Aravind Jukanti et al., Agrotechnol 2014, 2:4
http://dx.doi.org/10.4172/2168-9881.S1.012

OMICS Group Conferences
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3rd International Conference on
Agriculture & Horticulture
October 27-29, 2014 Hyderabad International Convention Centre, India

Inheritance of protein content and its relationship with different qualitative and quantitative traits in chickpea

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The inheritance pattern of grain protein content in chickpea and it's relation with few qualitative traits especially seed quality traits and some quantitative traits was evaluated. An F2 population derived from a cross between a high protein (29.15%) line ICC 5912 and extra large seeded, low protein (20.5%) line ICC 17109 was used for this study. Protein content exhibited a continuous variation in indicating that this trait is inherited quantitatively. F2 population with blue flower individuals produced higher mean protein content (21.81%) probably due to their reduced seed size. Variation in seed coat colour has profound effect on protein content. Grey seed coat colour group had highest mean protein content (21.8%) compared to other colour groups. Seed shape and seed coat mosaic doesn't show any significant influence on protein content. A significant negative correlation of protein content with seed size (-0.40), harvest index (-0.58) and seed yield (-0.18) were found. Protein content exhibited a significant positive correlation with days to maturity (0.14), plant height (0.30), secondary branch number (0.14), biomass (0.15) had a positive correlation with protein content. Results indicate that increment in protein content has negative effect on seed size and seed yield. However, observations indicated that careful selection for high protein content along with desirable seed size and seed quality traits in segregating generations may be useful for chickpea breeding.

Biography

Aravind K Jukanti has obtained his PhD in wheat genetics from Montana State University, Bozeman, USA. Postdoctoral research work was carried out on functional genomics of barley (at Montana State University, USA) and protein-protein interaction studies in castor (at Donald Danforth Plant Science Center, St. Louis, USA). Presently he is working as a Senior Scientist (Plant Breeding) at Central Arid Zone Research Institute, Jodhpur, Rajasthan, India. In total he has about 40 publications to his credit in cereal (wheat, barley, maize) and pulse (chickpea, cluster bean) crops. He is also manuscript reviewer for several international journals including Crop Science, Euphytica and Journal of Crop Science and Biotechnology.

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