

Hybrid Alfalfa: Harvest Management Effects on Yield and Quality

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Harvest management effects on yield and quality of hybrid alfalfa are unknown. Identical trials were seeded at Rosemount, MN; Arlington, WI; Clinton, WI; and East Lansing, MI; to compare three hybrid alfalfas (DS221HYB, DS222HYB, and Hybriforce-420/Wet) to a standard high-yielding variety (Magnum V) and a high-quality variety (WL322HQ). Three harvest regimes were imposed, including harvest at 1) early bud, 2) early flower, or 3) RFV 185 as estimated by the PEAQ method (PEAQ185). Data were collected for two production years at Arlington, Clinton, and East Lansing; and one production year at Rosemount. Depending on location and year, the early flower regime was harvested three or four times annually, and the early bud and PEAQ185 regimes were harvested three to five times.

At Arlington, total season yields were influenced by entry, year, and harvest regime; and a harvest regime X year interaction. Hybrid alfalfas (avg. 5.8 ton/ac) yielded 7 and 11% more than Magnum V (5.4 ton/ac) and WL322HQ (5.2 ton/ac), respectively. Harvest regimes produced similar yields in Year 1, but in Year 2 the PEAQ185 and early flower regimes (avg. 7.2 ton/ac) yielded 14% more than the early bud regime (6.3 ton/ac). At Michigan, there was an entry x year interaction, but harvest regime had no influence alone or interacting with other factors. After no entry yield differences in Year 1 (avg. 6.4 ton/ac), in Year 2 WL322HQ yielded 12% less than the other four entries, which did not differ. At Clinton, entries did not differ; but harvest regime and harvest regime by year were significant ($p < 0.10$; 2 reps). In Year 1, the early flower, PEAQ185, and early bud regimes yielded 7.1, 6.6, and 6.0 ton/ac, respectively; but regimes had similar yields in Year 2 (avg. 8.5 ton/ac). At Rosemount (Year 1 only), harvest regime influenced total season yield, but entries did not differ; the early flower, PEAQ185, and early bud regimes produced 5.6, 5.1, and 4.9 ton/ac, respectively.

At Arlington, hybrids (avg. 16920 lb milk/ac) produced 7 and 12% more milk/ac than Magnum V (15810 lb milk/ac) and WL322HQ (15100 lb milk/ac), respectively. The PEAQ185, early flower, and early bud regimes averaged 17000, 16190, and 15810 lb milk/ac, respectively. At East Lansing, after producing similar milk/ac in Year 1, WL322HQ produced 11% less milk/ac than other entries in Year 2 due to lower DM yields. At Clinton, WL322HQ produced 5% less milk/ac than the other entries during both years. RFV, RFQ, and milk/ton were influenced mainly by harvest regimes; entry differences were of little practical significance. Averaged across locations, season-average RFV and RFQ were 168 and 164 at early bud, 156 and 156 at PEAQ185, and 145 and 150 at early flower, respectively. The early bud regime had greater milk/ton than the early flower regime at Arlington and East Lansing, but the opposite was true at Clinton and Rosemount due to relatively lower NDF digestibility of the early bud regime at the latter two locations. At four locations, hybrid alfalfas consistently produced similar or greater DM and milk yields per acre than high-yielding and high-quality check varieties. Entries differed little in forage quality, which was influenced mainly by harvest regime.