

Kernel Fill Patterns in Oat

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The patterns of kernel fill in oat were studied in a series of experiments. The objective was to determine the relative importance of yield parameters in individual panicles, and their interrelationships. The mass of individual kernels was measured and the position of each within the panicle recorded, the descriptors being panicle node, branch within each node, position on the branch and order (primary, secondary or tertiary).

Kernel number was found to be the most important yield determinant. Average kernel mass was also a determinant, but these two parameters were generally unrelated.

The frequency of unfilled kernels was the second most important yield determinant. These kernels were found throughout the panicle, as both primary and secondary, and contained no rudimentary groat or floral parts. Therefore, they originate during panicle differentiation, and are not the result of stress during grain fill. The frequency of unfilled kernels is influenced by both genotype and environment, and can range from about 3% to over 40%. There was no effect found on the mass of the associated primary or secondary kernels. It is concluded that unfilled kernels represent a direct loss of yield potential by reducing sink capacity.