Results from farmers’ fields: technologies developed to improve maize productivity

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Introduction
Over the past ten years, CIMMYT has been working on innovation in maize- and wheat-based systems in Mexico through knowledge hubs that comprise (i) research platforms to develop research-based recommendations for farmers, (ii) modules with side-by-side comparisons in farmers’ fields to fine-tune recommendations at the field scale, and (iii) extension areas where farmers apply new technologies (Fig. 1). This infrastructure is used to build relationships and feedback loops among actors and for capacity development with farmers, farm advisors and local researchers. In modules, farmers and farm advisors register data on field operations, costs and yield for the conventional practice and the innovation treatment that the farmer decided to apply.

Material and methods
Here, we analyze the yield results of 801 comparisons from modules in areas of Mexico with an average precipitation of less than 600 mm per year and where farmers innovated for at least two years. The innovation treatment included at least the use of an improved variety, conservation agriculture or improved fertilization. Three crops were included: (i) maize with 679 comparisons divided over 20 states, (ii) common bean with 62 comparisons divided over 7 states and (iii) barley with 62 comparisons in three states in Central Mexico (Tlaxcala, Hidalgo and the state of Mexico) (Fig. 2).

Results
Average yields in the conventional practice were 3.81 t/ha for maize, 0.74 t/ha for bean and 2.46 t/ha for barley. The innovation treatment increased maize yields on average 0.83 t/ha or 22% compared to the conventional practice. The yield increase was stable over innovations and the wide range of farmer practice yields. For beans and barley yield increases were 0.21 t/ha or 28% and 0.14 t/ha or 6%, respectively.

Conclusions
Farmers can increase crop yields in dry areas, but more research is needed to help farmers decide on the most cost-efficient option for their conditions.

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