

## From Validation to Pilot-Testing, and Pre-Extension Demonstration: The Case of Food Barley in the Central Highlands of Ethiopia

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### Abstract

Ethiopia is considered as the center of diversity for barley (*Hordeum vulgare* L.), and it is the fifth most important cereal crop in the country. To increase the productivity of the crop, research has been conducted over the past decades by different research institutions, and because of this effort, several varieties have been released. However, barley landraces still represent more than 90% of the cultivated barley diversity in Ethiopia. Barley is a very dependable cereal on the highly degraded mountain slopes of the highlands of central Ethiopia. However, the production system is dominated by age-old landraces. Thus, using the newly developed integrated agricultural technology evaluation protocol and following the innovation pathway, CASCAPE program (Capacity building for scaling up of evidence-based agricultural technologies in Ethiopia) conducted a participatory variety validation, pilot-testing and pre-extension demonstration at Girar Jarso and Tarmaber Woredas of North Shewa, Ethiopia in 2017 and 2018. Data on grain and biomass yield, acceptability, profitability, gender-related labor burden, environmental ••• were normalized on a 1-5 scale and the mean value was computed for each variety. Subsequently, conferring the set-out rules of decision making, HB-1307 with a normalized mean value of 3.8 was selected. HB-1307 has given 3850 kg/ha grain yield, a 30% increase over the landrace. It was also the most preferred variety by farmers (80.83% acceptability score) and with higher profitability compared to the other improved varieties. In 2018, the pilot-testing at Girar Jarso exhibited: 209.76%, 171.78% and 189.3% production benefit than the national, regional and zonal average yield respectively. Likewise, the benefit of HB-1307 on the pre-extension demonstration at Tarmaber was also higher than the local production practice. Following the development pathway and validation protocol of the CASCAPE program, this paper aims to shed light to an effective way of integrating parameters while selecting a crop technology and to the follow-up extension endeavors.

**Keywords:** Barley; Integrated technology validation; Productivity; Profitability; Acceptability; Gender and nutrition; Environmental sustainability

smuts, leaf rust), moisture stress, low-yielding varieties, and inadequate agronomic practices. As a result, assuming the genetic potential of the crop, the national average is relatively lower than the world average. In 2015/2016 cropping season, the national average yield had been 1.96 metric tons per hectare of land [5].

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	<b>Variety</b>			
Inconstant variables	HB-1307	Abdene	Dafo	Local
Average grain yield (kg/ha)	3850	3145	2824	2960
Adjusted grain yield (kg/ha)	3465	2830.5	2541.6	2664
Average biomass yield (kg/ha)	18880	17160	18620	18760
Adjusted biomass yield (kg/ha)	16992	15444	16758	16884
Gross field benefits (ETB/ha)	36999			



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