Abstract

More than 600 million smallholders suffer seasonal poverty and food insecurity in the dry season (Vaitla et al., 2009). Agricultural terraces are typically fallow in the dry season, low soil moisture inhibits the growth of most crops (Grace et al., 2012). Fallow terraces are particularly vulnerable to soil erosion and loss of fertility at the onset of the rainy season, this leads to an increased weed pressure and in turn exacerbates female drudgery (Gardner & Gerrard, 2003). There is a global need for drought tolerant legume crops that provide food and feed in the lean season (El-Beltagy & Madkour, 2012). Stress tolerant crops can be improvement and development with wild plants (Dempewolf et al., 2014). Legume productivity in the dry season benefits from improved water use efficiency and biological nitrogen fixation in dry soils (Bunch, 2012).

An ethnobotanical survey was conducted in mid-hills of Nepal to identify genetic resources of dry-season legumes. An automated irrigation system was developed to precisely water potted plants and facilitate screening candidates for traits conferring drought tolerance in the greenhouse.

Objectives

1) Identify candidate legume species in Nepal.
2) Characterize candidates in the greenhouse under water deficient and water sufficient conditions.
3) Evaluate the effect of drought stress on yield, water use efficiency, and nitrogen fixation.

Methods: Flow chart

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2. Characterize candidates in the greenhouse under water deficient and water sufficient conditions.
3. Evaluate the effect of drought stress on yield, water use efficiency, and nitrogen fixation.

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