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BULLETIN NO. 16.

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AGRICULTURAL COLLEGE OF MICHIGAN

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BOTANICAL DEPARTMENT.

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REPLIES TO QUESTIONS ABOUT GRASSES.

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#### REPLIES TO QUESTIONS ABOUT GRASSES.

It may be generally known that the last Legislature passed an act whereby the writer should be one of six professors of the Agricultural College, each one of whom should prepare two bulletins a year. In the present case, no provision was made for defraying any expenses for making experiments. With no assistant, the care of a botanic garden, an arboretum and the large increase of students who attend the College and study botany, little time has been found for original investigation. Most of the results of former experiments in this direction have been given in lectures at farmers' institutes and reports to the Board of Agriculture.

This explanation seems to be in order as a partial excuse for selecting the above subject for the present bulletin.

The relation and uses of the botanical department of the Agricultural College to the people of the State have been explained in several former reports, and in the reports of the State Horticultural Society.

At different times during the past twelve years, we have had large numbers of plats of grasses and clovers. Lectures, reports, and notes for the press, have called attention to these experiments. Add to this the great importance and difficulty of the subject, making it impossible for any one except a botanist to recognize many grasses, inquiries have been frequent.

The department could be of still greater benefit to the farmers, if there were provisions made for using it. Here seeds of various sorts could be tested for purity, vitality, and freedom from weeds. For example, a plan might be followed similar to one adopted by the members of the Royal Agricultural Society of England. They employ a consulting botanist, who, for a small fee, examines farm seeds, especially those of grasses and clovers, before they are purchased by members.

The amount of work of the consulting botanist of England has rapidly increased, and the seeds sold in the market have very materially improved in regard to the points above mentioned.

## PHLEUM PRATENSE. TIMOTHY.

A Professor of Agriculture in another State, and others, want to know if Timothy blossoms twice.

*Answer.*—On a certain day a few flowers open and close, not to open again. On each succeeding day, for six to ten days, depending on the weather, other flowers open and close. During the middle of this flowering period most of the flowers open. Fewer blossom on the first and on the last days than on any other day.

"In Dakota, Timothy dries up, and produces a very light crop," says an inquirer. "What would you try?"

I. M. S., Otsego Co., asks the same question, and wants to know what to do. Replies appear in what follows.

## DACTYLIS GLOMERATA. ORCHARD GRASS. COCK'S FOOT.

Every little while specimens arrive, and questions are asked.

*Answer.*—This is a native of Europe, a nutritious, early grass, much prized for pasture, and in many places for meadows. It flowers with early red clover, is rather coarse, and speedily becomes ripe and woody after flowering. It grows in tufts, unless sown at the rate of about two bushels of seed in the chaff to the acre, or mixed with other grasses or clovers; it is a perennial, and not easily killed by feeding or mowing. It is one of the most promising for trial in northern Michigan and in Dakota, as well as in many other places. It does not spread like quack grass, and is not hard to kill by cultivation. It thrives very well in shady places. Orchard grass is especially suited to deep, rich loam, but not to stiff, cold clay, or very thin soils.

ARRHENATHERUM AVENACEUM. TALL OAT GRASS. (*Avena Elatior*.)

Various inquiries have been made. This comes from Europe, where it does not usually rank as high as some of the finer grasses.

Tall oat grass is a very vigorous perennial, starting early, usually making a large growth for meadow or pasture. It is rather bitter, but stock eat it well if not allowed to get too far advanced before cutting. Like orchard grass, it should not stand one day after flowering, if good hay is any object. This is very suitable in many places west, north and south to mix with early red clover and orchard grass. Most people who have tried it in our State report favorably. This is inclined to grow in tufts, and does not spread like quack grass. It is well worth trying on the light soils of northern Michigan.

## FESTUCA ELATIOR. TALL FESCUE. MEADOW FESCUE.

I. P. M., Penn., says this grass comes up luxuriantly, and thrives in the shade of trees. He would like to know whether to make it welcome, or begin an extermination. This comes from Europe, where it has long been highly esteemed for pasture and meadow. Like the two preceding, tall fescue grows in tufts, unless thickly sown. In quality it ranks high. The plants start early in spring, whether they come from seed or old stubble. This is liked in many places, and is especially worthy of trial in northern and southern Michigan. It is adapted to loam, but will thrive on any good soil.

SHEEP'S FESCUE. (*Festuca Ovina*.)

Is often inquired about, but hardly merits attention on account of its small size and tufted habit.

## BUFFALO GRASS.

There are many species of western grasses which are popularly and indiscriminately called by this name. They are all small and few, if any, stand well the tramping of close pasturing. Inquiry was made in reference to trying them in northern Michigan. Those named above are more promising for that country.

## ALOPECURUS PRATENSIS. MEADOW FOXTAIL.

At the first glance, when in flower, this grass is often mistaken for Timothy, but it blooms about four weeks earlier, the spikes are shorter, broader, and much softer, and the whole plant is smoother. In plats it attracts much attention.

The plants from seed require a couple of years to get well established. The seed is light, and often poorly filled. It is a perennial from Europe, where it is highly esteemed in mixtures for permanent pasture and meadow. Meadow foxtail is not well adapted to alternate husbandry, but is excellent for permanent pastures in moist climates. It starts very early in spring, and is well worth a trial in the richer parts of northern Michigan.

## SORGHUM HALAPENSE. JOHNSON GRASS.

This is a rather tall, coarse grass, introduced into the south, where the best judges are agreed that on rich land nothing surpasses it for permanent meadow. The rootstocks are large and juicy, and fill the ground like quack grass. At the north, it starts too late and makes too thin a growth to be of value; moreover, the plants are more or less killed by the winter, unless well mulched with snow or something else. It does not seem possible that it can be of any use in Michigan. Inquiries have often been made, in reference to habits and uses. Seeds ripen at Lansing.

## CYNODON DACTYLON. BERMUDA GRASS.

This foreign grass seldom seeds in the United States, but spreads rapidly after the manner of June grass by stout rootstocks. It loves the sun and heat and is one of the very best grasses for pasture and hay in warm climates. It is propagated by planting pieces of the rootstocks, which soon fill up the intervening spaces. At the Agricultural College, the habits of this grass have been carefully studied for several years, where it has never failed to pass the winter, though sometimes partially killed. It spreads slowly, in some places holding its own or even gaining on June grass; starts late in spring, and is killed back to the ground by the first frost. It does not seem to be worthy of attention in any part of Michigan.

## POA PRATENSIS. JUNE GRASS. KENTUCKY BLUE GRASS. BLUE GRASS.

Although answers have been repeatedly given to inquiries about this native grass they keep coming in. This is, perhaps, our most common grass found in old pastures or by the wayside. On poor land, or in dry seasons, the flower stalks seldom exceed a height of ten inches, while on rich land it not unfrequently grows four feet high. The quality is excellent, as is well attested by the famous pastures of some parts of Kentucky and of other States. It is one of our best grasses for lawn and for pasture, and is too well known to need a further notice. It must not be mistaken for flat-stemmed poa, also called

*wire grass* or *blue grass*. This latter is seldom purposely sown, as the growth is late, thin, and slow; still the quality is unsurpassed.

POA SEROTINA. FOWL MEADOW GRASS. FALSE RED TOP.

This native grass is very common on bottom lands in connection with red top which is rather more abundant and better known. Like the two preceding species of *poa*, this one also is of excellent quality for hay or pasture. The panicle is long, loose, and flexible, the stems a little weak, and inclined to lodge. It is very palatable, even after going to seed. The flowers appear in July, about the time of the blossoms of red top. It is one of the best for marsh-land meadows, but is not so well adapted for pasture. It deserves more attention than it has received by the farmers of our State. Specimens, with inquiries, have come from several distant States as well as from our own.

AGROSTIS VULGARIS. RED TOP. HERD'S GRASS OF PENNSYLVANIA.

This varies much in color and habit and seems to shade off into *A. stolonifera* or *A. alba*, known as *creeping bent* or *fiorin*. It is excellent for marsh lands, whether needed for pasture or for hay, and is very suitable for lawns sown alone or with June grass.

A. CANINA. RHODE ISLAND BENT

is smaller than the former, which it much resembles in many respects. The seeds of these are much mixed. The latter is a favorite for lawns.

Inquiries about the species of *Agrostis* are common.

DEYEUXIA (CALAMAGROSTIS) CANADENSIS. BLUE JOINT.

This tall, native marsh grass is usually called *blue joint* by people in Michigan and eastward, though half a dozen or more distinct sorts pass by this name as we go westward. This one flowers by the middle of July, when it will cut a heavy crop of very good hay. It is suitable to mix with red top and fowl meadow grasses for low lands.

PHALARIS ARUNDINACEA. REED CANARY GRASS.

This is a native in wet places and somewhat resembles the preceding. The top is six inches long and quite narrow, the stems are firm and the leaves harsh, the whole making rather poor hay. It is the original of our striped or ribbon grass found in cultivation.

MUHLENBERGIA GLOMERATA.

Frequent inquiries are made in regard to this native grass, which is found on marshes, where it flowers in August. The stems are about two feet high, wiry, erect, leaves thin, top about one-half by three inches, and usually tinged with purple. In various sections of the United States farmers have given it different common names. Where it is found in abundance, the hay bears a high prize for feeding horses. There are four other species of *Muhlenbergia* with a more branching habit, common in Michigan, some of them found on dry land and all flowering late.

VANILLA GRASS. (*Hierocloa*.)

Comes occasionally for a name on account of its fragrance, much resembling that of sweet vernal grass. It is apparently of little value for pasture or hay. The panicle is of a brown color.

RICE CUT GRASS. (*Leersia*.)

Grows in ditches, and cuts the fingers with its stiff, hooked prickles, which also serve to help to hold up the tall stems by hooking on to other plants. The leaves are sensitive, and close up when rubbed between the thumb and finger. An interesting grass, but of no agricultural value.

## ANDROPOGON FURCATUS. FINGER GRASS.

This native is sometimes called *blue stem*. It grows four to six feet high, has a woody stem, and flowers late. In the east it is not considered of much account, but on the dry plains of the west it is valued for hay.

Other grasses of less importance are sent for name or other information, such as burr grass, wild barley, some of the weeds of the grass family, the small annual variety of *sweet vernal grass*, *wild oats*, etc.

A western professor sends one hundred and fifty bunches of grass for name; others want a list which promises well for Missouri, Dakota, Kansas, Indiana, Illinois, or Michigan; others ask for those most suitable for marshes, the names of which are noted above.

A man in Illinois is told to try June grass if he desires a grass to keep the banks of a ditch from washing, and at the same time wants one which will not choke the ditch.

Seeds of June grass are sometimes sent to Germany, where they are sold as *Poa trivialis*, rough stalked meadow grass. Some of them come back to Michigan Agricultural College for identification after passing through a seed station in Germany, and one in New England.

Mixed lawn grasses are beginning to come in since our bulletin was issued stating that June grass and red-top were the best and only grasses needed for most lawns.

Some ask what permanent grasses will thrive best in an orchard or in a grove. Orchard grass and June grass are named for this purpose.

Grass seeds from this college have been sent for trial to the Agricultural colleges of six other States.

## WHEAT AND CHESS.

Large numbers of specimens have been sent, and several have been brought by persons to show that wheat will turn to chess. So far, each one has failed in every attempt. In brief, all the cases so far seen can be summed up as follows: A chess root ran into an old hull of wheat, which was pulled up with the chess plant; bunches, or plants of wheat and chess, were closely interwoven by the roots and lower stems, but with no connection; the top part of a chess plant had been pulled out, and one of wheat, cut off, and crowded down in its place; a panicle of chess had been crowded down into the upper sheath of a plant of wheat; some small portions of a panicle of chess had been purposely or accidentally broken off and clasped by the chaff of a spike of wheat.

W. J. BEAL,

*Professor of Botany and Forestry.*

AGRICULTURAL COLLEGE, MICH., )  
July 15, 1886. )