# SEED CROP NOTES

September 5, 1967

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Dear Seed Grower:

## HARVESTER SEED DAMAGE

The following is a discussion by Luther Jones, Agronomy Specialist, University of California which was presented at the Seed Industry Conference at Davis in March, 1966. A review of this information is timely.

Seed injury acquired by rough treatment in equipment handling is the most important factor contributing to the poor quality and low germination of alfalfa seed. Mechanical injury holds this position because injury is always present, to some degree, whenever and wherever machinery is used in handling seed. It is estimated that more than 70% of the failure of newly-harvested alfalfa seed to germinate is due to injury acquired in the harvesting and processing operations. Even though there is considerable information dealing with the relationship of injury to the quality of harvested seed, its elimination has not been achieved in the magnitude desired. There is still a very real need for emphasizing ways and means of combating injury in order to retain the full vigor and lengthening the storage life of seeds.

The quality of alfalfa seed has steadily improved in purity, weed seed content, other crop seed content through better cultural practices including chemical weed control, and better processing techniques.

The type of alfalfa seed injury is identifiable, and can be detected through the use of a microscope to locate fractures or breaks of the seed-coat or in the seed proper. The magnitude of injury can be defined from the type of fracture, bruise, crack or break inflicted upon the seed. In tests the influence of injury on germination will show a close and positive relationship between the observed injury and the dead seed content. The relation of germination (live seed content) to injury (dead seed content) is shown in the table below.

| Treatment Number | Way Threshed | Observed Injury % | Dead Seed Content % | Live Seed Content % |
|---|---|---|---|---|
| 1 | Hand | 0.0 | 0.8 | 99.2 |
| 2 | Combine once | 6.0 | 5.6 | 94.4 |
| 3 | Combine twice | 16.7 | 13.2 | 86.6 |

Treatments 1, 2 and 3 were harvested on the same date and from the same seed fields. Treatment 1 was hand threshed and showed no mechanical injury to seed. Treatment 2 was threshed once through the combine. The injury to seed threshed once averaged 6% compared with 16.7% for seed threshed twice. Treatment 1 showed


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a germination of 99.2; Treatment 2 - 94.4% and Treatment 3 - 84.8%. Threshing once increased the dead seed content over hand threshed by 4.8%. The two threshing operations increased the dead seed content over the hand threshed by 12.6%.

Mechanical injury and water damage are the two most important contributors to low quality seed and poor germination. The use of injury readings to aid in adjusting combines to reduce damage would greatly improve the quality of harvested seed. The identification of seed injury and the evaluation of injury in terms of dead seed point out that preventive measures of control of elimination are the most useful in improving seed quality of forage crop seeds. It is clear that once seeds are injured mechanically or otherwise the loss in viability is rapid and irreversible.

If the grower, the fieldman, the processor and the seller of alfalfa seed desire to improve its quality a program can be suggested which would assure an average germination of more than 90%.

The procedure of such a program would be as follows: inspect each grower's combine immediately upon the starting of harvests, calibrate the cylinder concave clearances, and adjust the cylinder speed (RPM) of each combine to conform to the recommendations contained in "Adjustments and Operation of Self-Propelled Combine".1/ Draw a sample of seed from the harvester bin, determine the percent injury by a visual reading. Make an evaluation for germination (injury percent equals dead seed content or the percent reduction in germination). If the percent visible injury (dead seed) is 5% or more, adjust combine cylinder speed downward until the damage index falls below 5%. Seed samples should be tested throughout the harvest period to determine if conditions of weather, crop or combine have changed to cause an upward trend in the damage index.

If such a program were put into operation the minimum germination of alfalfa could be raised to 90% and the germination of more than 90% of the total alfalfa seed produced in the state could be raised to 95% or higher.

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1/ J. R. Goss, L. G. Jones and R. G. Curley. Adjustments and Operation of Self-Propelled Combine. University of California Agricultural Extension Service mimeograph.

## CERTIFIED ALFALFA ACREAGES IN FRESNO COUNTY

Enclosed is your copy of the summary of acreages applied for certification and being grown in Fresno County. Reinspection is still in progress, therefore, the total approved acreage is not known at this time.

## ALFALFA HAY VARIETY BULLETIN

A discussion of the alfalfa hay varieties currently being sold is contained in the circular enclosed for your use. This summary was compiled by Dr. Vern Marble, Extension Agronomist at Davis. A few additional copies are available from this office.

## CERTIFIED SEED NOTES

Foundation seed is now available--see enclosed "Certified Seed Notes".

Sincerely,

Bob Sheesley

Bob Sheesley
Farm Advisor

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