



AMINO ACID SPECTRA OF WHEAT GRAIN AS INFLUENCED BY DIFFERENT FERTILIZER LEVELS

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ABSTRACT

Nitrogen fertilization increases amino acids contents in wheat grain upto certain level. However, the higher doses had deleterious effects on nutritive value.

Key words : Amino acid, Wheat grain, Fertilizer levels.

INTRODUCTION

Wheat in one of the most important source of amino acids in human diets. Nitrogen fertilization upto a certain level increased the amino acids content in wheat grain (Penk, 1975). However, the higher dose of nitrogen fertilization had deleterious effect on nutritive value of grain by reducing the content of amino acid (Pruger, 1978). Reduction of P and K only affected amino acid composition through effect on N content. The present work reports the amino acid composition in wheat grain (C V PBW343) grown under different fertilizer levels.

A field experiment was conducted at Ag. Farm of R.K. (P.G.) College, Shamli during Ravi on mollisol in split plot design with four replications. The soil of the experimental site was having following chemical properties.

Organic carbon	0.45%
Total Nitrogen	0.044%
Available P ₂ O ₅	30.36 Kg/ha
Available K ₂ O	290 Kg/ha
pH	7.5

EC 0.29 dsm⁻¹

There were four fertility levels viz. F₀ (N₀ P₀ K₀) F₁ (N₄₀ P₂₀ K₁₅) F₂ (N₈₀ P₄₀ K₃₀) F₃ (N₁₂₀ P₆₀ K₆₀) Kg/ha.

The recommended cultivation practices for wheat crop were followed. The crop was harvested at maturity and the grain yield was recorded. Representative grain samples collected were subjected to amino acid analysis using auto analyser, Model JEOL - 6 AH Japan, as per method described by Harvey (1973).

It is observed in Table 1 that the content of almost all the amino acids was found to increase with increase in fertilizer levels upto F₂ (N₈₀ P₄₀ K₃₀) Kg/ha except that of lysine. The content of lysine was found to decrease with higher fertilizer levels (F₂ and F₃). The content of aspartic acid, Threonine, Serine, Proline, Glycine, Alanine, Cystine, methionine, leucine, tyrosine was markedly decreased with the application of N₁₂₀ P₆₀ K₆₀ Kg/ha (F₃). On the contrary the content of arginine, glutamic acid, valin, isoleucine and Phenyl alanine were maximum with this fertilizer level (F₃). These results are in agreement with the findings of Austin and Ahuja (1974).

Table 1 : Amino acid content (g/16gN) in wheat grain as influenced by different fertilizer levels.

Fertilizer levels					
Amino acid	F ₀	F ₁	F ₂	F ₃	Mean
Lysine	1.79	2.15	2.10	2.02	2.01
Histidine	1.23	2.00	2.21	2.10	1.88
Ammonia	2.64	3.16	3.16	4.00	3.24
Arginine	3.28	4.28	3.96	4.27	3.95
Aspartic Acid	2.13	3.52	4.38	4.33	3.59
Threonine	2.22	2.91	3.33	3.18	2.91
Serine	3.27	4.17	4.29	4.26	3.99
Glutamic Acid	26.12	30.17	29.87	31.08	29.31
Proline	7.82	10.00	10.48	9.68	9.49
Glycine	2.69	3.87	5.04	4.13	3.93
Cystine	1.83	2.30	2.65	2.40	2.29
Valine	2.68	3.24	3.20	3.30	3.10
Methionine	1.04	1.16	1.56	1.43	1.29
Isoleucine	1.87	2.28	2.38	2.43	2.24
Leucine	4.66	5.92	5.63	5.39	5.40
Tyrosine	2.32	2.80	3.57	3.28	2.99
Phenyl alanine	3.18	3.28	3.16	3.58	3.30
Grain yield (qha ⁻¹)	7.56	13.29	29.13	37.88	21.96

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