

COOPERATIVE EXTENSION WORK
IN
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GIN DAMAGE TO COTTON

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Recent investigations in cotton markets have disclosed the fact that Oklahoma cotton is being heavily penalized for gin damage. Especially, during the last two years or since a longer staple has been grown in this State has this been the case. In some cases with this longer staple cotton the gin damage during the last year has been as much as fifty dollars a bale. Until the last two years the cottons in Oklahoma have had very short staple, most of it being less than 1 1-16 inches in length. This staple has been easily ginned with little attention to gin adjustments. Now much of the cotton grown in Oklahoma is 1 1-16 to 1 3-16 inches in length and this greater length which readily receives a good premium from the spinner is a valuable asset to the farmers of Oklahoma. It has been estimated that the avoidable waste in 1921 from gin damage was nearly \$5,000,000.00.

During the last five years this State has produced an average of nearly one million bales of cotton each year. It is not uncommon to find bales damaged from \$5.00 to \$25.00 a bale from gin damage. This loss is not anyone's gain as it goes into waste when the cotton is spun into yarn and is a loss entirely borne by the farmer as it is necessary for the buyer to purchase the cotton so that this damage is taken care of in the sale price.

DETERMINING THE GRADE OF COTTON

In deciding the grade of cotton the principal points to be considered are: (1) Foreign matter or impurities, such as leaf, dust, sand, motes and cut seed. (2) Color, and (3) Quality of ginning. Of these, the farmer is first responsible to a certain extent for all three. He can largely control the amount of trash in his cotton by proper and timely picking. The color also depends on proper picking when the cotton is not wet with dew or rain and not picking the cotton from the ground, and mixing with the good cotton. The farmer must first of all have his cotton in proper condition for ginning or it will be impossible to do a good job of ginning. Cotton that is damp comes through the gin with neps and gin-cut staple or as stringy cotton.

The ginner is largely responsible for the quality of ginning and to a certain extent the amount of foreign matter as all modern gins should be equipped with cleaner feeders and huller breasts which will clean low grade cotton until it is one to two grades better than if this machinery were not used. In no case should a ginner consent to gin wet cotton as it is sure to be greatly damaged and the value reduced to the extent of the gin damage.

The quality of ginning is clearly seen in a cotton sample by anyone familiar with lint cotton. A sample of properly ginned cotton is smooth, while a poorly ginned cotton is almost sure to contain neps, gin-cut staple, cut seed, or to be stringy and rough in appearance. Neps are seen in thin layers of cotton as small white dots when held up to the light. The cut fibers show in bunches and V-shaped **kinks**

and give the sample a rough appearance. Neps, gin-cut fibers, or "hog-eye kinks", may be caused by feeding the gin too fast, by the gin being in bad order, by green or immature fibers, or by the dampness of the cotton when ginned. These occur when the throat of the saw teeth have cotton packed in them, which the brush does not remove and it goes around and through the seed roll a second time. When this occurs the breast rolls should be backed off from the saws, or the roll may be slacked off. In general the first is the better method. Gin-cuts are also caused by saw teeth dragging on the ribs. This is largely a mechanical condition and is caused by wear and improper adjustment of the saws. When ribs become badly worn, an occasional seed will pass through with the lint. Nepping and gin-cuts are avoidable if cotton is in good shape and it will generally be found that if the gin is in good condition it can easily be avoided by not running the saws so deep in the rolls. These are all waste to the spinner and he either buys the bale at a price low enough to be on the safe side or refuses the bale in taking up his lists.

Cut seed in the lint indicates a large amount of waste and reduces the grade of the cotton. They are caused by fast ginning with a tight or hard roll or by broken or bent gin saw teeth that strike the grate bars. This often occurs where gins are crowded or in an effort to speed up and get a large production or turn-out of bales.

Stringy cotton may be caused by wrong adjustment of brushes that take the cotton from the saws and more commonly by ginning wet or immature seed cotton. The fibers in these strings are very difficult to separate and most of them are discarded in the first process of cleaning at the cotton mills. Samples of badly gin-cut or stringy cotton are rough in appearance and more nearly resemble "rat nests" when compared to properly ginned cotton which has a smooth even appearance.

CAUSES OF GIN DAMAGE

Direct gin damage is caused by one of the following: (1) damp cotton; (2) speeding or crowding of gin; (3) tight roll, and (4) sharp, rough saws. What might be termed indirect gin damage is the forming of two-sided bales and mixing of seed.

The most important factor in ginning is to have dry seed cotton. Cotton that is ginned damp is not smooth, but produces a curly or matted condition of the fiber, causes neps and gin-cut fibers, and gives a stringy, rough appearance to the sample. This reduces the value of the cotton to a very marked extent which may vary from little to as much as \$50.00 or more a bale, depending upon the amount of injury and the length of the staple. Every farmer should see that his cotton is well protected from moisture and that it is thoroughly dry when ginned. Then he should expect the ginner to give him good service and to deliver his lint to him still representative of its original true value. According to the Oklahoma laws, gins are public utilities, and ginner are fully responsible for the condition of cotton lint after ginning. Every ginner, however, has the right to refuse to gin cotton when it is so damp that it will be gin damaged. If both parties would see that cotton is ginned only when dry, the practice of "loading" with moisture would be done away with and the bale would sell on its true value which would undoubtedly be greatly increased over the value of the "loaded" bale. In the matter of ginning cotton when it is damp the farmer and the ginner have both been at fault.

Probably the factor that has caused the next largest amount of gin damaged cotton in Oklahoma is the undue speeding or crowding of gins in an effort to gain time. In many cases it has been found that the ginner, particularly gin managers who desire to make a showing to the company, give more attention to increasing the capacity of the gin than to the quality of work. Under average conditions a speed of about 400 revolutions per minute is recommended by the best ginner for brush gins and up to 600 revolutions for air blast gins. The speed with which the saw tooth passes through the seedroll not only determines the capacity of the gin but the condition of the ginned cotton and quality of ginning. The speeding of gins above the recommended rate by the manufacturer is an unsound economic principle in that parts are liable to break, boxes run hot, belts slip, and delays for repairs will more than offset any damage gained by greater speed. Running at the recommended speed is conducive to general improvement in the mechanical operation of the whole gin.

In connection with the speed of the gin it is well to get a proper proportion be-

tween the speed of the saws and the roll, or gin damage will result. By not running the saw teeth so deep in the roll, the same speed can be maintained but with no injury to the cotton. Of course, the capacity of the gin is lowered. If gin-cuts, V-kinks, etc., are visible it is well to see about the depth the saw teeth are in the roll and either back off the breasts or loosen the roll. Under no circumstances, however, should a ginner work an injury to his customer and to the cotton trade in general by sacrificing the value of the fiber of the cotton in an effort to increase the capacity of his gin. Of course, it is realized that every reasonable method for increasing capacity is permissible under favorable circumstances if it can be done without damaging the fiber.

Many gidders run their gin rolls so tight or hard in an effort to increase capacity that even very short staples are injured in the ginning process. A tight roll at a low speed will have a tendency to damage the fiber to a greater extent than will a loose gin roll with a high speed of saws. During the last two years it has been found that the longer staple of Acala cotton could be ginned with less damage where the rolls were not as tight as was the custom in ginning the ordinary shorter stapled cotton. A ginner should determine the proper speed and the proper condition of the gin roll by experiment and give some attention to adjustments, especially when ginning the better stapled cotton. Of course, it is unreasonable to expect a ginner to slow down his machinery and make adjustments for single bales of long staple cotton when the ginning price is based on the short staple ginning cost which allows of increased capacity. This increased cost in ginning could well afford to be paid by the person who has the cotton ginned as the value of the bale is greatly enhanced by proper ginning and it is right that the ginner receive the "worth of his hire." However, it is probable that a fair equalization will be made so that one price may cover all the cotton.

Sharp saws are necessary to properly gin cotton but newly sharpened saws are rough and have jagged edges which damage the fiber of cotton until they are worn smooth. The saws do not become smooth until several bales have been ginned. For this reason it is not advisable to gin cotton that has any length of staple until after a few bales of short staple cotton have been ginned. Some gidders even mix sand with some poor grade cotton and run this through the saws to take off the rough edges so the following bales will not be damaged to any extent.

Two-sided bales are those having more than one kind of cotton in them due generally to anxiety to crowd the gin capacity, or the impracticability of cleaning the rolls after each bale is ginned. The ginner may not allow sufficient time for each wagon load of seed cotton to be completely ginned, the breasts are not raised and consequently the following bale is made up of the remnants of preceding bale and the cotton from the next wagon load and so on. It is rare that the two wagon loads are of the same staple and grade due to differences in varieties, soil and climatic conditions and cleanliness in picking. This causes a mixed bale which is bought and sold on the basis of the class on the lower side, even though most of the cotton is of high grade. This is the most costly result from overcrowded gins and those striving for capacity runs. This damage can be largely overcome by communities standardizing on one variety of cotton.

Only in an indirect way might the mixing of seed for planting be called gin damage. Nevertheless, this is one of the greatest difficulties encountered in the production of uniform fiber. Seed of different varieties are often mixed at gins due to not allowing the machinery to run empty a few minutes and not cleaning out troughs, or emptying the gin rolls. It is impossible to maintain pure seed without the cooperation of the ginner and it is unreasonable to ask him to delay his regular ginning work and keep other customers waiting. Either the ginner should receive extra compensation above the regular rate or the pure seed be ginned at a time when there is no rush such as happens at the first or last of the season. All progressive gidders are generally willing to cooperate in this manner and if the cotton is brought to the gin when there is no rush, are glad to clean their gins in order to give the farmer back pure seed and at little if any extra cost.

The ginning of cotton so that there will be no gin damage is largely a matter of education. The producer, first of all, must bring the seed cotton to the gin in a state of dryness so that it will be possible for the ginner to make a smooth lint without neps, gin-cuts, seed-cuts, or strings. If the producer has a long staple cotton that requires the ginner to adjust the machinery in order to do good quality work,

he should be willing to pay a proper and reasonable charge above regular ginning prices as he will be able to make this back several times over when he sells the bale, with its increased value due to its having proper ginning qualities.

Next, it is the ginner's duty to see that the lint he returns to the owner is of the same quality as the lint that was given to him in the form of seed cotton. If the owner has delivered thoroughly dry cotton he has every right to expect that his cotton will not be injured and the value impaired in the process of ginning. The ginner should not speed up his gin capacity to increase production nor by running too tight a seed roll. If the cotton is not in suitable condition for ginning the ginner should refuse to gin it. Care should be taken to see that long staple cotton is not ginned on newly sharpened saws until they have had the rough edges removed. There is absolutely no reason why Oklahoma should lose thousands of dollars every year due to carelessness in ginning as it can be avoided by cooperation between the farmer and the ginner or even by the ginner himself if he refuses to gin damp cotton.