HARVESTING AND THRESHING THE SEED CROP OF BROME GRASS AND CRESTED WHEAT GRASS IN THE PRAIRIE PROVINCES

The seed quality and seed yield of brome and crested wheat grass depend to a large degree, upon the methods and time of harvesting and threshing. Certain characteristics of these grasses, such as the greenness of the foliage when the seed is mature, the readiness with which the ripe seed shatters and the weight of the seed, give rise to problems which are not encountered to the same extent in grain crops. If, however, these characteristics are taken into account and the harvesting and threshing processes are regulated and adjusted in accordance with them, many of the possible difficulties may be avoided.

Time of Harvesting

The leaves and lower stem of these grasses generally remain quite green, even when the seed is fully ripe. Consequently the appearance of these parts of the plant is of no value in determining the time to harvest the seed crop.

The seed of crested wheat grass drops readily as it approaches maturity. Brome grass holds its seed better, but when fully ripe it will also shatter quite readily. In both crops a high percentage of the seed may be lost by shattering, if harvesting is unduly delayed. However, it may be advisable to suffer a slight loss of seed, rather than harvest when the seeds are too immature.

Soil and moisture differences in a field usually result in considerable variation in the date of ripening. Harvesting should be done when the majority of the plants have reached the proper stage, from the latter part of July to mid-August.

Brome Grass.—When immature the heads and seeds are green but as the crop approaches maturity they develop a purplish colour. When completely ripe the seed colour changes to a dull brown. These changes are subject to variation and it is necessary to carefully examine the seed to properly judge maturity.

The firmness or stiffness of the seed is probably the most accurate measure of stage of maturity. This character may be easily tested by holding them, one at a time, end-wise between the thumb and forefinger and gradually applying

Published by Authority of Hon. J. G. Gardiner, Minister of Agriculture, Ottawa.
4-6:40

AGRICULTURAL CANADA
-7 JUIL 1981
LIBRARY — BIBLIOTHEQUE
630.4
C212
WPS
SP

pressure. Immature seeds are soft, and crush or buckle with the slightest pressure, while the completely ripe seeds are hard and brittle and will break if sufficient pressure is applied. Seeds at the proper stage for harvesting are fairly firm and will bend but not crush or break under reasonable pressure. It is necessary to examine a number of seeds to determine the average stage.

Ease of shattering may also be used as an indication of stage of maturity. This may be determined by striking heads against the palm of the hand. Some seed will shatter when the crop is at the proper stage for cutting. If the crop has already begun to shatter its seeds, it should be cut at once.

Crested Wheat Grass.—Harvesting should be done as soon as the crop is mature, otherwise losses from shattering will be heavy.

During ripening the heads and upper part of the stems of crested wheat gradually turn a straw colour. The proper stage for harvesting is reached when the heads are straw coloured, but still show a slightly greenish tinge. The seeds are then in the late dough stage and are plump and firm, but not hard. When pressed end-wise the seeds will buckle rather than break.

The ease of shattering is another indication of maturity. This may be tested by striking heads against the palm of the hand. If the seeds are easily knocked out, the crop is ready or nearly ready for harvest. Where harvesting can be done promptly and quickly, the crop may be permitted to stand until the seed just starts to shatter of its own accord.

Method of Harvesting

Harvesting With the Grain Binder.—The grain binder is generally used for harvesting brome and crested wheat grass. Because of certain characteristics of these grasses, some adjustments of the binder may be necessary.

Both of these species are normally green and leafy when the seeds are mature, consequently they cure more readily when the sheaves are not too large. The binder should, therefore, be set to make comparatively small sheaves which are tied fairly loosely; however, if too loose, they will be difficult to handle.

Crested wheat grass is rather hard to cut. In order to make a good job, it is advisable to use a sharp knife and to have the ledger plates in good condition.

If the crop is slightly over-ripe, the action of the reel and the packers will result in shattering. A trough suspended directly below the junction of the table and lower elevator canvases will catch the seed shattering on the platform. Troughs to catch the seed may also be arranged at the lower edge of the knotter table and under the bundle carrier, if necessary.

Shattering losses are heaviest during hot, dry weather. If the crop becomes over-ripe, the losses may be reduced by harvesting early in the morning when the crop is slightly tough and the temperature lower.

Crested wheat grass for seed production is generally grown in rows 30 to 42 inches apart, and as it approaches maturity there is a tendency for it to lodge between the rows. In order to pick up the crop, it is advisable to equip the binder with long extension guards of the type which is sometimes used for picking up wheat which has lodged. These extension guards should be arranged so that there will be one on each side of each row being cut. With the attachments properly adjusted, nearly all the heads may be picked up. Brome grass usually does not present this difficulty.

Harvesting With the Combine.—Crested wheat grass is not well adapted to harvesting with a combine because the necessary delay in harvesting will result in much shattering.

The combine is fairly extensively used to harvest brome grass. If the crop is well matured before cutting, this machine gives quite satisfactory results, but otherwise seed of poor germination may be obtained. The delay in harvesting, which is necessary, may result in some loss of seed.

The adjustments on the combine are similar to those on the separator.

Curing the Sheaves

Because of their leafiness and greenness, it is desirable to stook the sheaves in such a manner that they will secure the maximum exposure to the sun and to air movements. The long narrow stook arranged with the greatest length in a north-south direction provides the ideal condition for curing.

It is advisable to stook immediately after cutting, in order to reduce shattering losses. This is especially important in crested wheat grass.

The time required for curing varies with weather conditions. In bright, hot, dry weather the sheaves of both grasses will cure completely in about ten days. However, when the crop is completely cured the brittle leaves and stems are finely broken up during threshing, which makes a good separation of seed from straw impossible. This results in lost seed and later difficulty in cleaning. Brome grass is particularly troublesome in this regard. Therefore it is advisable to allow the material to cure only until the seed is hard and dry but the leaves and stems are still slightly tough. With good drying weather, crested wheat grass has been threshed two days after cutting with very good results. Threshing during humid weather accomplishes the same results. Stacking brome grass and allowing it to sweat is advocated by some growers.

Threshing

The ordinary grain separator threshes crested wheat grass and brome grass satisfactorily. Breaking the stems and leaves up finely gives rise to the most common difficulties, but these may be greatly reduced by proper feeding of the sheaves and adjustment of the thresher.

Hauling the Sheaves.—In crested wheat grass, in particular, the seed drops off easily when well cured. To avoid substantial losses the floors of the racks should be tight or covered with canvas. A canvas under the feeder will aid in collecting the seed which fall there.

Setting the Machine.—Generally the machine should be set level. If, however, the material is not carried off the straw decks and chaffer readily, a better separation may be obtained if the rear of the machine is lowered slightly. The adjustable sieve should, however, always be level or nearly so.

Concave Adjustment.—The concave adjustment should be such as to remove the seed with the least possible breakage of stems and leaves. Small pieces of straw tend to form a mat over the surface of the straw racks and chaffer and make a good separation difficult.

If the brome or crested wheat is sufficiently cured, complete threshing can usually be done without using any concave teeth. This is especially true of crested wheat grass. Grates should be used in place of the concaves, as they

permit of an early separation of the seed from the straw. Some threshermen prefer to use one blank concave in front with grates behind. The straw should be examined as soon as threshing has commenced, and if the seed is not being completely removed one row of concave teeth should be inserted. Further examination of the straw and seed should enable the operator to determine the proper setting of the concave. The seed should be completely removed without breaking up the stems and leaves too finely.

The hulls on the seed of brome are fairly easily removed in threshing. The naked seeds are a deep purplish colour and their germination is likely to be poor. The presence of much naked seed indicates that threshing is too close, and thus the concave teeth should be lowered or, if necessary, removed.

Chaffer Adjustment.—The adjustable chaffer should be opened as wide as possible without letting the straw pass through with the seed. Generally the sieve should be about two-thirds closed.

A zinc screen with a $\frac{5}{64}$" x $\frac{1}{2}$" opening placed under the adjustable sieve is of great assistance in threshing crested wheat grass. Unthreshed spikelets, which would otherwise come through with the seed, are carried into the return elevator. With such a screen the adjustable sieve may be left about half open.

Wind Adjustment.—The wind blast should be as strong as possible without blowing the seed over. The shutters on the top or front sections of the air inlets should be completely closed and the lower or back shutters manipulated until the blast is just sufficient to raise the chaff from the chaffer, but not strong enough to carry the light seed over. The weed seed opening should always be closed.

Feeding the Separator.—In order to give the chaffer and decks the greatest opportunity for separating the seed from the straw, the layer of material passing over them should be kept thin and loose. The sheaves should be fed slowly but steadily with the heads first and lying straight in the feeder.

Storing the Seed

Seed threshed from a crop cut in the proper stage and properly cured can be stored in practically any manner, but if the threshed seed is damp or tough it will probably heat in storage. Heating is most likely to occur in brome grass seed which has been combined. After the seed is placed in storage it is advisable to examine it every day or so for a short period. If heating is observed the seed should be spread out thinly, exposed to an air current and sunlight, if possible, and turned over frequently.

The straw from these grasses normally contains quite a high percentage of leaf which is still green when the crop is harvested for seed. Chemical analysis has shown these straws to be quite high in feeding value. Generally farmers who have fed them extensively in recent years have found this to be true, and have also found the feed quite palatable, though not equal in feeding value to hay cut at the proper stage.

W. J. White and W. H. Horner, *Dominion Forage Crops Laboratory, Saskatoon, Sask.*

Ottawa: Printed by J. O. Patenaude, I.S.O., Printer to the King's Most Excellent Majesty, 1940.