

## **Effects of maturity at harvest on the nutritional value, yield and milk production potential of corn hybrids planted under tropical/subtropical conditions**

**K.G. Arriola, R.M. Martins, T.F. Bernardes, F.M. Silva, B. Coy, E.A. Alias, E. Marin, L. Leyton, Z. Ma, I. Ogunade, Y. Jiang, M. Bamikole, F.A. Xavier, and A.T. Adesogan**  
Department of Animal Sciences, University of Florida, Gainesville, FL

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This study examined the effect of maturity at harvest on key agronomic and nutritional traits of corn hybrids planted in the Florida Summer. Eighteen corn hybrids from five seed companies (Agra Tech, Croplan Genetics, Mycogen, Pioneer, and Syngenta) were grown on four replicate plots (1.8 x 6.1 m) in each of four blocks in August 2013. Hybrids were harvested at target maturity stages of 30, 35, 40, and 45% dry matter (**DM**) by removing 1.8-m sections from two rows in each plot. Temperatures ranged from 14.1 to 29.3°C and rainfall was 432 mm during the growing season. Disease ranking (1, low to 5, high scale), DM yield, kernel milk line position, and chemical composition at harvest were measured. Milk-per-ton (**MPT**) and milk-per-hectare (**MPH**) values were calculated with the Milk 2006 model. Data were analyzed with a model including hybrid, maturity and the interaction using the Glimmix procedure of SAS. Mean DM concentrations at harvest were 32.3, 34.6, 40.7, and 42.5% at the respective target maturity stages above. Milk-per-hectare was unaffected by maturity (1,529-1,679 kg/t) but milk-per-ton was greater when hybrids were harvested at 30 or 35% DM than at 40 or 45% DM (1668 vs. 1531 kg/t). The neutral detergent fiber (**NDF**) digestibility decreased at each maturity stage ( $P < 0.05$ ; 59.2, 58.0 and 57.2 and 55.7%, respectively), whereas DM yield did not change (22.2 t/ha) until the 45% DM stage when it increased (25.5 t/ha). For most hybrids, disease ranking and NDF concentration decreased to a nadir and starch concentration peaked when they were harvested at 40% DM (hybrid x maturity,  $P < 0.05$ ). Kernel milk line position increased quadratically with maturity for most hybrids (hybrid x maturity,  $P < 0.05$ ). Six hybrids had among the highest milk-per-ton ( $> 1641$  kg/t) and milk-per-hectare ( $> 39164$  kg/ha) values and their NDF digestibility (57.3 to 60.3%) and starch concentration (27.7 to 32.0%) ranges were moderately high. Differences in milk-per-ton and milk-per-hectare among hybrids of 150 kg/ton and 14,132 kg /ha, respectively, were evident. Yield and quality measures were simultaneously optimized when hybrids were harvested at 35 to 40% DM.