

Agronomic strategies to intercrop corn in Manitoba

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As corn production in Manitoba grows, there is more interest in understanding how intercropping can be used as a tool to achieve both agronomic and ecological goals. This experiment explores establishment strategies, such as seeding method and timing, for corn grown on standard 30-inch rows and wider 60-inch rows. Corn was planted at the University of Manitoba at Glenlea and Carman research stations on June 20 and May 24, respectively, in 2022 with a dual-purpose grain and silage hybrid (DKC 31-85, 2125 CHU). The seeding rate for the 30-inch row treatment was 36,000 plants/ac and 18,000 plants/ac for the 60-inch row treatment. Plant to plant spacing within rows were same between intercrop and control treatments to avoid lodging. In the first seeding date treatment, intercrop mixture was seeded at planting by broadcasting or drilling the intercrop seed. In the second seeding date treatment, the intercrop was seeded using the same two methods when corn was in the V4 stage after two applications of non-residual herbicide to control weeds. Measurements included corn, intercrop, and weed biomass in mid-September and mid-November. As expected, corn biomass was highest in the 30-inch row treatments at both sampling dates. Intercropping after herbicide application at V4 stage did not reduce corn biomass at both row spacing treatments tested relative to the non-intercropped control treatments. Intercrop biomass was greatest in the 60-inch row treatments when drilled at planting followed by the drilled at the V4 stage. As expected, intercrop biomass increased from September to November sampling. Weed biomass was similar among all planting methods at 30-inch row spacing and lower than the weed biomass for all treatments at 60-inch row spacing. Among 60-inch row spacing treatments, weed biomass was greatest in the broadcast treatment at the V4 stage. As expected, grain yields were highest in the 30-inch row treatments averaged over both sites. Grain yields were equivalent to the control treatment if intercrops were planted at the V4 stage after weed control. The results of this experiment can help farmers select intercrop establishment methods to optimize the production of corn and intercrop for fall and winter grazing, silage corn and fall cover crop, or grain corn and fall cover crop.