

## Correlation studies in pea [*Pisum sativum* (L.)] seeds and quality attributes with response of sulphur fertilization

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### SUMMARY

Pea [*Pisum sativum* (L.)] proteins based on their total sulphur content for nutritional variability studies, an experiment was conducted during *rabi* seasons of 2005-06 at Instructional Farm of Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad (U.P.). Seeds of Fourteen (14) varieties/strains of state varietal trial (SVT) and Twelve (12) of co-ordinated varietal trial (CVT) including one check variety of state (T-163), were analyzed for protein, non-protein nitrogen (NPN), methionine, ash and total sulphur contents. In addition, the biological value of pea varieties and strains was also computed as per standard procedures. Protein, NPN, methionine, ash and total sulphur contents ranged from 20.17-24.03%, 0.144-0.285%, 0.47-0.82 g/16g N, 2.30-3.30% and 0.246-0.302% in SVT and 19.60-24.53%, 0.158-0.257, 0.49-0.89 g/16g N, 2.52-2.88% and 0.246-0.302% in CVT, respectively with significant variation among the varieties/strains themselves. The varieties/strains PS-409, PS-60 and PS-391 in CVT and 6113, 15/T-10 and K/T-1-2 were nutritionally superior over the rest. There was a highly significant and positive relationship between total sulphur and methionine content in both the trials [ $r = 0.906$  (SVT)] and  $r = 0.922$  (CVT) indicating the possibility for rapid screening of pea varieties/strains for superior biological value on the basis of its total sulphur content as well as for further nutritional and crop improvements studies in quality of pulses.

**Key words :** Pea, S, Non-protein nitrogen and methionine.

Protein, methionine and total sulphur assume their significance as a vital component of quality protein including pea crop. Earlier investigations revealed that protein linked with high S-containing amino acids is of great importance for determining the nutritional quality of legumes grain (Porter, 1972). Although, sulphur is the main constituents of S-containing amino acid, however, only a few reports are available to indicate the relationship between protein quality and total sulphur content in pulses, (Porter *et al.*, 1974 and Block and Mitchell, 1946). Therefore, in order to evaluate the quality of the pea protein based on their total sulphur content, the present study was under taken with promising lines of pea.

### MATERIALS AND METHODS

A field experiments was conducted at instructional farm of Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad-224229 (UP.), India during the year 2005-06 by using randomized block design and fourteen (14) varieties/strains of stage varietal trial (SVT) and Twelve (12) varieties/strains of co-ordinated

varietal trail (CVT) were analysed for protein, non-protein nitrogen (NPN), methionine, ash and total sulphur contents. Protein, NPN and ash were estimated by AOAC (1970), methionine by method of Horn *et al.* (1946) and total sulphur estimation by the method of Sanford and Laneaster (1962). The biological value of methionine was computed by method of Block and Mitchell (1946), Rao and Subramanian (1970). Co-efficients of correlation were worked out between methionine and total sulphur content.

### RESULTS AND DISCUSSION

The data regarding protein and other quality determinants is presented in Table 1. Protein and non-protein nitrogen contents ranged from 20.17 to 24.03% and 0.144 to 0.285%, respectively in SVT whereas, it varied from 19.60% to 24.53% and 0.158% to 0.257%, respectively in CVT. Varieties/strains 353-2B, 1437. 15/K-4 and K/15-3 were found to possess the highest protein and PS-391, 15/M-3-2 and V/T-3-4/1 were low in NPN values. A significant variability for protein content in pea was observed. These varietal variations for protein content are in accordance with Aykord (1966), Bajaj (1975) and Awasthi *et al.* (1979) whereas Bressani (1973) and Gots-Chalk *et al.* (1975) have reported a wider range of protein in pea and other pulses. It might be due to the effect of locational, seasonal and environmental factors associated with them.

Methionine content showed a variation of 0.50 to 0.87 g/16g N in SVT and 0.40 to 0.89 g/16g N in CVT.

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