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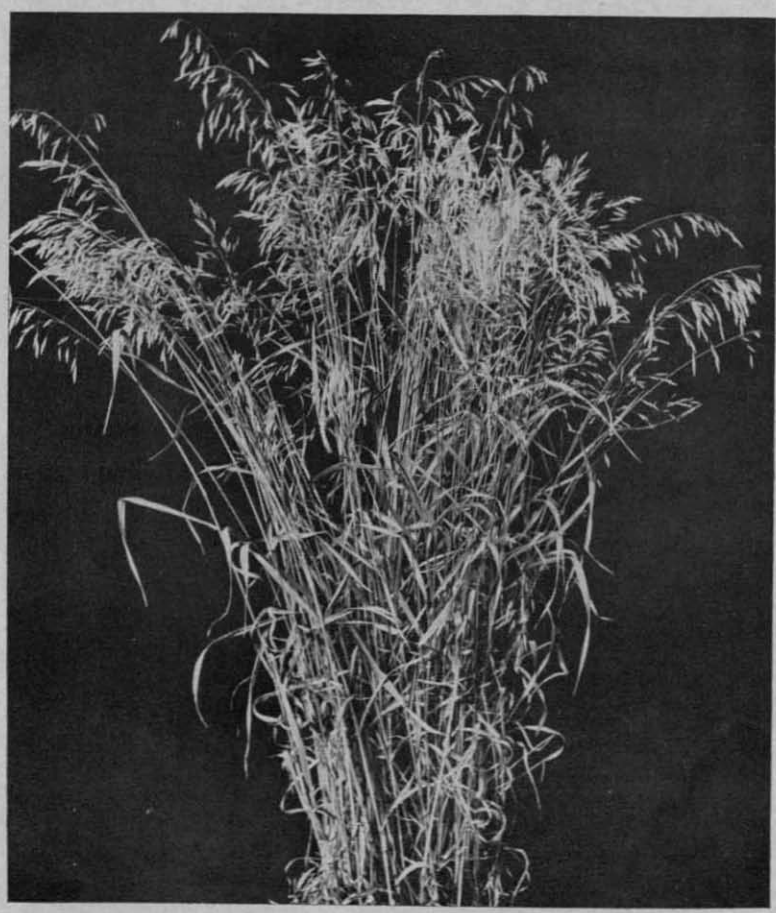
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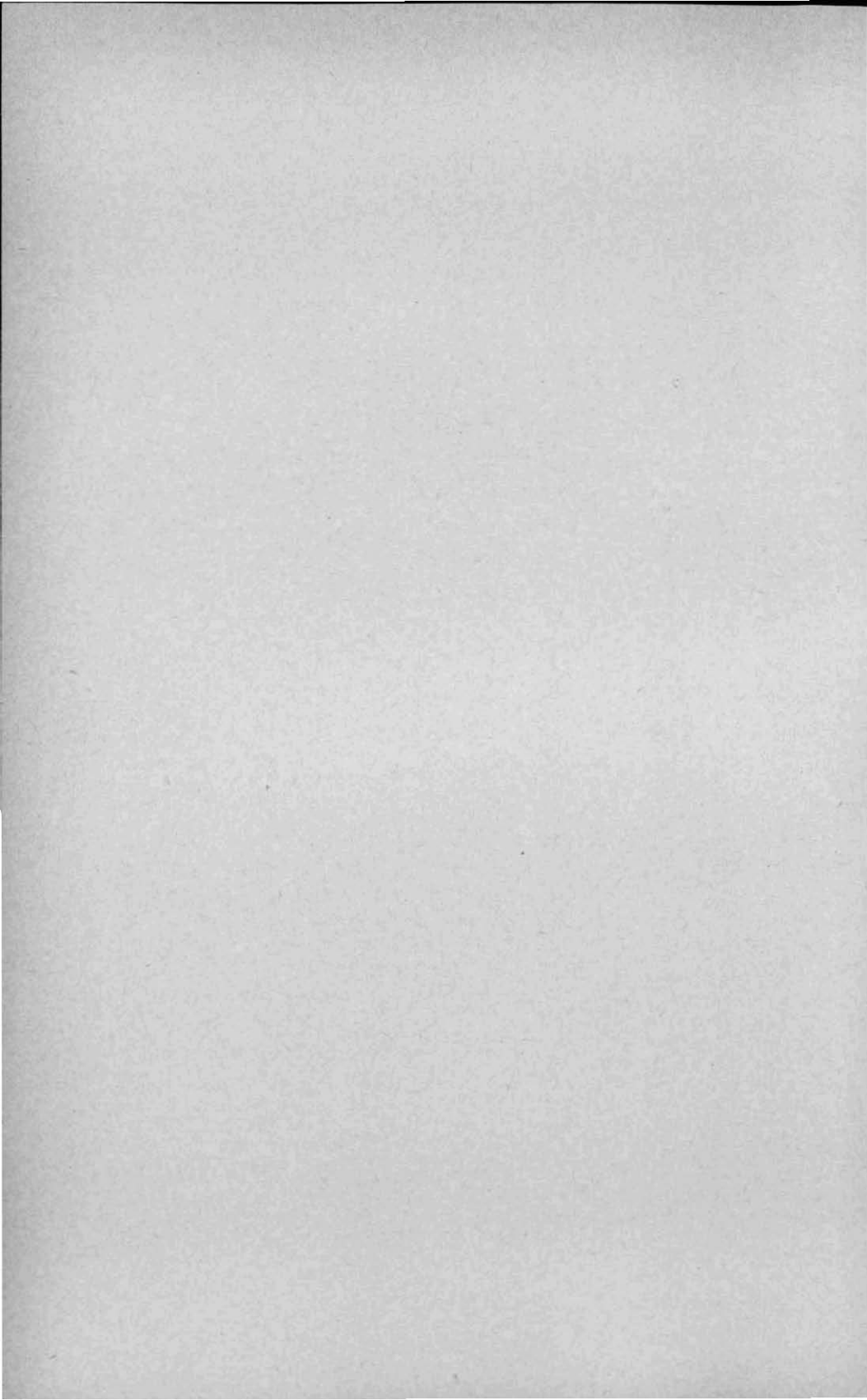
UNIVERSITY OF IDAHO  
AGRICULTURAL EXPERIMENT STATION  
Department of Agronomy

# *Manchar Smooth Brome*

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# *Manchar Smooth Brome*<sup>1</sup>

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## **There Are Several Types of Smooth Bromes**

Smooth brome is a long-lived perennial grass native to Europe and Asia. A southern type of the brome came originally from central Europe and is best adapted to areas with periods of high summer temperatures. A northern type came from Siberia and is best adapted to areas with more moderate temperatures.

## **Manchar Is a Northern Type**

Manchar smooth brome is the result of a plant selection out of a lot of seed, P.I. 109812, received in 1935 from the Kungchuling Experiment Station of the South Manchurian Railroad. The name Manchar was selected to indicate the origin of this new variety of smooth brome. It is adapted to all portions of Idaho and the Pacific Northwest. It may be used under irrigation or on dryland where annual rainfall is over 14 inches. Best growth is made on moist, well-drained soils with high fertility. However, it can be grown on depleted soils with alfalfa to help restore organic matter.

## **Manchar Has Outstanding Characteristics**

Manchar is a mild sod-forming grass that does not become sod-bound so rapidly as common smooth brome. This characteristic enables Manchar to produce high yields over a longer period of time than do the common strains. Manchar is well adapted for use in alfalfa-grass mixtures. It reaches the hay stage when alfalfa is starting to bloom. Some common strains are often too early. Manchar produces a vigorous seedling and is a high yielder of seed and forage. Leaves grow high on the stem, producing a leafy hay. After cutting, Manchar will recover faster than the common strains. It is resistant to most common grass diseases although mild cases of leafspot and mildew have been reported on Manchar. Its dark, purple-cast seeds thresh easily, and the seed is generally heavier than that of common smooth brome. This makes harvesting and seeding easier. A typical plant of Manchar smooth brome is shown on the cover of this publication.

1. The data reported in this publication resulted from cooperative studies of the University of Idaho Agricultural Experiment Station with the Soil Conservation Service Nursery Division, U. S. Department of Agriculture. The authors acknowledge helpful suggestions in the preparation of this manuscript from Dr. A. L. Hafenrichter, Chief, Regional Nursery Division, and John L. Schwendiman, Manager, Pullman Nursery Unit, Soil Conservation Service.
2. Manager, Aberdeen Nursery Unit, Soil Conservation Service, U. S. Department of Agriculture; and Agronomist, Idaho Agricultural Experiment Station, University of Idaho.

## Manchar Was Developed For Conservation Seeding

In order to obtain maximum conservation benefits from a grass, the growth habits of the grass must conform to the growth habits of legumes with which it is to grow. Some common strains of smooth brome are strong sod-formers. The aggressive habit of these strains frequently offers excessive competition to alfalfa and other legumes with which the grass must be grown. The Idaho Agricultural Experiment Station and the Soil Conservation Service, Nursery Division, tested a number of strains of smooth brome for use in legume-grass mixtures. The Manchar strain is compatible with legumes, and as a result does not produce excessive competition. Figure 1 shows a good alfalfa-Manchar smooth brome mixture.

### Manchar Can Be Used For Hay Production

The leafy characteristic of Manchar makes it desirable for hay production. Yield records show that when it was grown in pure stands at Aberdeen and Moscow it produced higher yields over a period of years than a common strain. Comparative hay yields in pure stands are given in Table 1.

Hay yields of alfalfa-Manchar mixtures are slightly higher than the yields of alfalfa seeded alone. Yields produced from such seedings made at Moscow in 1941 and Aberdeen in 1944 are shown in Table 2.

Table 3 gives the percentage composition of the hay harvested from the alfalfa-Manchar mixtures at Aberdeen and Moscow by production years and hay cuttings. The data show that at Aberdeen the relative amount of grass in the hay decreases with the age of the mixture. At Moscow the opposite trend is shown. There the percentage of grass in the hay increased with advancing age of stands. Since the mixture was grown under irrigation at Aberdeen, three cuttings of hay per season were harvested. At Moscow, under dryland conditions, only two cuttings were harvested. At both stations the first cuttings contained significantly higher amounts of grass than the second and third cuttings.

The use of Manchar smooth brome in hay seedings is illustrated by the following mixtures for irrigated and non-irrigated conditions:

A. Irrigated conditions		B. Non-irrigated conditions	
Alfalfa .....	6	Alfalfa .....	6
Manchar smooth brome.....	6	Manchar smooth brome.....	6
Orchard grass .....	2	Sherman big bluegrass*.....	4
Total pounds per acre .....	14	Total pounds per acre .....	16

\*On heavy soils substitute crested wheatgrass for the big bluegrass

### Manchar Is a Good Pasture Grass

Field trials in the irrigated as well as the non-irrigated sections of Idaho show that Manchar can be used for pasture wherever

smooth brome is adapted. Relative grazing values have not been obtained, but field observations show that Manchar will remain productive in a pasture for a longer period of time than common strains.

Typical irrigated and non-irrigated pasture mixtures including Manchar smooth brome are:

A. Irrigated conditions		B. Non-irrigated conditions	
Manchar smooth brome ....	6	Manchar smooth brome .....	6
Alta fescue .....	6	Orchard grass .....	4
Orchard grass .....	4	Alfalfa .....	2
Ladino clover .....	2	Total pounds per acre .....	12
Total pounds per acre.....	18		

### Manchar Produces High Seed Yields

Manchar is outstanding in maintaining a higher level of seed yield than commercial strains of smooth brome. This is supported by the yield data in Table 4. The row seeded stands at Aberdeen received a maintenance application each year of 40 pounds of nitrogen per acre. The plots at Moscow were not fertilized. The 1945 yields at Aberdeen of both brome strains were low because of a cold, wet spring. In 1946 the weather conditions were more favorable. This is reflected in seed yields. The 5-year average seed yield for Manchar from the nursery trials seeded in 1941 at Aberdeen was 469 pounds or 136 pounds higher than the yearly average for the commercial strain. Manchar's average for the first three production years was 681 pounds per acre. The average yield for the commercial seed for this same period was 488 pounds. At Moscow, Manchar produced consistently higher seed yields than the commercial strain both in solid and row seedings.

The yields recorded in Table 3 show that at least three seed crops can be harvested from one seeding on irrigated land providing it is maintained in rows. At least two seed crops can be harvested on dry land. Seed yields in solid stands decrease rapidly after the first and second year of production. Manchar has the ability of combining high seed with high forage production.

### Row Seedings Are Best For Manchar Seed Production

Seed yields from row seedings can be expected to be higher than those from solid seedings. Row seedings permit weed control by cultivation and prevent sod binding. The rows should be spaced 36 inches apart to facilitate cultivation. At this spacing, a seeding rate of 3 pounds per acre is high enough. Row seedings are recommended for class I and II lands. Solid seedings should be used on class III and IV lands too steep for row culture. Table 4 shows that good seed yields can be obtained with solid seedings. The yields reported from the University farm at Moscow were obtained on a field of a high fertility level. Brome, like other grasses, responds to nitrogen fertilization. Nitrogen additions are



especially necessary when smooth brome is grown in solid stands on soils of only moderate fertility.

### Manchar Seed Is Easy to Harvest

Although Manchar can be harvested with a binder or combine, harvesting with a binder is the safer method. This permits field curing and makes threshing and handling easier. Binder-harvested crops produce excellent feed because they are cut while most of the stems and leaves are still green. The crop may be left standing for harvesting with a combine, but there is more danger of shattering if this is done. The seed crop is ready to combine when the majority of the stems appear brown just below the heads for at least one-third the height of the stem.

Combined seed may contain too much moisture for immediate storage and will contain still green pieces of leaves or stems. Sacked seed with too much moisture will start to heat within 24 hours. When this occurs it will be necessary to empty the sacks and expose the seed to air to prevent damage.

### Manchar Can Be Seeded in the Spring or Fall

Manchar does not require seeding at any certain time. Successful seedings have been made in the spring or fall and even in the summer on irrigated land. Mixtures of Manchar can be seeded at any time that a legume can be expected to establish a stand.

In establishing a stand for seed production on irrigated land it is recommended that spring seeding be delayed until at least two stands of annual weeds are killed by cultivation.

Fall seedings should be made on well-prepared seedbeds not later than 6 weeks before killing frosts may be expected.

### Manchar Seed Is Available

Manchar was first distributed for certified seed production in 1943. Idaho seedings eligible for certification increased to approximately 100 acres by 1948. Foundation seed, to be used only for seed production, can be obtained through the Idaho Agricultural Experiment Station, University of Idaho, Moscow; or Soil Conservation districts.

Seed for hay or pasture seedings, or even for production of certified seed may be obtained by purchasing certified seed. Certified seed can be obtained from county extension agents, or the Idaho Crop Improvement Association at Boise.

If a grower plans to produce certified seed, an application for field inspection must be made by May 1 to the Idaho Crop Improvement Association.

Table 1.—Comparative hay yields in tons per acre of Manchar and commercial smooth brome at Aberdeen and Moscow.

Station and Crop	Years of Test					Average Yield
	1942	1943	1944	1945	1946	
<b>Aberdeen</b>						
24-inch row seedings						
Manchar .....	3.84	1.40	1.79	1.04	1.29	1.87
Commercial .....	3.47	1.27	1.08	0.90	1.13	1.57

**Moscow**

**36-inch row seedings**

Manchar .....				3.18	2.24	2.71
Commercial .....				2.75	2.15	2.45
<b>Solid seedings</b>						
Manchar .....	2.07	1.84	0.64			1.52
Commercial .....	1.55	1.46	0.51			1.17

Table 2.—Hay yields in tons per acre of alfalfa-Manchar mixtures and alfalfa by production years at Aberdeen and Moscow.

Location and Crop	Production Years			3-Year Average
	1	2	3	
<b>Aberdeen</b>				
Alfalfa-Manchar Mixture .....	6.75	7.26	7.41	7.14
Alfalfa Alone .....	6.18	7.47	7.32	6.99
<b>Moscow</b>				
Alfalfa-Manchar Mixture .....	5.03	8.26	4.85	6.05
Alfalfa Alone .....	4.72	6.76	5.26	5.58

Table 3.—Percent of grass in the hay harvested from the alfalfa-Manchar mixtures at Aberdeen and Moscow by production years and hay cuttings.

Station	Hay Cutting	Production Years		
		1	2	3
<b>Aberdeen</b>	1	32.0	5.9	5.6
"	2	7.0	2.0	2.9
"	3	1.0	2.8	1.6
<b>Moscow</b>	1	23.5	35.0	45.0
"	2	1.5	2.0	2.0

Table 4.—Comparative seed yields in pounds per acre of Manchar and commercial smooth brome at Aberdeen and Moscow.

Station and Crop	Production Years						Average Yield
	1942	1943	1944	1945	1946	1947	
<b>Aberdeen</b>							
<b>24-inch row seedings</b>							
<b>1941 nursery</b>							
Manchar .....	1205	256	581	66	238		469
Commercial .....	1039	215	211	26	172		333
<b>1942 nursery</b>							
Manchar .....		559	277	132	251		305
Commercial .....		637	158	92	92		245
<b>Moscow</b>							
<b>Solid seedings</b>							
Manchar .....	461	315	99				292
Commercial .....	281	226	90				199
<b>36-inch row seedings</b>							
Manchar .....					734	215	474
Commercial .....					316	202	259



A good mixture of alfalfa and Manchur smooth brome.

### **Manchur Will Be Used**

Smooth brome is used more widely in Idaho than any other cultivated grass. So far, practically all seedings of this grass originated from commercial seed. Such seed gives rise to a great variety of plants ranging from low-growing, vigorous sod-forming types to tall, erect-growing plants with varying numbers of leaves on the stems. The reason for the extreme variability of the plants in a smooth brome field established from commercial seed is due to the fact that such lots of seed consist of a mixture of numerous strains. Some of these strains are well adapted to Idaho conditions and yield good returns; others are not so well adapted to our particular soil and climatic conditions and are for that reason not able to produce maximum yields. This obviously influences the total yield from a field.

Manchur smooth brome has demonstrated its superiority over commercial seed under the varying conditions met with in the agricultural areas of the state. It is adapted to our conditions. Manchur will be used in pasture and alfalfa-grass hay mixtures. It combines good forage production with good seed yields. Because of its superiority, users of smooth brome will demand the Manchur variety. It is therefore of special interest to grass seed producers to obtain seed of Manchur rather than to establish stands of the more variable and lower yielding commercial smooth brome.