

## Visual Evaluation for Seed Yield in Pearl Millet

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**Abstract :** The effectiveness of visual discrimination for seed yield was studied in pearl millet (*Pennisetum glaucum*). Results indicated that it is possible to visually discriminate the lines for seed yield in case the differences among them were large but not when such differences were small. Plots intermediate in yield were more prone to misjudgment during visual evaluation in comparison to high or low-yielding ones. The observer's perception of yield was influenced by plant height and earliness resulting into overestimation of actual yield for certain plots and underestimation for others. In general, correctly classified lines were taller, while no particular trend was observed with respect to earliness.

**Key words :** *Pennisetum glaucum*, pearl millet, visual discrimination, grain yield.

Visual evaluation is age old practice among plant breeders during initial screening of large number of lines when the lines are selected or rejected without recording the actual yield. Such selection (or rejection) is based on the breeder's perception of the ideotype and breeding objectives. Reports on successful visual discrimination in barley (Atkins, 1964), oats (Frey, 1962), soybean (Hanson *et al.*, 1962) and cowpea (Obisesan, 1987) are available. However, the information is scanty in pearl millet (*Pennisetum glaucum* (L.) R. Br.) regarding effectiveness of visual evaluation in identifying high yielding lines. Further, visual evaluation is based on breeder's assessment of various traits contributing to grain yield. Hence there are chances of bias caused by other traits like earliness and plant height in judging the yielding potential of genotypes. Consequently objectives of the present investigation were to evaluate visually pearl millet lines for studying (i) the effectiveness of visual discrimination for selecting high yielding lines, (ii) the influence of other traits on relationship between visual assessment and actual yield.

### Materials and Methods

The experiment was conducted during rainy season of 1992 at the Central Arid Zone Research Institute, Jodhpur. It consisted of 136 plots each having four rows of 4 m length spaced 60 cm

apart. The crop received 40 kg N and 20 kg P ha<sup>-1</sup>.

Three observers, having over 10 year experience in pearl millet breeding, visually rated the phenotypic capacity of all the plots for seed yield on a 1 (very poor) to 5 (excellent) scale at maturity. The visual rating methodology involved an initial survey of the field to determine the range of variability in the phenotypic capacity of the test material. The factors that entered into the visual assessment of grain yield were plant stand, number of productive tillers per plant and the panicle size.

Observations were recorded on days to flowering, actual seed yield and plant height. Correlations between visual scores and actual seed yield were worked out.

For frequency tabulation (Table 1) of plots into four phenotypic yield classes (actual yield) and three visual classes, each plot was included three times, once for each observer. Plots falling on dividing line of a phenotypic or visual class were assigned randomly to a class with the restriction that 34 plots were allotted to each phenotypic class and 34, 68 and 34 plots, respectively, to the high, intermediate and low class of visual score. In case, the observers possessed no ability to discriminate visually, distribution of the plots is expected to occur in a 1:1:1:1 ratio among the four phenotypic yield classes within each