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AGRICULTURAL BULLETIN

THRESHING DAMAGE TO SEEDS

Prepared by the Canterbury Agricultural College, Lincoln

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This bulletin is supplementary to Bulletin No. 185 dealing with methods of avoiding losses due to skinning and cracking seeds in threshing, as a result of wrong setting of the machine or of not making adjustments to the machine as conditions vary throughout the day. Some farmers keep blindly on in an endeavour to finish an area—particularly so with contract work. The advent of the header harvester has brought problems of seed injury as a result of threshing crops before the seed has become thoroughly ripened and hardened. The injury may take the form of broken, cracked or skinned seeds which are classed as inert matter (figs. 1-4). In some cases germs are bruised and these fail to produce normal growths on germination. The external damage can be detected with the aid of a hand lens during threshing but internal injury which results in "abnormal growths" (figs. 5 and 6) cannot be detected till the germination test is carried out. Such growths are not included in the germination counts. Therefore it is doubly important to see that visible damage is avoided. Damage is very liable to occur when threshing red clover, ryegrass, wheat, barley, peas and lupins. It is less serious with white clover.

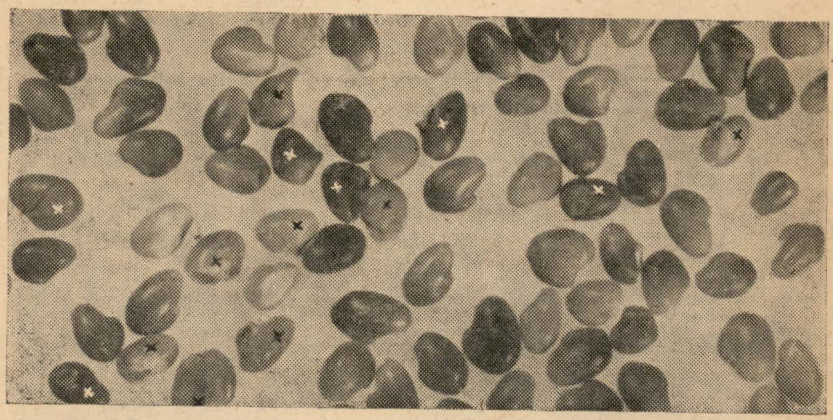

Fig. 1—Red Clover. (x) Chipped and broken seeds.

The accompanying photographs show some types of damage which must be looked for during threshing.

CAUSES OF BROKEN OR DAMAGED SEED:

1. Bad Mowing:

(a) Making a big heavy swath by using a 6' or 7' wide cutter bar in heavy crops instead of making a narrow swath with a 4' or 5' cutter bar . (See Bulletin No. 149).

(b) It is necessary to put down an even swath without breaks. Mower cutting attachments must be thoroughly overhauled before the season's cutting commences. (See Bulletin No. 186).

(c) Inside swath boards are not advocated in heavy crops but are useful in bringing in a light swath

to the width of the harvester pick-up attachment which is to follow.

(d) The grass stick on the swath board is adjustable and with care will assist in laying a more even swath, thus giving a better feed to the drum of the harvester.

(e) To obtain the quickest possible conditioning of the swath for the harvester, as long a stubble as possible should be left, consistent with getting all the seed.

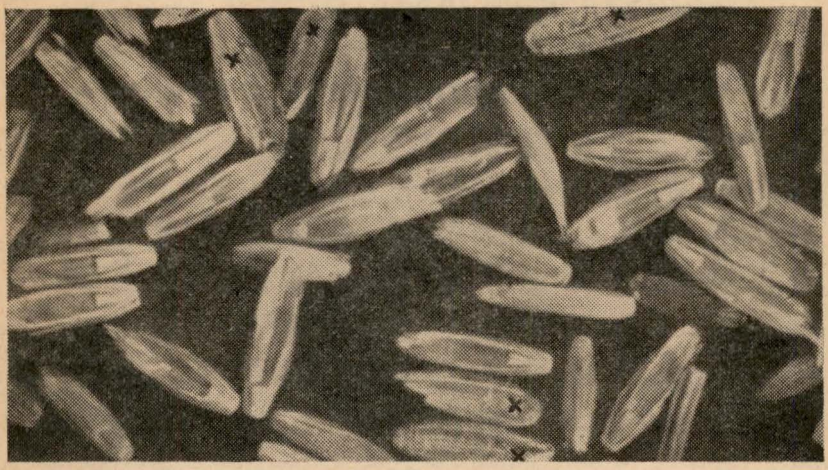

Fig 2.—Perennial Ryegrass. (x) Shelled goosegrass.

2. Out of Condition Swaths:

Harvesting must not commence until the swath is in good condition for threshing. The swath may be conditioned by:—

(a) The use of an aerator.

(b) The side rake can be used but will lose seed.

(c) The swath can be under-cut with a mower, or

(d) The crop may be stacked.

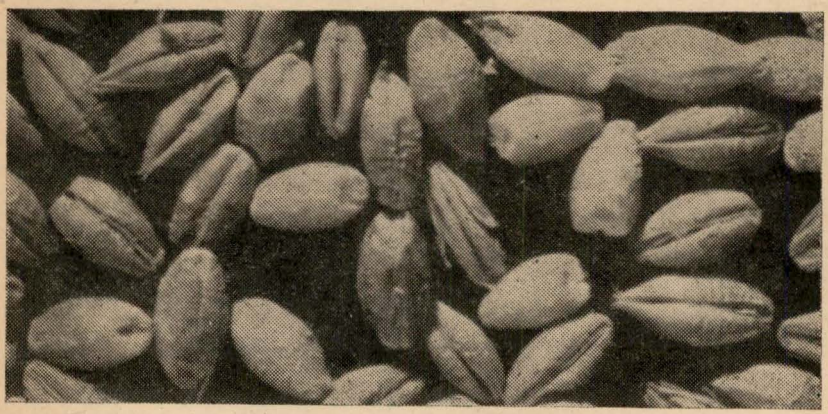

Fig. 3.—Barley. Skinned and broken seeds.

3. Bad Threshing:

(a) An even feed to the drum within the capacity of the harvester is the first essential if damage is to be avoided.

(b) Serious damage can be caused by too close a setting between drum concave and shelling plate.

(c) Excessive drum speed is a further cause of damaged or broken seed but (b) should be corrected before drum speed is reduced. Never make more than one adjustment at one time.

(d) It is not always advisable to speed up the drum or reset concaves so that all seed is threshed

in the field; often broken seed is the result, or the seed is fractured so slightly that it is not perceptible to the naked eye and may fail to germinate or they produce "abnormal growths."

(e) Excessive return to the drum from the riddles is another cause of injury. Trying for a machine-dressed sample with a finishing riddle under the adjustable sieves often sacrifices good quality by over-return to the drum.

(f) Cracked shelled and broken seed often occurs when ryegrass and white clover are threshed together. The temptation is to thresh out all the white clover and generally this damages a percentage of grass seed.

(g) Where goose grass occurs in a crop of ryegrass hard threshing breaks the awns or shells the seed of the goose grass. Such seed cannot be completely removed in machine dressing.

(h) Red clover under some conditions does not shell out completely and rather than reset concaves or increase speed to shell all the clover it is better to leave some cob as this can be collected and re-threshed or sent to the machine dressing plant.

(i) The maker's instruction book is the best guide for correct adjustment and should be followed closely.

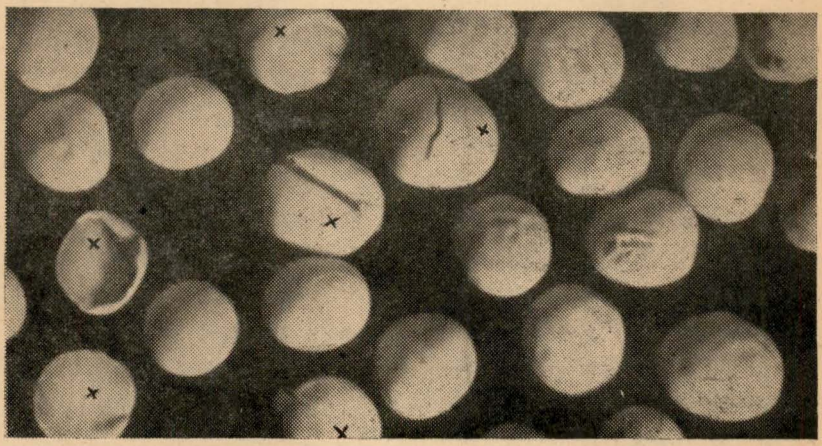

Fig. 4.—Peas. Cracked and split seeds.

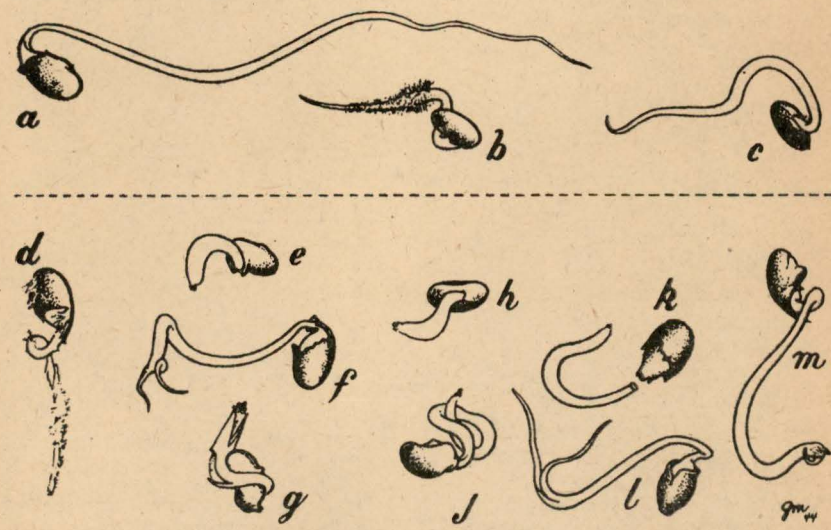

Fig. 5.—Red Clover, abnormal growths. a, b and c, normal; d-m, abnormal. (Iowa Bulletin 334).

PURITY AND GERMINATION STANDARDS:

Overseas buyers in most cases specify a purity of 98% and a germination of 90%. Germination and purity up to export standard can only be obtained if care is taken on the lines indicated by operators of harvesting equipment at every stage of the work. **Machine dressing plants cannot rectify damage done on the farm.** It is suggested therefore that machine owners should have a good magnifying glass so that a careful check can be made frequently for cracked, broken or skinned seed which the naked eye cannot detect.

In the case of white clover which contains ryegrass and a lot of rubbish, farmers should run their seed through the machine again without going through the drum and endeavour to reduce the bulk by taking out the ryegrass and dust. The advantages would be: Saving in railage; saving in dressing charges; saving in handling charges and cartage; quicker dressing results as machines would have less bulk to handle.

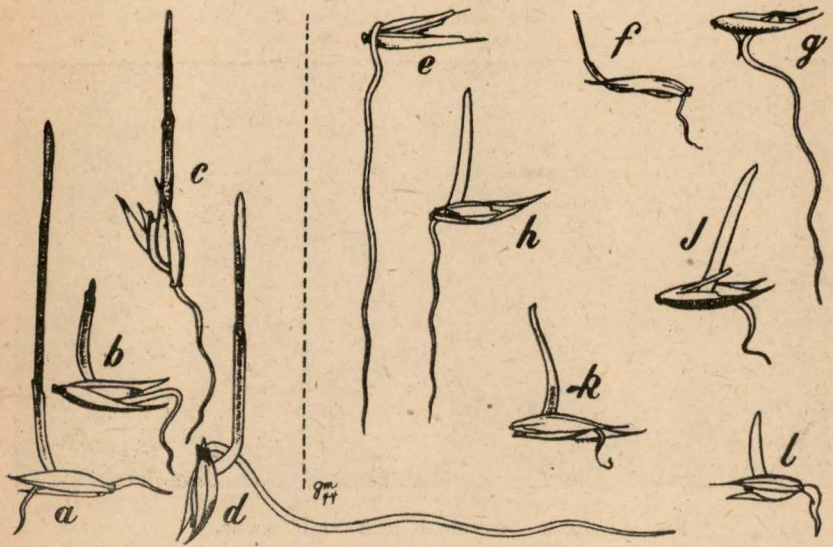

Fig. 6.—Cocksfoot, abnormal growths. a-d, normal; e-l, abnormal. (Iowa Bulletin 334).

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