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CONFERENCE PROGRAM & ABSTRACT BOOK





### PP95: Faba bean (*Vicia faba* L.) yield potential and gap under supplementary irrigation in Ethiopia

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The major faba bean (*Vicia faba* L.) growing countries are China (0.9 million ha) and Ethiopia (0.5 million ha) accounting for 37.6 and 20.5%, of the total world area, respectively. The average national yield of faba bean is very low (1.7 t/ha) in Ethiopia compared to the yields reported in countries like Argentina (8.9 t/ha), Bulgaria (5.7 t/ha), United Kingdom (5.4 t/ha), Uzbekistan (4.8 t/ha), and Belgium (4.5 t/ha). Factors which include climatic, edaphic, moisture stress, physiological, pests and crop management cause large yield gaps in Ethiopia. Thus, the objective of this study was to determine the potential and yield gap of faba bean grown under supplemental irrigation. Two field experiments were carried out at Holetta Agricultural Research Center during 2014/2015 and 2015/2016 cropping seasons, where supplemental irrigation was applied at 4-6 days interval to avoid water stress for normal plant growth. Two improved varieties (Gora and Gebelcho) released for the red soils were grown in 6.8 m x 10 m plots. Yield potential was determined using the CROPGRO-Model, included in the Decision Support System for Agrotechnology Transfer (DSSAT) suit of models, calibrated using measured weather, soil, crop management and crop data collected from the two season field experiments. The actual yield of faba bean was obtained from the Annual Agricultural Sample Survey report of the Central Statistical Agency of Ethiopia reported for rainfed faba bean production around the study area. The results showed high yield potential with substantial yield gaps (44%) indicating high opportunity to double faba bean yield through improved varieties and crop management practices.

### PP96: Agronomic and farmer-participatory comparison of legume-based crops for livestock systems of different Mediterranean regions

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Livestock systems in the Mediterranean basin are facing different challenges, such as insufficiency of high-protein feedstuff, overexploitation of forage resources, and climate changes. Growing forage crops that include annual legumes, such as vetches or pea, has considerable potential and interest farmers. Cropping systems including these crops can also be more sustainable in terms of energy use, water efficiency, greenhouse gas emissions, and safeguard of soil fertility. This study was carried out in Morocco (Marchouch, area of Rabat) and Italy (Sassari, Sardinia) during 2014 and 2015, aimed to assess the forage dry matter yield and the farmers' participatory acceptance of innovative forage crops including pea (semi-dwarf or tall plant type), common vetch or Narbon vetch, in pure stand and in binary mixture with oat or triticale. We assessed also complex mixtures including two legume and two cereal species, and cereal pure stands (N-fertilized at double rate as mixtures). Experiments were designed as randomized complete blocks with four replications. Farmer-participatory assessments were performed in both years using visual scores of acceptability (ranging from 1=lowest value to 5=highest value) that were assigned to individual plots by independent groups of farmers. In both locations, pea was the highest-yielding legume pure stand crop (with minor differences between plant types), tending to out-yield even the best-performing cereal pure stand, i.e., oat. On average, pea-cereal binary mixtures tended to be somewhat higher-yielding than common vetch-cereal mixtures, and much higher-yielding than Narbon vetch-cereal mixtures. Pea- and common vetch-based crops outperformed Narbon vetch-based crops also for control of unsown species. Oat-based mixtures outperformed triticale-based ones in terms