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Case Study 7.4-2 Decision tool improves grain yield, profitability and efficiency for maize in China.

A dynamic and robust nutrient management approach is essential to increase yields and optimize profits for smallholder farmers practicing within intensified cropping systems. A new fertilizer recommendation method based on yield response and agronomic efficiency for hybrid maize, Nutrient Expert (NE), was tested in North China from 2010 to 2011.

Outcomes

Results from the table below indicate NE plots had higher grain yields and net profits compared with farmer practice (FP) and the local "optimal" soil test-based recommendation (OPT local). In 2010, Nutrient Expert saved 57 to 87 kg N/ha, or 29 to 39%, while in 2011 the system saved 54 to 61 kg N/ha (25 to 27%) compared with FP and OPT local, respectively. The yield increase achieved with NE could be attributed to the balanced application of N, P and K based on location-specific crop requirements that take into account yield potential and indigenous soil nutrient supplies.
Source: He, P. et al. 2012. Plant Nutrition and Fertilizer Science, 18(2): 499-505.

Year	Treatment	No.	Grain yield, t/ha	N	P_2O_5	K_2O	Net profit, US$/ha
				— kg/ha —			
2010	FP	138	8.6	225	53	33	2,155
	OPT Local	138	8.7	195	47	69	2,237
	NE	**127**	**8.8**	**138**	**50**	**52**	**2,219**
2011	FP	185	10.0	222	64	36	2,931
	OPT Local	185	10.2	215	64	86	2,990
	NE	**90**	**10.6**	**161**	**49**	**51**	**3,048**