

Evaluation of Cleaning Farmers Stock Peanuts Prior to Marketing

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ABSTRACT

During two harvest seasons, 103 drying wagon lots of Florunner peanuts were graded, cleaned and regraded. The effects of cleaning on grade parameters and economic value were evaluated. Observed value changes were compared to theoretical value changes assuming removal of all grade - indicated foreign material. Neither theoretical or experimental benefits of cleaning prior to marketing increased economic value enough to exceed to the current commercial charge for cleaning.

Key Words: cleaning, peanuts, marketing, economics.

The market value of a lot of farmers stock peanuts is established by grading a sample drawn from the lot with a pneumatic sampler (1). One of several factors determined during grading is the percentage by weight of foreign material (FM) in the lot. A graduated penalty is assessed if peanuts contain between 5% and 10% FM. Most peanuts with greater than 10% FM are cleaned before marketing. FM penalties have not changed since 1968 even though the value of peanuts has increased substantially (4) (5).

A survey indicated that charges for peanut cleaning at several commercial buying facilities throughout the USA range from \$8.81 to \$16.52 per metric ton (t) regardless of % FM (Blankenship, P.D., Unpublished data). The FM penalty for peanuts with 10% FM is \$6.61 per t which should discourage farmers from cleaning peanuts with less than 10% FM. Because of sampling variability and the operating characteristics of the pneumatic sampler, many farmers believe that cleaning can be economically justified at varying percentages of FM between 5% and 10%. There has been no reported research examining this hypothesis.

The research reported herein was conducted to determine the economic importance of cleaning farmers stock peanuts before marketing under both 1968 and 1980 market prices and regulations.

Materials and Methods

Cleaning experiments were conducted during the 1977 and 1978 harvest seasons at a commercial peanut buying facility located in Parrott, Georgia, and owned by Stevens Industries, Incorporated, Dawson,

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Georgia. The effect of cleaning on the value of 103 drying wagon lots of farmers stock Florunner peanuts was examined with the procedure outlined in Figure 1. The peanuts were cleaned with a Sutton, Incorporated, Model 1403D² cleaner. Peanut flowrate through the cleaner was limited to about 8 t per hour. Loose shelled kernels separated by the cleaner were remixed with the peanuts at the entry of a bucket-type elevator which placed the peanuts into a drying wagon after cleaning. All FM removed by the cleaner, except dust lost out of the top of cyclones (estimated 1.3 kg/lot maximum), was collected and weighed. Lot weight after cleaning was calculated by subtracting the weight of the initial grade sample and the weight of FM removed from the lot weight before cleaning. Official Federal-State inspectors at the buying facility conducted sampling and grading. Corresponding 1968 and 1980 lot values were calculated as outlined by MQ-94 forms (3) for 1) uncleaned peanuts, 2) theoretically cleaned peanuts assuming removal of all grade indicated FM, and 3) peanuts cleaned with the commercial cleaner.

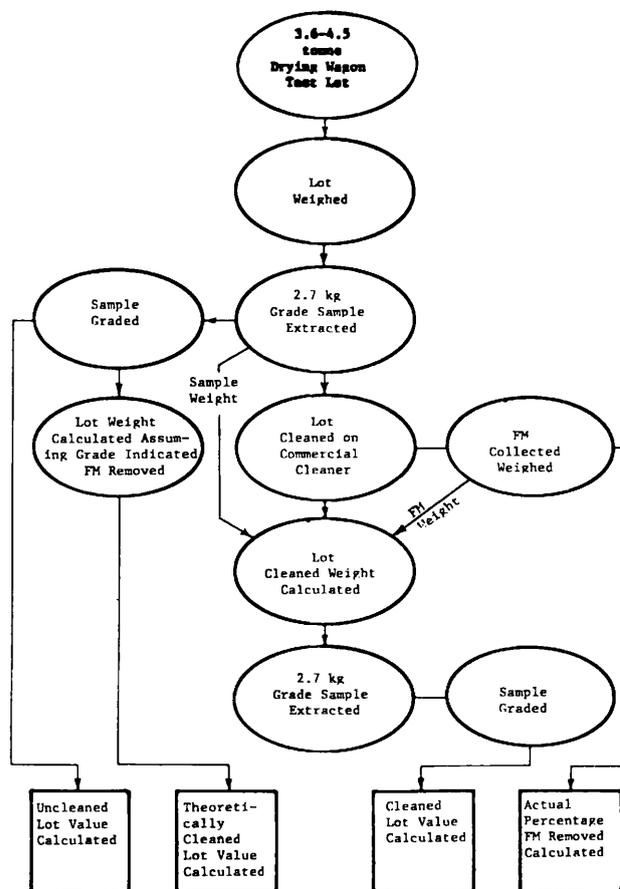


Fig. 1. Experimental procedure.

Results and Discussion

Test lots averaged 3.86 t and ranged from 3 to 23% FM at the initial grading. Normally, grades are not completed for peanuts having greater than 10% FM; however, for the purposes of this research, all grades were completed regardless of the initial percentage of FM. The total dollar values of the uncleaned, cleaned, and theoretically cleaned peanuts of all test lots were calculated using both 1968 and 1980 market prices and are shown in Table 1. A theoretical increase in the mean dollar value of the peanuts of \$5.92/t by cleaning was indicated using 1968 market prices, while a \$6.48/t theoretical increase was determined with 1980 market prices. The observed increase in mean value by cleaning the peanuts average \$5.39/t with 1968 prices and \$7.19/t with 1980 prices. Price changes between 1968 and 1980 increased the total dollar value of the peanuts 87%, but the impact of cleaning on peanut value decreased. Based on 1968 prices, cleaning increased the theoretical and observed mean dollar values of the peanuts 2.7% and 2.4%, respectively. Theoretical and observed mean values increased only 1.5% and 1.7%, respectively, when determined by 1980 prices. Equal FM penalties for both years decreased the advantage of cleaning with 1980 prices.

Table 1. Comparison of the 1968 and 1980 total dollar values for uncleaned peanuts, cleaned peanuts and theoretically cleaned peanuts.

Year	Uncleaned value dollars	Observed cleaned value dollars	Theoretically cleaned value dollars
1968	88,768	90,907	91,121
1980	167,820	170,676	170,394

Regression equations correlating % FM at initial grading and theoretical cleaning value/t were derived to show the economic potential of cleaning the peanuts using both 1968 and 1980 market prices (Figure 2). Even though FM penalties were equal for 1968 and 1980 prices, there were slight differences in the correlation coefficients and y intercepts of the two curves because peanut values were higher with 1980 prices. These equations can be used to predict the grade indicated percentage of FM required to justify cleaning. Assuming an \$8.81/t charge for cleaning and substituting in the equations shown in Figure 2, both 1968 and 1980 prices require an 11% FM at initial grading and the observed value of cleaning the test peanuts for 1968 and 1980 prices are shown in Figure 3. Again assuming an \$8.81/t charge for cleaning, economic justification of cleaning as observed would require an 11% FM for 1968 prices and 10% FM for 1980 prices.

Correlation coefficients for observed cleaning and initial % FM were lower than the coefficients for theoretical cleaning and initial % FM. Most of the variation indicated by the lower correlation coefficients was probably attributable to changes in grade factors resulting from sampling errors and the rounding of percentages in grading. Many lots decreased in value with cleaning rather than increased.

A comparison of grade-predicted FM weight removed and the actual FM removed at the cleaner for all the

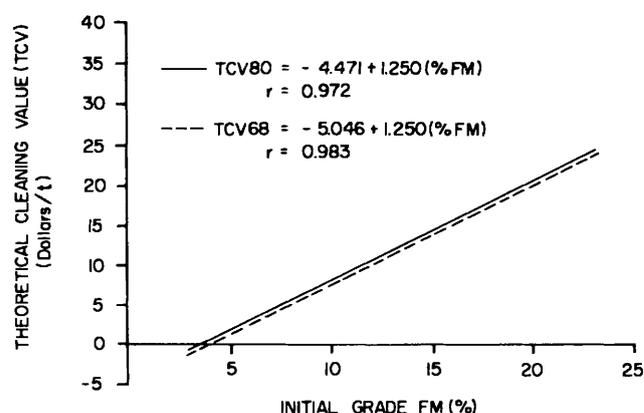


Fig. 2. The effect of initial grade FM on theoretical cleaning value with 1968 and 1980 peanut prices.

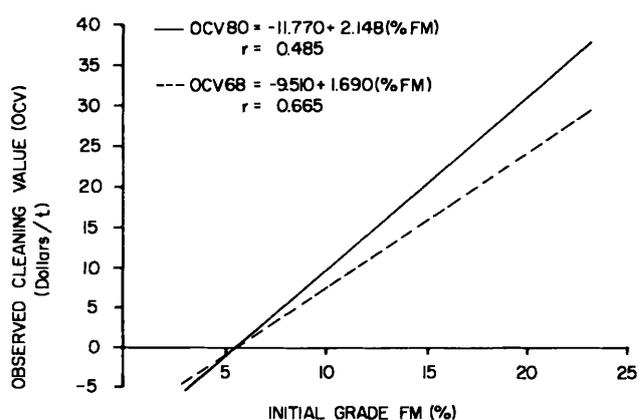


Fig. 3. The effect of initial grade FM on observed cleaning value with 1968 and 1980 peanut prices.

peanuts in the tests is shown in Table 2. Assuming that the initial grade % FM prediction was correct, a higher percentage of FM was removed by the cleaner than indicated by the final grade % FM. This difference in the weight of FM removed by the cleaner and grade-indicated FM removed had the overall effect of reducing the net marketable weight of peanuts an average of 17.6 kg/lot. The apparent loss of marketable weight explains some of the difference in the y intercepts of the theoretical and observed prediction equations shown above.

Table 2. Comparison of grade-indicated FM removed vs observed FM removed at cleaner.

Total FM indicated at initial grading	Total FM indicated at final grading	Grade total indicated FM removed	Observed total FM removed at cleaner
tonnes	tonnes	tonnes	tonnes
34.9	14.1	20.8	22.6

Most peanuts are stored for varying lengths of time in warehouses after harvest and farmer marketing. There is ample justification for cleaning all peanuts before storage (2); however, the results of these tests indicated that current grading procedures and marketing regulations should not encourage farmers to clean peanuts at commercial facilities before marketing. Because of the possibility of lowering the value of a lot and because a 10% FM

percentage was required to produce a value increase equal to even the lowest cleaning charge, cleaning peanuts before marketing which grade less than 10% FM is not economically sound.

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