

INTEGRATED CROP MANAGEMENT

A response to phenomenon in 2006: Multiple ears per node



[1]Double ears.

Corn hybrids from several companies expressed more than one ear at a single node from Iowa to Indiana in 2006. Multiple ears are not unexpected, but they typically occur at different nodes (as with prolific hybrids), not on the same node. This trait was expressed in different ways in Iowa. In the most extreme cases, up to eight ears occurred at a single node. Some have called these "bouquets." Ears on these plants were usually barren. In one case, a field with bouquet ears yielded 50 bu/acre.

In less severe instances, locations exhibited two ear shoots at a node; we'll call these "double ears" (see photo, right). Often one of the double ears was significantly smaller, consisting of only a few short husks surrounding a tiny cob with silks. The other ear appeared to be full

size and not hampered by the double ear. The smaller of the double ears occasionally set grain, as shown in the picture. A "susceptible" hybrid sometimes showed bouquet ears in one field and double ears at another field.



[2]Double ear showing aborted ear shoot.

The expression of the multiple-ear trait was unusual for hybrids grown in the Corn Belt, which are typically non-prolific (one ear per plant). Incidence reports from fields expressing the bouquet trait ranged from 20 percent of the plants to 100 percent. Incidence of double ears was similar, with a range from 5 to 10 percent in affected hybrids to 100 percent. It does not appear that there was one single cause for the 2006 reports of this phenomenon.

We propose that apical dominance of the primary ear node was lost (see photo, left). This allowed multiple ear formation on lower nodes. We suggest this is true for both of the multiple ear traits (bouquet and double) observed this year.

It is doubtful that a single management or environmental factor induced the loss of apical dominance and the subsequent expression of the multiple-ear trait across several states this year. We believe the multiple-ear trait was triggered by particular stress events that occurred during primary ear formation. We may never determine exactly what the specific stress was in any given situation. In terms of yield impact, we expect that plants expressing the double-ear trait had little or no yield loss because the larger ear appeared fairly normal in size and development. Yet, in instances where a bouquet of ears occurred, we expect a greater yield loss because these ears often had no kernels produced. Therefore, the differential expression of this multiple-ear trait (bouquet versus double) caused substantially different yield responses. We believe that this type of multiple-ear expression is rare and do not expect to see it again for several years.

For more information on this, please refer to the complete article posted on our Web site at www.agronext.iastate.edu/corn/production/management/hybrid/multiple.html [3].

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<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2006/12-18/doubleear.html>

Links:

[1] <http://www.ipm.iastate.edu/ipm/icm//ipm/icm//ipm/icm/node/2193>

[2] <http://www.ipm.iastate.edu/ipm/icm//ipm/icm//ipm/icm/node/2194>

[3] <http://www.agronext.iastate.edu/corn/production/management/hybrid/multiple.html>

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