

Harvesting Sutter Pink Beans

effects of field exposure on change of color may be reduced by early harvesting and threshing

Francis L. Smith and John H. Lindt

Browning in the Sutter Pink bean—resulting in a lower selling price—can be reduced by early harvest and threshing but at the expense of bean size and yield.

To determine the effect of field exposure on browning, plots were cut at three stages of maturity: before ripe, ripe, and overripe. Half of the plots from each cutting date were threshed when dry, and the others were left exposed in the windrow for several days. This gave the following six treatments:

Cut	Threshed
1. Sept. 18 (before ripe)	Sept. 26 (dry)
2. Sept. 18 (before ripe)	Sept. 30 (delayed)
3. Sept. 22 (ripe)	Oct. 3 (dry)
4. Sept. 22 (ripe)	Oct. 8 (delayed)
5. Oct. 3 (overripe)	Oct. 10 (dry)
6. Oct. 3 (overripe)	Oct. 17 (delayed)

Each treatment was replicated four times in a randomized experiment. Each plot was a four-row block 30' long from which the two center rows were harvested.

In this experiment a bean was classed as brown if either side was brown. Five 100 bean samples were examined from each plot.

The 120 samples of beans graded for brown beans showed that there was an increase of the percentage of brown beans with each successive date of cutting.

Cut	Thresh	Days exposed from date of first cutting	Brown beans %
Before ripe	Dry	8	22.60
	Delayed	12	25.05
Ripe	Dry	15	28.25
	Delayed	20	31.65
Overripe	Dry	22	35.40
	Delayed	29	39.35

The variation between samples was very high, and significant differences were demonstrated between plots and between replications. Highly significant differences were found between treatments. The differences between cutting dates were all significant. However, the differences between threshing dates were hardly significant, and the interaction of cutting date and threshing date was not.

The effect of the length of exposure on the percentage of brown beans is

shown in the graph. Although the intervals between different cutting and threshing dates were not equal, the graph reveals that in the 21-day interval between the first and last threshing dates the percentage of brown beans rose from 22 to 39. The graph also shows the length of time the beans were exposed either standing or in windrows. Although the analysis of variance showed that differences between threshing dates were hardly significant at the 5% level, it can be seen in the graph that the percentage of brown beans increased with each extension of the length of exposure. It should be noted that the increased exposure of the delayed threshing plots was four days in the first cutting, five days in the second and seven days in the third.

Additional experiments in 1953 will investigate the questions of whether there is some inherent browning in Sutter Pink, and if so, whether there is any hope of decreasing it by using another variety.

Effect of harvest treatment on the size of the beans was determined by taking the average weight in grams of three 100-bean samples from each plot. This is expressed as an index.

On each successive date of cutting the beans were significantly larger, but there was no significant difference between the plots threshed when dry and those in which threshing was delayed. The differences between replications were not significant, but differences between treatments were highly significant. When beans were harvested before they were ripe, the size index was 26.8; when harvested ripe, it rose to 29.7; and when

they were harvested overripe the size index was 31.2.

Differences in yield were highly significant between cutting dates but not between threshing treatments or replications. No yield differences would be expected unless some beans were lost in the process. The last cutting had to be removed from the field for curing because the land was to be pastured. Some losses occurred in the extra handling these plots received, which accounts for the lower yields in the plots cut last. Beans harvested before they were ripe yielded 1,453 pounds per acre, those harvested ripe 2,015, and those harvested overripe 1,901.

The difference between the first and the other two cutting dates was significant, but the difference between cutting dates two and three was not. From this experiment the early harvest resulted in a loss in yield of 562 pounds per acre, or 28% compared to the second date of cutting.

The preliminary tests to date indicated that the grower should cut his plants as early as possible and thresh them as soon as they are dry. By harvesting early, however, he may have to sacrifice in yield and size of beans. Since there were 22% brown beans in the earliest cut plots, early harvest alone did not eradicate the brown beans in the Sutter Pink variety.

Francis L. Smith is Associate Professor of Agronomy, University of California, Davis.

John H. Lindt is Farm Advisor, Sutter County, University of California.

Robert C. Pearl, formerly Farm Advisor, Sutter County, co-operated in the experiments reported here.

