

EVALUATING SOYBEAN GENOTYPES BASED ON PROTEIN CONTENT, OIL CONTENT, AND TRYPSIN INHIBITOR ACTIVITY

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The primary objective of this study was to investigate the nutritional composition of five distinct soybean genotypes (Genap 54, L.2 (S-4 x Nadejda), Onika, Z1M₉250, and Z3M₁₀200) and assess their impact on protein digestibility. The study yielded several noteworthy conclusions:

Protein Content: The soybean genotypes under analysis exhibited significant variations in their protein content. Genotype Z3M₁₀200 stood out with the highest protein content at 49.6%, while Genap 54 had the lowest protein content at a mere 38.5%. This substantial disparity in protein content highlights the pivotal role of genotype selection in influencing dietary protein intake and the overall nutritional value of soy-based food products.

Oil Content: The oil content in these soybean genotypes showed relatively consistent values, ranging between 23.7% and 25.0%, with the exception of the L.2 (S-4 x Nadejda) genotype, which displayed the lowest oil content. This uniformity in lipid content across different genotypes indicates that soybean oil production can be facilitated by choosing any of these genotypes, as it offers predictability in the oil extraction process.

Trypsin Inhibitor Activity (TIA): The study revealed significant differences in TIA levels among the soybean genotypes. Genotypes Z1M₉250 and Z3M₁₀200 exhibited the highest TIA values, indicating a greater capacity to inhibit trypsin in these genotypes. In contrast, Genap 54 displayed the lowest TIA level. These findings are of utmost importance as increased TIA levels can negatively impact protein digestibility and nutrient absorption, potentially affecting the nutritional quality of soy-based products.

This study highlights significant differences in the nutritional profiles of different soybean genotypes, especially in terms of protein, fats, and trypsin inhibitor activity. This information is valuable for choosing the right soybean genotypes for specific uses, whether in food production or animal feed, based on their nutritional suitability.

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