

Recommendation of hybrid corn on Mollisols of Western upland areas in Cambodia



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Context, objective and methodology

Hybrid of corn are widely grown since early 2000s by smallholders in the western areas of Cambodia. A large number of hybrids are available on the market. However, few information are delivered regarding the yield potentialities, tolerance to drought and to low soil fertility, among others criteria. Through the Feed the Future Innovation Lab for Collaborative Research on Sustainable Agriculture and Natural Resources Management (SANREM) funded by USAID, a number of trials of registered hybrids were carried-out on several locations (Boribo I: BB-I and Boribo II: BB-II) since 2010 on Mollisols in Rattanak Mondul, Battambang province. They aim at assessing the yield to recommend the more appropriate cultivars to farmers. The experimental design is based on a tested collection with one control (cv. CP888) replicated and each hybrid was tested on 40m² with two fertilization levels F1 (70N-30P₂O₅-30K₂O) and F2 (116N-65P₂O₅-60K₂O) under conventional plow-based cropping (CT) and direct seeding mulch based cropping (DMC) systems (i.e., no-tillage, diversified crop sequence, cover/relay crops).

Corn yield under DMC and CT management

Yield was significantly higher ($p < 0.05$) under DMC than that under CT management. On average, the increase under DMC was 1.5 Mg ha⁻¹ and 2.5 Mg ha⁻¹ in 2012 and 2013, respectively (Fig. 1 and Fig. 2). When comparing the effect of fertilization, the difference between F1 and F2 ranged from 1 Mg ha⁻¹ to 1.5 Mg ha⁻¹ under DMC and CT management, respectively. By contrast, the gain in yield due to mineral fertilizers can reach almost zero on rich soil like the Red Oxisol on basalt in Chamcar Leur, Kampong Cham province.

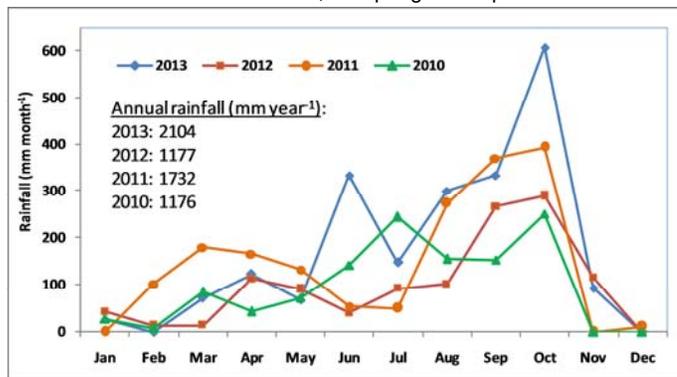


Fig. 1: Annual rainfall (mm month⁻¹) 2010-2013

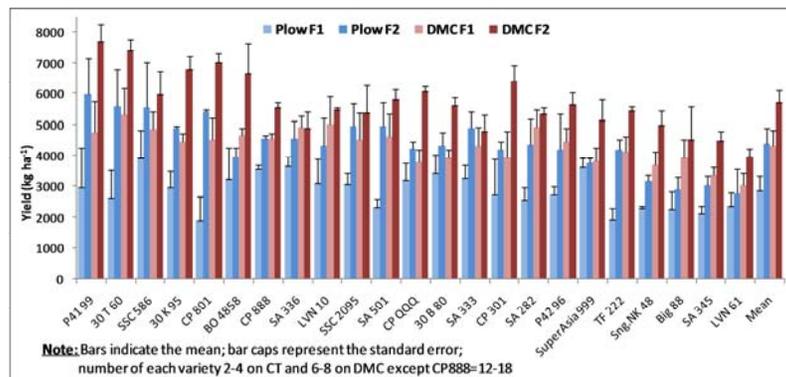


Fig. 2: Hybrid yields under DMC and CT management 2012-2013

DMC corn yield as compared with the control CP888

- In 2010, CAAA, CPQQQ, and 30B80 produced higher yield than other hybrids, the yield was in average 38%, 31%, and 21% higher than CP888, respectively.
- In 2011, CPQQQ, 30Y87, and 30B80 were the first top three hybrids, with a yield 30-to-40% higher than CP 888.
- In 2012, due to drought higher yield was observed with CP 888. Only three hybrids showed similar yields than CP 888: 30B80, P 4296, and SA 336.
- In 2013, higher yields were observed for SA282, SA336, 30T60, and SA 501, 20-30% higher than CP888.

During this year, significant difference were recorded, and yield performance varied drastically with given biophysical environment, and climatic conditions. The hybrids 30T60, P 4296, SA 282, and SA 336 showed more stable yields when compared with the others hybrids. Additional trials may confirm these first results.

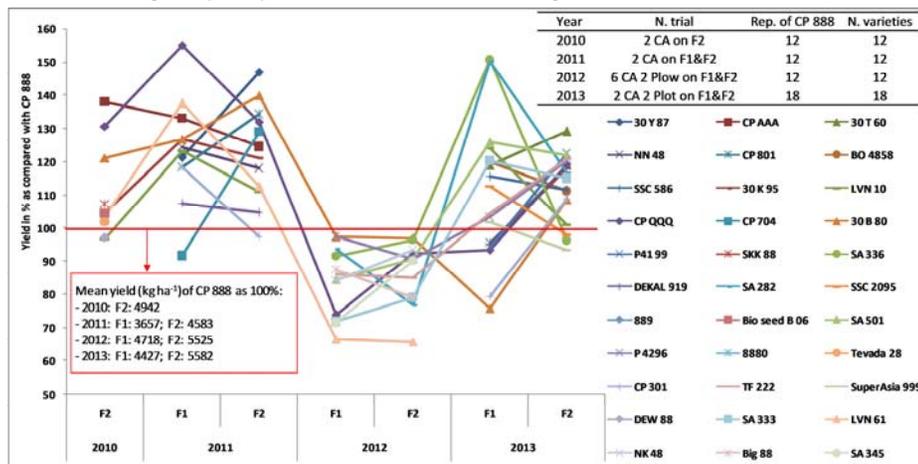


Fig. 3: Comparison of hybrid yield between CP888 (control) and the others hybrids (2010-2013)



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