

## To amino acid composition of common bean seeds from university collection

Aytasheva Z.G., Rysbekova A.B., Baiseyitova S.Q.,  
Dzhangalina E.D., Zhumabaeva B.A., Baqytbek Zh.B.

Abundance of Kazakhstan food as heirloom beans and pumpkins cultivars and lines based on domestic as international accessions and specimens received from Asian countries, European sources, Russia, Turkey and USA are under consideration. A range of introduced common bean cultivars have revealed high seed germination and maturation rates as well as resistance to water deficit, whereas domestic cultivars have been demonstrated to surpass certain foreign accessions and cultivars by seed weight and other seed parameters. Data on bean collection, grown under mountain and steppe conditions in Almaty region are completed by quantitative and qualitative amino acid analyses.

Domestic and external cultivars and lines (cvs “Aktatti”, “Bijchanka”, “Zuzka”, “Camelia”, “Katka”, “Luna”, “Nazym”, “Red Goya”, “Talgat” and “Ufinskaya”) have been ranged by using the data on amino acid composition of bean seeds obtained with high-performance liquid chromatography. Essential amino acids have been indicated to achieve 27.5 – 29.8% of total amino acids content in domestic lines. Lys and Thr as a part of the essential group is significant for plant growth. If tyrosinylation index (Phe/Tyr content) for local lines is around 0.91 – 0.94, similar ration for external cultivars is of 0.88-0.89. Thus, it may show that membrane proteins of local lines provide for complex (i.e. mechanic, thermal and chemical) stability comparing to the international accessions under investigation. By the amount of some individual amino acids (e.g. Glu, Asp, Ala and Pro) domestic bean lines have been established to exceed external cultivars 2.0-2.4 times.

### Broader Impact

Study on common bean cvs is under progress by application of paper chromatography to test the seeds for fatty acid and polyphenolic compositions. These experiments are a part of the graduates research studies at the Department of Molecular Biology and Genetics of al-Farabi Kazakh National University. Related Out-Door Workshop, Training Courses on Pumpkin and Common Bean Collection as Charity programs have been fulfilled by the department graduates as the teachers in collaboration with the the university “Zhanga Talap” Agrobiocenter еркіуіііі through February-December, 2014 and are being held to date.