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Maize Inbred Release Notice

TO: Potential Users of University of Delaware's Maize Inbred Lines
DE3, DE4, and DE5

FROM: **Dr. Robin W. Morgan**
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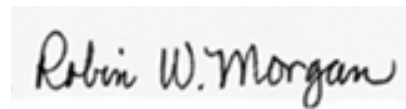
The Delaware Agricultural Experiment Station announces the release of three new yellow dent maize inbred lines: DE3, DE4, and DE5. DE3 (DKXL212:N11a-191-1-1-1-1-1) and DE4 (DKXL212:N11a-365-1-1-2-1-1-1) were derived from a Germplasm Enhancement of Maize (GEM) breeding cross (Brazilian tropical maize Dekalb hybrid DKXL212 crossed to elite non-Stiff Stalk temperate inbred N11a) using conventional breeding techniques of pedigree selection and early-generation yield testing initiated with S₂ ears. Both DE3 and DE4 are vigorous silkers and have good flower synchrony (Table 1). DE3 is short compared to inbred checks B73Ht and Mo17Ht and has ears with 16 kernel rows and white cob color. We also observed the agravitropic phenotype for the primary root of DE3. DE4 is slightly shorter than Mo17Ht, has two-ear tendency, and ears with 14 to 16 kernel rows and red cob color. European corn borer (ECB), *Ostrinia nubilalis* (Hübner) evaluations at the University of Delaware in 2001 indicate that DE3 and DE4 may have intermediate leaf feeding resistance with ratings of 5.3 and 4.9, respectively, compared to 4.0 for resistant check DE811 and 6.8 for susceptible check B73Ht. DE3 and DE4 averaged 9.0 cm and 18.3 cm tunnel length damage below the ear, respectively, compared to 44.7 cm for B73Ht and 17.3 cm for DE811 following ECB infestation at anthesis.

DE3 and DE4 hybrids were evaluated for yield and agronomic performance with GEM cooperators at 18 locations and 25 reps each for LH198 and FR1064 (see tests 1121A and 1121 B at the GEM web site: www.public.iastate.edu/~usda-gem). DE3 and DE4 yielded 174 and 175 bu/A, respectively, on the LH198 tester compared to a test entry mean of 168.6 bu/A and commercial check mean of 185.4 bu/A. Harvest grain moisture of the LH198 x DE3 hybrid was similar to Pioneer hybrid 33G26; whereas, the LH198 x DE4 hybrid was slightly wetter than Pioneer hybrid 3223. The DE3 hybrid with the FR1064 tester yielded similar to the test entry mean of 166.6 bu/A; whereas, the DE4 hybrid yielded 187.4 bu/A which was not significantly different from the check mean average of 195.2 bu/A. Stalk lodging averaged 5.3, 4.5, and 4.7 percent for the DE3, DE4, and mean of the commercial check hybrids, respectively. Root lodging averaged 5.7, 3.8, and 3.4 percent for the DE3, DE4, and mean of the commercial check hybrids, respectively. A non-replicated NIRS whole grain analysis at USDA-ARS GEM Project, Iowa State indicated that DE3 and DE4 have relatively high protein percent of 14.3 and 13.0 (dry matter basis), respectively, compared to 10.8 for B73Ht. We believe that DE3 and DE4 will contribute to the USDA-ARS GEM Project's major objective of broadening genetic diversity in Corn Belt maize by providing unique and usable germplasm for future breeding improvements.

DE5 was derived from cycle 2 of a recurrent selection program initiated with BSSS(R)C11 which was designated DE(BSSS)C_o. DE5[DE(BSSS)C2-420-3-2-1-1-1-1] was developed by pedigree selection and early-generation yield testing initiated with cycle 2 S₁ ears testcrossed to a non-Stiff Stalk inbred tester. DE5 is about 38 cm taller than B73Ht but has similar ear height (Table 1). DE5 has good flower synchrony, silked one day later than B73Ht, and has ears with 18 kernel rows and red cob color. DE5 consistently rated resistant for ECB leaf feeding resistance based on evaluations in Delaware (2000 and 2001) and in New York (2001). DE5 had comparable tunnel length damage below the ear to DE811 following ECB infestations at anthesis in Delaware during 2000 and 2001 and in New York 2001. DE5 was testcrossed to LH185 and was evaluated for yield and agronomic performance in 1998 and 2001 in Delaware at 3 locations (2 reps/location). The DE5 x LH185 hybrid was also evaluated in the NCR-167 Regional 700-800 Test at 10 locations during 2001. The DE5 x LH185 hybrid yielded similar to Pioneer hybrid 3394 in 1998 but grain harvest moisture was 1.5 percent higher. DE5 x LH185 ranked second in yield (192 bu/A) and was similar maturity to Pioneer hybrid 31G98 (202 bu/A) in the 2001 Delaware Test. DE5 x LH185 was also one of the top five yielding experimental hybrids in the NCR-167 Regional Test, but had high summer root lodging at two Iowa State University test sites following high winds. This same hybrid, however, had high vertical root pulling resistance and rind penetrometer values in the NCR-167 evaluations at Columbia, Missouri.

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Seed will be maintained and available in 100 kernel lots from the Department of Plant and Soil Sciences upon completion of the enclosed order form and the Maize Inbred Research and Development Agreement for each inbred which can be found at the following web page <http://ag.udel.edu/departments/plsc/MaizeResearch.htm> or by calling (302) 831-2535 and requesting a copy.



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Date