Circular No. 15 - Pastures and Pasture Grasses for Utah

F. S. Harris

Utah State University

Follow this and additional works at: https://digitalcommons.usu.edu/uaes_circulars

Part of the Agricultural Science Commons

Recommended Citation
https://digitalcommons.usu.edu/uaes_circulars/11

This Full Issue is brought to you for free and open access by the Research Centers at DigitalCommons@USU. It has been accepted for inclusion in UAES Circulars by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.
Pastures and Pasture Grasses for Utah

By F. S. HARRIS

Logan, Utah, November, 1913
# Utah Agricultural Experiment Station

## Board of Trustees

<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorenzo N. Stohl</td>
<td>Brigham</td>
</tr>
<tr>
<td>Thomas Smart</td>
<td>Logan</td>
</tr>
<tr>
<td>John Q. Adams</td>
<td>Logan</td>
</tr>
<tr>
<td>Elizabeth C. McCune</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>J. W. N. Whitecotton</td>
<td>Provo</td>
</tr>
<tr>
<td>John Dern</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>John C. Sharp</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>Angus T. Wright</td>
<td>Ogden</td>
</tr>
<tr>
<td>J. M. Peterson</td>
<td>Richfield</td>
</tr>
<tr>
<td>Hazel L. Dunford</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>Geo. T. O'Dell</td>
<td>Salt Lake City</td>
</tr>
<tr>
<td>Joseph Quinney, Jr.</td>
<td>Logan</td>
</tr>
<tr>
<td>David Mattson, Secretary of State, Ex-officio</td>
<td>Salt Lake City</td>
</tr>
</tbody>
</table>

## Officers of the Board

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorenzo N. Stohl</td>
<td>President</td>
</tr>
<tr>
<td>Elizabeth C. McCune</td>
<td>Vice-President</td>
</tr>
<tr>
<td>John T. Caine, Jr.</td>
<td>Recording Secretary and Auditor</td>
</tr>
<tr>
<td>John L. Coburn</td>
<td>Financial Secretary</td>
</tr>
<tr>
<td>Allan M. Fleming</td>
<td>Treasurer</td>
</tr>
</tbody>
</table>

## Experiment Station Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. D. Ball, Ph. D.</td>
<td>Director</td>
</tr>
<tr>
<td>H. J. Frederick, D. V. M.</td>
<td>Veterinarian</td>
</tr>
<tr>
<td>Robert Stewart, Ph. D.</td>
<td>Assistant Director and Chemist</td>
</tr>
<tr>
<td>E. G. Titus, Sc. D.</td>
<td>Entomologist</td>
</tr>
<tr>
<td>L. D. Batchelor, Ph. D.</td>
<td>Horticulterist</td>
</tr>
<tr>
<td>F. S. Harris, Ph. D.</td>
<td>Agronomist</td>
</tr>
<tr>
<td>F. L. West, Ph. D.</td>
<td>Meteorologist</td>
</tr>
<tr>
<td>J. E. Greaves, Ph. D.</td>
<td>Bacteriologist</td>
</tr>
<tr>
<td>W. E. Carroll, M. S.</td>
<td>Animal Husbandman</td>
</tr>
<tr>
<td>Byron Alder, B. S.</td>
<td>Poultryman</td>
</tr>
<tr>
<td>G. R. Hill, Jr., Ph. D.</td>
<td>Plant Pathologist</td>
</tr>
<tr>
<td>John Stewart, B. S.</td>
<td>Associate Chemist</td>
</tr>
<tr>
<td>C. T. Hirst, B. S.</td>
<td>Assistant Chemist</td>
</tr>
<tr>
<td>Archie Egbert, D. V. M.</td>
<td>Assistant Poultryman</td>
</tr>
<tr>
<td>H. W. Stucki, B. S.</td>
<td>Assistant Agronomist</td>
</tr>
<tr>
<td>H. J. Maughan, B. S.</td>
<td>Assistant Agronomist</td>
</tr>
<tr>
<td>J. I. Lauritzen, B. S.</td>
<td>Assistant Plant Pathologist</td>
</tr>
<tr>
<td>B. L. Richards, B. S.</td>
<td>Assistant Plant Pathologist</td>
</tr>
<tr>
<td>George Stewart, B. S.</td>
<td>Assistant Agronomist</td>
</tr>
<tr>
<td>C. Y. Cannon, B. S.</td>
<td>Asst. Animal Husbandman</td>
</tr>
<tr>
<td>H. Sweitzer, B. S.</td>
<td>Assistant Horticulturist</td>
</tr>
<tr>
<td>Leslie A. Smith, B. S.</td>
<td>Assistant Bacteriologist</td>
</tr>
<tr>
<td>Violet Greenhalgh</td>
<td>Clerk and Librarian</td>
</tr>
</tbody>
</table>

## In Charge of Co-operative Investigations With U. S. Department of Agriculture

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. W. McLoughlin, B. S.</td>
<td>Irrigation Engineer</td>
</tr>
<tr>
<td>L. M. Winsor, B. S.</td>
<td>Irrigation Engineer</td>
</tr>
<tr>
<td>R. A. Hart, B. A.</td>
<td>Drainage Engineer</td>
</tr>
<tr>
<td>A. D. Ellison, B. S.</td>
<td>Assistant Agronomist</td>
</tr>
</tbody>
</table>
Pastures and Pasture Grasses for Utah

By F. S. HARRIS

Since the earliest records of man his domestic animals have secured a large proportion of their forage from pastures. Before crops were planted and harvested by man the wild grasses furnished the chief food for numerous kinds of animals, and the cutting and curing of hay came as a later development to supplement natural pasturage in seasons of scarcity.

At the present time there is a great difference in the prominence given to making and keeping pastures in various regions. In some places the land is naturally covered with a heavy growth of grass. Under such conditions it is easy to maintain good permanent pastures. Under other conditions first class pastures are obtained only as a result of much effort, and their proper maintenance requires constant attention.

Arid regions do not usually have the best pastures without the aid of irrigation. The native grasses on the range grow well during only a small part of the year, and none of the cultivated grasses have been found that can be depended on to make satisfactory growth on the range during the dry season. In speaking of pastures, in Utah, therefore, we mean the grass raised with irrigation water, or on low moist land, and not the native vegetation of the open range.

It is doubtful if the farmers of Utah have given sufficient attention in the past to making good pastures. There are probably a number of reasons for this: First, alfalfa hay has been so easily produced in the state; and second, there has been so much public land on which the farm animals could be turned to graze during the summer. As the state grows in population hay will become more expensive, and as the public land is taken up the farmer will be confined more and more to his own premises. These conditions will make almost necessary the development of good pastures to furnish summer feed that was previously obtained from public land and the plentiful supply of alfalfa.
A certain amount of pasturage is desirable under most any condition. It makes a cheap way of feeding stock during the summer season when farm work is rushing. Good pasturage also helps to keep the animals in good health as well as greatly adding to the profit of milch cows. There is no hay that can compete in cheapness with pasturage for summer feed.

GRASSES.

The list of tame and wild grasses that are used for pasturage is very long, but only a few leading varieties are of sufficient importance to discuss in any detail. Those considered are suited to the conditions of the average irrigated farm in Utah. A grass to be good for pasturage should have a leafy growth and should form a compact sod that is not easily destroyed by the tramping of animals.

Kentucky Blue-grass (*Poa pratensis*) is by far the most important pasture grass in America, although it is not as good for hay production as a number of others. It spreads rapidly without seeding and will usually run out other plants on good soil. It is slow in developing, so is rarely sown alone. It begins growth very early in the spring, but does not produce much during the hottest part of the summer. Its seed is rather expensive and is often low in germination. From 1 to 10 pounds of seed are sown to the acre, depending on the other grasses in the mixture. Canada blue-grass seed (*Poa compressa*) is often used to adulterate the seed of Kentucky blue-grass as it is very difficult to distinguish between the two. The Canada blue-grass does not produce as well as the other, but is better adapted to poor land. It is probable that the most pasture grass mixtures for Utah should contain Kentucky blue-grass.

Timothy (*Phleum pratense*) is one of the most important pasture grasses as well as hay grasses. One advantage in using it is the cheapness of seed. It also produces good feed soon after being sown. It needs a good soil and a fair amount of water. In permanent pastures it is usually later displaced by other grasses, but it furnishes much feed while the others are getting established. It is one of the best grasses for temporary pastures that go into the regular rotation. For hay it is usually grown with red clover. Timothy seed weighs 4½ pounds to the bushel. Where it is sown alone or is the chief grass, from 10 to 15
PASTURE GRASSES

pounds of seed are sown to the acre, and the amount reduced according to the other grasses used.

Redtop (*Agrostis alba*) is particularly well suited to wet, poor land. As a grass for hay it ranks second to timothy in the country, although its hay is not as good as timothy. The seed is not expensive, and if well cleaned weighs about 35 pounds to the bushel. When sown alone from 12 to 18 pounds to the acre are used.

Rhode Island Bent (*Agrostis canina*) is closely related to redtop, and is adapted to the same conditions of soil and climate. It has been used with success in Utah in pasture mixtures, especially on low, wet lands.

Smooth Brome Grass (*Bromus inermis*) is particularly well suited to arid conditions. It was introduced from the plains of Russia a few years ago, and has been extensively used in the drier climates for both hay and pasture. After it has been grown on the same land for a number of years it becomes root bound and unfitted for hay production, although it may continue to produce good pasturage. When sown alone about 15 pounds of seed are used to the acre.

Orchard Grass (*Dactylis glomerata*) is a tall tufted grass, growing best in a deep rich soil, although it may produce fairly well on a poor soil. It is a good grass to go in pasture mixtures and is sometimes sown with alfalfa. The seed is rather high priced and often adulterated. Good seed weighs about 20 pounds to the bushel, and rarely more than 15 pounds of seed are planted to the acre.

Tall Meadow Fescue (*Festuca elatior*) is a bunch grass which is about as stolenerferous as timothy. It takes practically three years for it to form a good sod. The seed is rather expensive and it is subject to rust. It is a good grass to go into a pasture mixture. It is one of the most important of the grasses grown in Europe.

The Rye Grasses (*Lolium perenne* and *Lolium italicum*) are the most important grasses of Europe, but are not so much used in America. They have been found, however, to give fairly good results on some of the irrigated lands of the West, especially when included in pastures. The seed of the rye grasses weigh about 20 pounds per bushel and as high as two or three bushels of seed to the acre are sometimes sown if
planted alone. In mixtures the amount decreases in proportion to the other seed used.

Tall Meadow Oat-Grass (*Arrhenatherum avenaccum*) is not of very great importance in the United States, although it grows well in some regions. Its chief recommendations are that it will grow in warmer and drier climates than timothy; it is easy to secure a stand and continues productive for many years. It is not as well liked by stock as many of the other grasses.

Red or Medium Clover (*Trifolium pratense*) is grown extensively in many parts of the United States and is very often planted with timothy. The medium and mammoth red clovers have seed that look alike and the plants are very similar except that the mammoth grows larger and matures later. The red clover seed that is purchased is often a mixture of the two. Red clover requires a good soil that is well drained. Its seed weighs 60 pounds to the bushel. About 10 pounds to the acre are used if sown alone, or from 6 to 8 pounds if sown with timothy.

Alsike Clover (*Trifolium hybridum*) is usually raised on wet soils where red clover will not grow. It is often mixed with the red clover on poor soils. It is not advisable to raise it alone, except for seed, when about 8 pounds of seed to the acre are used.

White Clover (*Trifolium repens*) has no value as a hay, but is good for pastures, as it readily fills the place not occupied by other plants. It grows close to the ground, and spreads rapidly by its stems taking root. It makes a very good supplement for Kentucky blue-grass. Only a small amount of seed is needed as it quickly adjusts itself to the plants with which it is growing.

**MIXTURES.**

No single grass is best for all soils and climates, each having its own good qualities that make it suitable for special conditions. It is usually better to have a mixture of grasses in a pasture than any one kind for a number of reasons. Each kind of plant occupies a slightly different root zone, so a number of kinds growing together can more effectively utilize the entire soil. Some seasons are favorable for one kind of grass while during a different season another kind will do better. A mixture, therefore, gives a more even production from year to year than any one kind. All fields are somewhat irregular in their
soil, so if a mixture is planted there is a chance for each grass to make the greatest development on the soil for which it is best suited. Grasses mature at different seasons of the year, so where the proper mixture is used there will be one grass or another growing through most of the summer, instead of at just one period, as would be the case if a single grass were used. Grasses to be cut for hay should mature at the same time, but those used for pastures should have a different season of development.

The question of just what mixture to plant will depend entirely on local conditions. The variations in kind and amount of seed that might be used are almost without number. Only a few standard mixtures will be given, and the farmer can judge from these what to use for his own conditions.

A mixture used with success on the good soils of the East is as follows:

- Timothy 10 pounds,
- Red clover 4 pounds,
- Alsike clover 3 pounds,
- White clover 2 pounds,
- Kentucky blue-grass 3 pounds,
- Tall meadow fescue 2 pounds,
- Orchard grass 2 pounds.

For poor land in the humid sections the following is often used:

- Timothy 5 pounds.
- Redtop 5 pounds,
- Alsike clover 5 pounds,
- White clover 2 pounds.

At the Utah Station Prof. L. A. Merrill and others have experimented with a number of mixtures of grasses under irrigation, and as a result the following are recommended:

For bench lands under irrigation:

- Kentucky blue-grass 12 pounds,
- Bromus inermis 8 pounds,
- Perennial rye-grass 6 pounds,
- Orchard grass 3 pounds,
- White clover 2 pounds,
- Red clover 2 pounds,
- Alfalfa 2 pounds.
For light sandy soils under irrigation:

- Kentucky blue-grass 8 pounds,
- Meadow fescue 12 pounds,
- Tall meadow oatgrass 5 pounds,
- Bromus inermus 8 pounds,
- White clover 2 pounds,

For low moist lands:

- Perennial rye-grass 8 pounds,
- Redtop 10 pounds,
- Rhode Island bent grass 4 pounds,
- Meadow fescue 4 pounds,
- Timothy 2 pounds,
- Alsike clover 5 pounds,
- White clover 2 pounds.

**PLANTING.**

In planting pastures great care should be taken with the seed bed in order to get a good stand. This is much more important than with the ordinary annual crops, as the pasture remains a number of years. The soil should be fine and, at the time of planting, should be moist.

Most of the pasture grasses can be sown in either fall or spring. If planted in the fall, it should be early enough to get a good start before winter sets in. Where planted with a nurse crop the grass is usually planted in the early spring. In regions having summer rains the late spring is a good time for planting.

It is difficult to get an even stand of grass by hand seeding, so some form of machine is recommended. The ordinary grain drill often has a grass seed attachment. The depth of planting depends on the nature of the soil and the size of the seed. The small seeds should be planted very shallow.

The common practice of using the poorest land of the farm for the pasture, because it will produce nothing else, is often unwise. The pasture crop, if it is to be entirely successful, must have good soil.

**CARING FOR PASTURES.**

Pastures often fall into ill repute on account of their lack of receiving proper care. Stock naturally select the most desirable plants and keep them eaten off, leaving the undesirable kinds to grow and produce seed. This in time will cause the pasture to
deteriorate unless it is mowed before the weeds and undesirable grasses have a chance to mature their seeds. If proper care is taken there is no need for a weedy pasture.

Pastures should not be grazed too closely, as the crop will be injured thereby, and since the plant makes most of its food in its leaves, much more forage will be produced in a day if the grass is not eaten too close. This can in part be obviated by dividing the pasture into fields and allowing one field to grow while another is being grazed. There is a danger from turning stock onto the pasture when the land is too wet. The grass is tramped into the ground and the soil puddled by the animals’ feet. Grass responds readily to fertilizing, so any barnyard manure that is spread over the pasture will give good returns. It is a good thing to run a brush drag or some other implement over the pasture once in a while to break up any little piles of manure there may be, as animals do not like to eat the grass in such places. Many pastures are also benefited in the spring by the use of a more severe implement such as the spike tooth or spring tooth harrow.

If Utah farmers will use proper judgment in selecting land and grasses and will care for their pastures after they are planted, there can be no doubt that the agriculture of the state will be improved by the planting of more pastures even on expensive irrigated land.
Contentment
Testing Pasture Grasses at the Utah Experiment Station