sown cereal or vetch begins. A light application of land-plaster often stimulates the clover and helps to give a better stand.

Crops lending themselves best to clover seeding in this manner may be listed in the following order: winter barley, winter wheat, winter oats, vetch. Often vetch makes such a heavy growth that in somewhat dry summer seasons following the planting of the young clover it fails to survive.

(2) Clover is often broadcasted either ahead or behind the grain drill at the time of seeding spring grain. Uniform seed distribution is necessary. Seeds must not be covered too deep; one-half to one inch is enough. If the soil is loose and inclined to dry out on top it may be desirable to roll the land with a corrugated roller after sowing.

Where this method is used it is desirable that seeding take place as early as possible. This may be at any time that weather conditions will permit, from late February on through the latter part of April, with most success following the early planting.

Land-plaster, as in the cases above, often serves to stimulate early development.
(3) Where a considerable amount of summer pasture for sheep, hogs, or other stock is needed three to five pounds an acre of Dwarf Essex rape with the recommended seedings of clover may be made as early as possible after the first to the middle of April. The land should be plowed six or eight inches deep and worked to a fine, firm seed bed with a somewhat mellow surface. This should be given harrowings from time to time to kill weeds that may sprout. When the ground warms up sufficiently for quick germination the clover and rape seed should be planted. Usually after six or eight weeks the rape is big enough to be pastured off with stock and furnishes very good pasture while the clover is getting established. Hogs should be ringed to prevent rooting.

The rape should be pastured off closely enough so that it does not shade the clover too much. It should be pastured off closely in the fall. The following spring, unless it has been completely pastured off or cut, it will make a heavy growth and may go to seed. Close, early pasturing and possibly cutting with a mowing machine may be necessary to prevent seed developing on the rape. Rape seed shatters badly in the field. It is not desirable to allow this because rape plants will keep coming up for many years. It is very desirable to get genuine Dwarf Essex rape that does not go to seed the first year and get the planting done early and not too deep.

Fig. 2. Clover is a cheaply produced green feed.

(4) Clover is sometimes seeded alone. This is the usual practice on weedy land, on soils that have never had clover, or where it is difficult to get a stand, or on soils that dry out badly.

The land is plowed early and worked down to a fine, firm seed bed. Light surface harrowings are given from time to time to kill out weeds. When the weeds are under control the seeding of the clover may take place some time in May or June. Deep working, after plowing, which brings up new weed seeds, must be avoided.

If the seed bed is moist near the surface the seeds may be broadcasted and lightly harrowed in, but if the seed bed is loose and rather dry it is preferable to cover the seed by rolling with a corrugated roller.

In some cases the clover seed may be seeded with a drill. The seed bed must be quite firm, and special care taken to avoid getting the seeds in so deeply that the plants cannot come up.
(5) Occasionally clover is fall sown, either alone or with a nurse crop of small grain or vetch. This method often results in the clover being heaved out by freezing and thawing. It is most likely to be successful on loamy to moderately heavy soils that are well drained.

Following the end of the feeding period for one or the other of the clovers comes the time when it is most difficult to provide green feed for the stock. During this summer period fall-sown crops have reached maturity and many of the spring crops are not far enough along to give profitable yields.

**Peas and Oats.** For this mid-July period oats and peas or beardless barley and peas offer some promise. The oats and peas should be planted before the fifteenth of April on soil that is warm, loamy, and well drained. Sixty to 90 pounds of peas are usually planted with 40 to 60 pounds of White spring oats.

Peas make an excellent type of green feed and are relished by the stock. They are available for cutting during the early to a little past the middle part of July. The White Canadian and Blue Prussian varieties of peas are very desirable for this purpose.

**Turnips.** A crop that may be fed for summer soiling purposes to some stock is turnips. A fine, well-prepared, firm seed bed is planted to the turnips some time in late April or May. Turnips may be planted in rows and given cultivation, or they may be broadcasted, provided there are not too many weeds in the field.

One to three pounds of good White Globe or Purple-topped Strap-leaf turnip seed per acre is sufficient for planting. The crop is usually available from the first of July on and from good seed gives a very good yield. When planted early in the summer there is more loss due to the root maggots. The flavor imparted to milk by turnip feeding is sometimes objectionable.

**Buckwheat** is a crop that is not so commonly grown for soiling purposes. It may be planted in the spring any time after frost danger is over, and this may be from the middle of April until the tenth of July.

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Fig. 8. Corn is good for fall use. Late weeds were pastured from this field by sheep.
provided there is moisture enough in the soil to bring about the germination. If planted early the buckwheat will have made a considerable growth and may be cut and fed green, although its quality is not the best.

These crops may be made use of together with spring oats or spring barley or spring wheat for carrying the animals through on a green-feed ration until corn is ready in the fall. Wherever possible, it is more economical, except on the Coast pasture regions, to use silage after clover rather than to rely upon the average crop of field peas, turnips, or buckwheat for midsummer feeding.

**Corn.** For fall soiling purposes the best crop is corn. Corn should be planted on rich, well-drained soil as early as possible after frost danger is over and the ground warm enough for prompt germination. Usually the latter part of April until the twentieth of May is the best time for planting. Minnesota 13, Wisconsin Golden Glow, Wisconsin 12, Minnesota 23, and a few other acclimated varieties may be recommended for soiling purposes. Minnesota 23 usually does not give so large a yield, but as it comes on exceedingly early and makes a good quality of forage it is recommended for early planting. The others are recommended for late or main crop planting and any surplus may be made use of in the silo.

Corn planted early on rich land should be big enough for soiling purposes by the middle of August. It is available from that time on until frost, which usually does not come until some time in October.

Corn offers many advantages in that it is a cultivated crop, fits into the rotation well, provides a good quality of feed, and, on good soil, gives a good tonnage. It is easily handled for soiling purposes.

Usually about eight to ten pounds of seed an acre are required. Corn is planted in rows three to three and one-half feet apart, with the individual plants spaced at from eight to fourteen inches apart in the row. When the soil is very rich and plenty of moisture is present, the seeding may be made thicker. For early use 6- to 8-inch planting is good.

Where the land is free from troublesome weeds it is best to drill corn at a depth of one to one and one-half inches. Where the land is weedy and cross cultivation is necessary a check rower should be used for planting. After planting it is a good plan to harrow the field. After the crop is up it may be harrowed at intervals until it is four inches high. Light harrowing with the teeth slanted back kills many small weeds and does very little injury to the corn. Corn seed must be of good quality and enough planted so that after the harrowings are over there will be a good stand remaining. No good yield of corn can be had with a poor stand.

Corn is ready for soiling purposes after it tassels out but reaches a considerably better stage when the ear is pretty well formed. Minnesota 23 for early seeding followed by Minnesota 13 or one of the others mentioned will provide green feeding of excellent quality for a long period.

**Kale.** For winter and early spring feeding there is probably no crop equal in yielding power or quality to Thousand-headed kale. Kale stands the average temperature of Western Oregon and when covered with snow will survive the most extreme winters. When not provided with a snow cover kale is injured by a temperature of 13° F.

The seed of Thousand-headed kale is usually planted at the rate of one pound for each acre to be set out. This is usually drilled with a
garden drill in narrow rows on a rich, well-prepared seed bed. These rows are usually a foot apart and the seeds are planted rather thick. When the plants are ten to twelve inches high they are lifted, part of the leaves removed, and transplanted in field.

The field for kale should be very heavily manured, as kale is a very gross feeder and requires a large amount of plant food. Previous to plowing, which should be at a depth of about eight inches, the manure should be put on as early as possible in the spring. It should then be worked mellow and kept harrowed to conserve moisture and kill weeds until time to put out the kale. The field is usually marked off in rows from three to three and a quarter feet apart and after a satisfactory rain sometime in late May, June, or early July, the kale plants are transplanted so that they are about two to three feet apart in the row.

The transplanting is done by a machine or by hand. Hand transplanting may be done in either of two ways. (1) The planter sets a shovel into the ground, pushes it ahead, and drops the kale plant in behind it as deeply as possible without covering the crowing point or bud. The shovel is then removed and the loose earth tramped in order to pack it around the roots. In some instances the operator carries the plants with him; in other cases they are distributed along the row at about the right interval. (2) In the second method one man operates the shovel or spade and another man carries the plants, setting them in behind the spade as indicated above. After the plant is set the loose earth is tramped around the roots in much the same manner.

Since transplanting usually packs the land more or less it is desirable to give a good cultivation as promptly as possible. If the soil is rather badly dried out it may be desirable to provide a small amount of water for each plant at setting time. Kale needs good cultivation during the earlier part of the season until the leaves become so large that they are broken off by further work. In the fall after the corn is gone the kale is usually big enough for feeding. Some people take off the lower leaves of the kale plant, which usually fall off during the dry period, but this stripping is such an expensive process that it seems hardly practicable where labor is valuable.

During the fall, winter, and early spring, the kale plants are cut with a corn cutter, axe, brush hook, heavy spud, or in some cases with a heavy hoe. The entire plant is forked onto the wagon or sled and is hauled up to the stock and fed. Kale is a heavy yielder and is quite watery. Since it is very palatable stock eat it readily.

It is undesirable to use much frozen kale since it has a tendency to bloat stock. In the early spring it begins blooming and gets woody. It is usually desirable for feeding purposes till the first of March.

There are times during the winter months when because of extremely wet conditions or extreme cold it is impossible to harvest kale. There is also a period after the kale harvest is over before vetch and rye are available. During these periods some stored succulent feed must be made use of. In some instances it will be corn silage; in other instances it may be roots. High production cost is a serious objection, and in many cases silage is cheaper.
Mangels. Probably the most satisfactory root crop for Willamette Valley conditions is mangels. Mangels of the Giant Intermediate or the Golden Tankard varieties should be planted on rich, mellow, well-drained and well-prepared seed beds, some time in late April or early May. Usually about eight pounds an acre of seed are used. Mangels are planted in rows 24 to 30 inches apart and care must be taken not to plant the seed too deep. When the fourth leaf appears they are thinned to 8 to 12 inches apart in the row. Good cultivation is essential until the leaves cover the ground. In the fall mangels may be lifted with a root lifter or with a plow and in some cases may be pulled by hand. Tops should be twisted off carefully or cut off, but the beet should not be cut. The roots should be handled carefully to avoid bruising. They should be stored in a cool, dry, dark place that is well ventilated. They are available for feeding purposes (properly sliced) any time during the winter or the early spring.

 Rutabagas and Carrots. For the Coast regions and many other sections rutabagas are better yielders and better keepers than mangels. In the south Coast regions carrots are an excellent crop.

The following table shows approximately the proper time of planting and of harvesting these soiling crops.

**WESTERN OREGON SOILING CROP SYSTEM ON BASIS OF ONE COW**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Planting dates</th>
<th>Feed and harvest dates</th>
<th>Days fed</th>
<th>Daily feed</th>
<th>Total Yield per acre</th>
<th>Acres needed</th>
</tr>
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<tbody>
<tr>
<td>Vetch and rye</td>
<td>Aug. 20-Sept. 10</td>
<td>Apr. 15-May 9</td>
<td>25</td>
<td>60</td>
<td>1600</td>
<td>10</td>
</tr>
<tr>
<td>Crimson clover</td>
<td>April 15-July 10</td>
<td>May 10-26</td>
<td>17</td>
<td>50</td>
<td>850</td>
<td>10</td>
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<tr>
<td>or vetch and oats</td>
<td>Sept. 1-10</td>
<td>May 10-26</td>
<td>17</td>
<td>60</td>
<td>1020</td>
<td>10</td>
</tr>
<tr>
<td>Vetch and oats</td>
<td>Sept. 15-Oct. 15</td>
<td>May 27-June 14</td>
<td>19</td>
<td>60</td>
<td>1140</td>
<td>12</td>
</tr>
<tr>
<td>Clover</td>
<td>Yr. before, Feb.-June</td>
<td>June 15-July 4</td>
<td>20</td>
<td>50</td>
<td>1000</td>
<td>15</td>
</tr>
<tr>
<td>Peas and oats</td>
<td>Feb.-April 15</td>
<td>July 5-24</td>
<td>20</td>
<td>60</td>
<td>1200</td>
<td>10</td>
</tr>
<tr>
<td>Turnips</td>
<td>April 15-May 15</td>
<td>July 25-Aug. 22</td>
<td>20</td>
<td>45</td>
<td>1350</td>
<td>10</td>
</tr>
<tr>
<td>or corn silage</td>
<td>May 1-20</td>
<td>July 5-Aug. 23</td>
<td>20</td>
<td>45</td>
<td>1350</td>
<td>10</td>
</tr>
<tr>
<td>Corn</td>
<td>May 1-20</td>
<td>Aug. 24-Sept. 27</td>
<td>35</td>
<td>50</td>
<td>1750</td>
<td>10</td>
</tr>
<tr>
<td>Kale</td>
<td>Seed Mar. Apr.</td>
<td>Sept. 28-Mar. 15</td>
<td>160</td>
<td>40</td>
<td>6400</td>
<td>20</td>
</tr>
<tr>
<td>Roots</td>
<td>April</td>
<td>Mar. 16-Apr. 14</td>
<td>39</td>
<td>45</td>
<td>1755</td>
<td>20</td>
</tr>
<tr>
<td>or corn silage</td>
<td>May 1-20</td>
<td>Sept. 28-Apr. 14</td>
<td>199</td>
<td>45</td>
<td>8955</td>
<td>10</td>
</tr>
</tbody>
</table>

Amounts fed daily are for the basis of calculation rather than as recommendations. So many factors are involved, such as size of animal, other feeds, productivity, etc., as to make a definite recommendation impracticable. Yields, except on turnips which have been tried elsewhere, have been exceeded on the College farm.

It pays to grow soiling crops where the supply of land is limited, where land is high priced, and where labor is reasonably cheap, also where financial or other conditions make it impossible to build a silo.

Supplemented by pasture and, during the dry summer months and the exceedingly wet cold period during the winter months, by silage, there are many advantages in a soiling crop system from the standpoint of good crop management.