

## Seed Vitality

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prove that grain cut and stooked shortly before frost, threshes a better sample than grain that has been allowed to stand. Of course reference is made to grain that is fairly well on toward maturity.

Comparative local elevation affects the percentage of frost injury. For instance, grain growing in slough bottoms and even in furrows is often nipped when the rest of the field escapes injury. Particularly is this noticeable with flax. Probably the comparative stage of maturity due to the difference in elevation also contributes to render the lower grain more susceptible to injury.

### Indications of Frozen Wheat

Frost injury to wheat is indicated by a cracking of the seed coat and by more or less shrinkage. There is also a reddish discoloration at times. The degree of injury can be pretty well diagnosed by the use of the eye alone. The germination test is misleading, because the frost injury does not seem to destroy germination power to the extent one would naturally expect. This is of interest to those who have damaged wheat which they fear to sow, but which they are not in a position to replace by better seed. A fair percentage is certain to germinate, the amount depending on the favorable or unfavorable weather conditions obtaining after seeding. The serious character of the injury lies in the poor start that shrunken seed must of a necessity give to the young plant. Many claim that this influence is negligible, but some years of experiments with small seed, broken seed, and last year with frosted seed, show that the injured seed, while it may germinate, cannot produce a stand as vigorous as when plump healthy seed is sown. In last year's experiments the average germination of uninjured wheat was over 98%, while the average germination of frosted wheat was over 81%. Sown in plots the comparative stand scored 92% and 47%, of final estimate.

### Frost in Oats, Barley and Flax

Frost injury to oats is not readily apparent to the eye, and indeed it may be so little apparent as to cause spirited arguments as to its literal presence. It may as well be stated at the outset that no judgment should be given until the hull is removed. It is the popular plan to take a knife and cut the oat longitudinally. If a discoloration is found along the inner side of the bosom of the seed, it is declared frosted. After having carefully examined several hundreds of samples in search of evidence of frost injury the writer would not care to make an emphatic decision in certain cases. The discoloration just mentioned may be evidence of frosting and it may not. Samples of grain from Ontario show this discoloration when there has been no possible chance of frost injury. Perhaps excessive moisture may have been the cause. Hold the seed up to the light; a dark spot at the middle of the seed or toward the end is a pretty sure sign of frosting. Break the seed over the thumb nail; normal seed is rather pliable, but brittleness is a characteristic of frosted oats. The frosted seed tastes "oldish and sweetish," as one has styled it. The opaque spot in the seed is often large, and then the bosom of the seed is generally shrunken, giving the seed a rather flat appearance. A low germination test should tend to make one very suspicious of frosting. It is true that some varieties of oats seem to be slow in germination if tested shortly after threshing, but, as already stated, a low percentage of germination, where frosting is suspected, is apt to be strong evidence of such injury.

Discoloration of barley is said to indicate frosting and it is true that such darkening or yellowing may be caused by frost. However, it is known how rain or even dew will affect the color of barley, so one must not jump at conclusions. Lack of plumpness associated with a low germination test would indicate probable frost injury.

Flax that has been caught by frost before maturity will show a whitening of the seed coat, generally over only part of the seed. The amount of surface so bleached is a pretty fair indication of the extent of the frost injury. Most depends upon maturity. Ripe flax was subjected to three alternate thawings and freezings after being soaked for a short time in water. The seed so treated

germinated about as well as seed from the same sample that had not been so exposed. On the other hand, seed that showed bleaching showed also a corresponding falling off in germination power.

From what has been said in the foregoing one can readily deduce the fact that the securing of early maturity is the chief factor in avoiding loss from frosting. Also it seems clear that frosting causes deterioration in the quality of the seed, unless the seed has been able to ripen; that in the case of wheat and sometimes in the case of other seed the appearance of the seed should be considered along with its reputed germination power. In this country where unseasonable frosts sometimes occur, a study of the effect of such frosts upon seed, is very much to the purpose.

## Farm Buttermaking

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when we first learned to milk it was usual to squirt a little milk on the hands occasionally to keep them wet while pulling the teats. The idea was that by doing this milking was easier on the cow. But such is not the case. The practice is one which encourages waste and is also dirty so that all milking nowadays is done dry.

### Clean Surroundings Essential

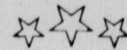
Milk so readily absorbs taints from the surrounding atmosphere and forms such an excellent breeding ground for germs of all kinds present in the air that the greatest possible care should be taken of it to insure its being kept as nearly pure as is possible. The pail used for milking should be partly closed in at the top, only a small space being left thru which the streams of milk from the teats may flow. Milking should be done as rapidly and thoroughly as possible. If the udder is not milked out dry each time the secretion of milk will soon decrease and the cow will eventually dry up long before her proper time. A great many otherwise good milking cows are spoiled during their first lactation period by not being kept milked long enough. After a heifer has her first calf she should be milked consistently for as long a period as possible, even if the amount given is comparatively small. By doing this consistently secretion of milk is encouraged, the glands are developed to their largest capacity and the maximum amount of milk is produced by the cow. After the milk has been drawn from the cow it should be taken into a clean cool room and either immediately run thru the separator or cooled down below 60° F. It has been found that milk or cream will keep sweeter and longer if cooled down well towards 40° F. immediately after being taken from the cow. The reason for this being that blood heat is just the right temperature at which bacteria develop readily. Bacteria being always present in the air very naturally drop into the milk and, since it is exactly the proper medium in which they can develop best, they immediately begin to multiply and rapidly generate taints and often sourness in the milk.

### Points to Consider

On the farm where butter is made for home use the general practice is to save the cream from the separator after each milking until sufficient for a churning has been collected. In order to insure good flavor and a uniformly ripened product there are several items which must be kept in mind. First of all never run the warm cream from the cream spout of the separator directly into the cream which is being kept for the churning. This cream should be kept separate and only added to the other after being cooled down below 60° F. If fresh cream is added to that which has been kept for some time it naturally raises the temperature of the whole amount thus tending to produce the proper condition for the growth of acid ferments which cause the whole to ripen. Then again, the first lot of cream will probably have commenced to sour somewhat and the introduction of sweet cream will cause unevenness in the whole sample. After the cream has been cooled down, however, to the same temperature it may be added to the rest of the churning and the whole carefully stirred. This will tend to produce a uniformly ripened cream when eventually enough has been gathered for a churning. Cooling is important and since it is usually so hard to find



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