1. Objective of activity and intended output (1-2 sentences)

* Assess the effects of heat stress on protein content of 48 advanced breeding lines under late planting conditions.

1. Materials and methods (very brief and succinct, 3 sentences at the most)

* Advanced breeding lines, 30 Desi and 18 kabuli, were evaluated for their yield performance under rainfed conditions and heat stress conditions during 2015 and 2016, respectively.
* These lines were planted in randomized block design with two replications. Plot size was 4.8 m2.
* After harvesting dried seed was analyzed for protein content (%).

1. Results and interpretation (again succinct, maximum of 250 words).  Include data in the form of graphs, tables or pictures.

Protein content in in desi type varied from 16.2-20.4% and 22.0-27.5% under normal and summer seasons, respectively. In kabuli type, the variation was less among the genotypes both in normal (19.6-21.2%) and summer seasons (23.8-25.0%). Interestingly, the protein content of genotypes enhanced when grown under heat stress conditions compared to normal season. Similar trend was observed in both desi and kabuli types. Regression analysis showed a significant association between normal and heat stress conditions in terms of protein content (Fig. 1). A strong correlation in desi (r=0.47) and kabuli (r=0.50) types was also observed among these lines.

In two desi lines, ICCV 14104 (20.6-22.4%) and ICCV 14512 (22.3-23.3%), protein content did not vary between normal and heat stress conditions. The protein content in desi type increased more than 50% under heat stress compared to normal conditions in genotypes ICCV 14115, 14505 and 14507. Similarly in kabuli type, two genotypes (ICCV 14307 and 14317) showed increase in protein content up to 30%. Results indicate that the protein content was enhanced under heat stress conditions in most of the genotypes.

Fig 1: Relationship of protein content evaluated under normal and summer conditions in desi and kabuli type.

1. Next steps (1-2 sentences)

It would be interesting to understand the relationship of protein content with seed yield, seed size and micronutrients under normal and heat stress conditions.