Two new field pea cultivars for the southeastern highlands of Ethiopia

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Introduction

Field pea is the first ranking food legume in Bale region. It is planted in rotation with barley and wheat (Alemayehu and Steven, 1987). Field pea grows twice a year during "belg" (March to July) and "meher" (July to December). Grain harvest by small farmers falls between 4-6 and 2-3 t/ha in belg and meher seasons respectively around Sinana (1). Aphids, low yielding a local varieties, lodging, diseases (powdery and downy mildew), and pod shattering are the major production constraints to field pea production in Bale in that order of importance. Sometimes aphids and variety are interchangeable.

Dadimos and Tullushenen are new field pea cultivars adapted to the southeastern highlands of Ethiopia, developed by Sinana Research Center through its regional breeding program. They are high yielding and medium maturing (140-145 days) with high protein content.

Selection

Both lines were acquired from Holetta Research Center in 1988. Fifteen plants from each line were picked before harvesting and were bulk planted in 1989. These selected lines were screened for yield and agronomic traits in a simple lattice design in 1990, 1992, 1993 and 1994 in a multi-location yield test within the Bale region at major pea growing areas. They were evaluated together with other test entries in a total of eleven environments. The elite lines with the designation, 161K-2P-11/3/3(B) and PGRC/E 32121-1(B) were named DADIMOS and TULLUSHENEN respectively after official release for commercial production by the national seed release committee.

Grain Yield Performance

The two newly released field pea varieties exhibited consistently good yield, as indicated by their mean yields (Tables 1 and 2). Data from yield trials in the 11 environments during the last four seasons (1991-1994) showed that the grain yield advantages of new cultivars Dadimos and Tullushenen were 14 and 24% over that of the local varieties. Stability analysis was done as per Eberhard and Russell (2). The coefficient of regression (b) value for both the new varieties was above one indicating that they are productive in favorable environments. This con-

Table 1. Mean seed yield (t/ha) of Tullushenen and Dadimos in comparison to the standard and local varieties over four years in 11 environments.

Variety	1990	1992	1993	1994	Mean
Tullushenen	**5.3**	**5.4**	**5.4**	**4.8**	**5.2**
Dadimos	**5.0**	**6.0**	**4.3**	**3.1**	**4.8**
FP EX DZ	**4.2**	**4.9**	**4.3**	**3.3**	**4.2**
G22763-2C	**4.1**	**4.7**	**4.1**	**3.5**	**4.1**
Local	**4.9**	**4.7**	**3.4**	**3.4**	**4.2**
Mean	**4.7**	**5.1**	**4.3**	**3.6**	**–**

Table 2. Mean grain yield and stability parameters of two newly released field pea varieties along with two standard and one local variety grown in 11 environments in Bale region

	Stability parameters			
Variety	**Seed yield, t/ha**	**b**	**sd**	**r^2**
Tullushenen	**5.2**	**1.327**	**0.391**	**0.76**
Dadimos	**4.8**	**1.432**	**0.111**	**0.68**
FP EX DZ	**4.2**	**1.002**	**0.339**	**0.53**
G22763-2C	**4.1**	**1.009**	**0.417**	**0.54**
Local	**4.2**	**1.136**	**0.084**	**0.76**
Mean	**4.5**			

clusion is in agreement with Saeed et al. (3). A cultivar with high mean performance and b value higher than 1.0 would indicate that it is expected to respond with high yield to favorable environmental conditions and can thus take advantage of the best agronomic treatments that can be applied or the best growing seasons. In the multi-location test over four years Tullushenen and Dadimos gave an average yield of 5.2 t/ha and 4.8 t/ha respectively compared with 4.2 t/ha for the local check.

Table 3. Quality characters of Dadimos and Tullushenen in comparison with G22763-2C, FP EX DZ and the local variety.

Character	Tullushenen	Dadimos	G22763-2C	FP EX DZ	Local
Protein %	26.5	23.6	25.3	24.6	24.4
TGW	158	205	147	133	133

TGW=Thousand Grain Weight

Grain Quality

Tullushenen has a higher protein content (25.6%) than the two standard and the local variety. Dadimos has also comparable protein content (23.6%) with the standard and the local varieties (Table 3). Moreover, the seeds of Dadimos and Tullushenen are, respectively, 54% and 19% larger than the local (Table 3). Dadimos has white colored seeds so it has a premium price in the local as well as export markets.

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