

## PAMI COMBINE REPORT INTERPRETATION

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Project Engineer

Upon delivery to PAMI for evaluation, a combine meets a rigorous schedule. Run in, followed by detailed specification measurements, ensures correct initial adjustment. Field aids such as acre meters, speedometers and grain loss monitors are installed to help determine average workrates. Laboratory tests are conducted to determine grain tank capacity, unloading time, center of gravity and turning radius. Test equipment is designed and fabricated to gather information on power consumption, component behaviour and grain loss characteristics. Preliminary trials ensure that all test equipment is functioning correctly. Finally, it's off to the field to meet two main objectives.

The first objective is to obtain information on the daily performance of the combine. How well does the pickup feed the table auger? Are the table auger, feeder or cylinder easily unplugged? How does the combine handle? Are the controls responsive and convenient? Are there any safety hazards?

Obtaining information on grain loss and combine capacity is the second main objective. Since combines harvest non-uniform biological matter, capacity is affected by many crop variables. Crop type and variety, grain and straw moisture content, grain and straw yield and local climatic conditions during the growing season all affect the threshing and separating ability of a combine.

In 1976, after a warm and dry growing season, capacity tests were conducted in barley harvested soon after windrowing with the windrows receiving little or no rain. In 1977, after a cool and moist growing season, tests were conducted in barley harvested long after the completion of windrowing and subjected to many wetting and drying cycles. Less straw breakup and a lower MOG/G\* ratio for the 1977 crop resulted in lower straw walker losses. Because of the variation in crop conditions year-to-year, PAMI uses a reference combine to enable comparisons of combines evaluated in different years.

Combine capacities listed in PAMI evaluation reports are based on loss measurements taken in a particular crop type and condition as listed in the reports; operating with a properly adjusted machine. Capacities are expressed as tonnes per hour MOG feedrate that correspond to a certain percentage loss. 3% of yield is considered to be an acceptable loss when operating in cereal grains.

To check combine capacity at 3% loss; locate 3% on the vertical axis of the loss graph. Move horizontally until intersecting the total loss curve. Drop vertically to the horizontal axis to find expected feedrate. Operators who find higher or lower losses more acceptable may use the same procedure to locate corresponding feedrates.

\*MOG/G - Material other than grain/grain (ie. chaff & straw/grain)

FIGURE 1 shows that the capacity of the reference combine was greater in 1977 and 1976. It is expected that other combines would also show differences in capacities from year to year.

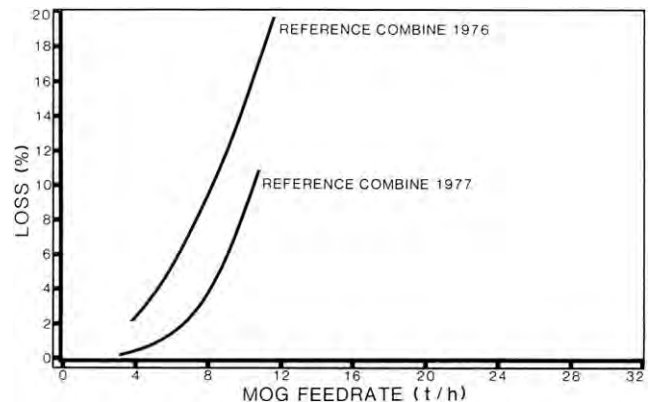


FIGURE 1. Total Grain Losses in Bonanza Barley.

FIGURE 2 shows that the capacity of Combine A was similar to the capacity of the reference combine. Combine A and the reference combine were tested in the same field on the same day in 1976.

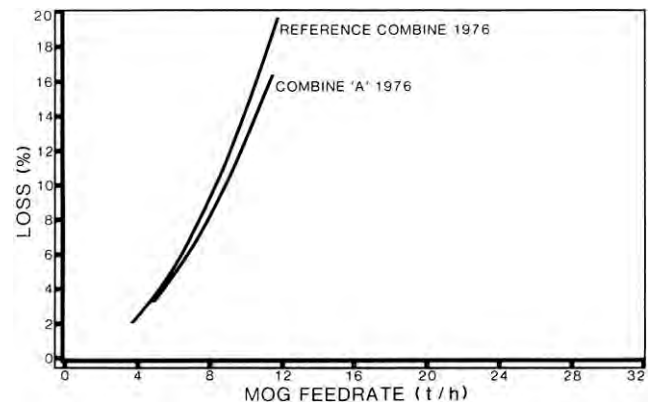


FIGURE 2. Total Grain Losses in Bonanza Barley.

FIGURE 3 shows that the capacity of Combine B was similar to the capacity of the reference combine. Combine B and the reference combine were tested in the same field on the same day in 1977.

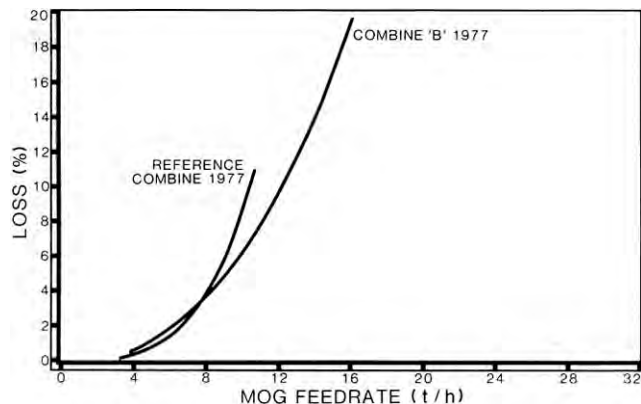


FIGURE 3. Total Grain Losses in Bonanza Barley.

It is expected that the capacity of Combine A is similar to the capacity of Combine B, since both Combines A and B had capacities similar to the reference combine in their respective year of evaluation.

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