

## Erratum from page 9876-9878

Erratum to “Chemical quality of common beans as influenced by genotype and aluminium rates under two soil liming regimes. *African Journal of Food, Agriculture, Nutrition and Development*, 15 (2) 9872-9891”

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**Key words:** Aluminium, Proximate, Lime, Soil, *Phaseolus vulgaris*

Under the materials and methods the paper was correct as follows

### Chemical seed quality analysis

Moisture content, total ash, crude protein, crude fat, and crude fiber contents of the seed flour of the two common bean genotypes were determined according to AOAC[18] using the official methods 925.09, 923.03, 979.09, 920.39 and 962.09, respectively.

#### 1. Moisture

This was determined by drying about 5 g bean seed flour in an oven (Memmert 854 Schwabach, West Germany) at 102°C for 5 h (AOAC method 925.09)[18]. Then, the moisture content was calculated by using formula:

$$\text{Moisture (\%)} = \left[ \frac{\text{Mass of initial sample} - \text{Mass of dry sample}}{\text{Mass of initial sample}} \right] * 100$$

#### 2. Ash

Ash content was determined after carbonizing about 2 g bean seed flour sample and igniting it in a muffle furnace (GALLENKAMP, Model FSL 340-0100, U.K.) at 550°C until ashing was complete (over 12 h) (AOAC method 923.03)[18]. Then, the ash content was calculated by the following formula:

$$\text{Total ash (\%)} = \left( \frac{W2 - W}{W1 - W} \right) * 100$$

Where, W= mass in grams of empty dish, W1= Mass in grams of the dish plus sample dry matter basis (db), W2= Mass in grams of the dish plus ash

#### 3. Crude protein

Crude protein content was analysed using common bean flour sample (about 1 g) by micro-Kjeldahl (Automatic Steam distilating unit, UDK142, UK) method of nitrogen (N) analysis (% crude protein = % N \* 6.25) using urea as a control (AOAC method 979.09)[18].

$$\text{Nitrogen (\%)} = \frac{(V2 - V1) * N * 14.007}{W \text{ in mg}} * 100$$

Where, V2 = Volume in mL of the standard sulphuric acid solution used in the titration for the test material; V1= Volume in mL of the standard sulphuric acid solution used in the titration for the blank determination; N = Normality of standard sulphuric acid; W= mass of sample (db) and 14.007 atomic mass of nitrogen.

#### 4. Crude fat

Crude fat content was determined by the gravimetric method by taking about 5g dried common bean flour sample, extracting with ether using the Soxhlet extraction method for 4 h (AOAC method 920.39) and drying of the extracted sample at 100°C for 1 h [18]. The crude fat content was calculated by the formula:

$$\text{Crude fat (\%)} = \left( \frac{W_a - W_b}{W_D} \right) * 100$$

Where,  $W_a$  = mass of extraction flask + fat extracted;  $W_b$  = mass of extraction flask;  $W_D$  = mass of sample (db).

#### 5. Crude fiber

Crude fiber content was analysed by taking about 1.5 g bean flour sample as a portion of carbohydrate that had resisted sequential digestion with 1.25 % sulphuric acid and 1.25% NaOH, followed by sieving through 75 microns, drying at 130°C for 2 h in an oven (Memmert 854 Schwabach, Name of City, West Germany), ashing in a muffle furnace (GALLENKAMP, Model FSL 340-0100, Name of City, U.K.) until ashing was complete (over 1 h) and subtracting ash from fiber (AOAC method 962.09)[18]. The crude fiber content was calculated by using the following formula:

$$\text{Crude fiber (\%)} = \left( \frac{[(W_1 - W_2)]}{W_3} \right) * 100$$

Where,  $W_1$  = crucible mass + sample after drying;  $W_2$  = crucible mass + sample after ashing and  $W_3$  = initial sample mass (db).

#### 6. Total carbohydrates

Total carbohydrate content was determined by difference as follows:

$$\text{Total carbohydrate (\%)} = 100 - (\text{moisture \%} + \text{protein \%} + \text{crude fiber \%} + \text{crude fat \%} + \text{ash \%})$$

### Calcium (Ca), Magnesium (Mg) and Aluminium (Al)

Calcium, magnesium, and aluminium contents were determined after dry digestion of the bean flour sample (about 1 g) by atomic absorption spectrophotometer (Varian SpectraAA-20Plus, Varian Australia Pty., Ltd., Name of City, 34 Australia) using air-acetylene gas as an energy source for the atomization (AACC Method 40-70) [40]. For Ca and Mg analysis, 1% lanthanum solution (1mL La solution/5 mL or 20 mL per 100 mL flask) was added to the samples and standard to suppress interferences of phosphorus. For calcium analysis absorbance was measured at 422.7 nm and the calcium content was estimated from standard solution (0.1-1.0µg Ca/mL) prepared from CaCO<sub>3</sub>. For the determination of the magnesium content, absorbance was measured at 285.2 nm and magnesium content was estimated from a standard calibration curve (0.2-2.0 µg Mg/mL) prepared from analytical grade Mg metal ribbon. For aluminium content determination, emission was measured at 396.15 nm and aluminium content was estimated from a standard calibration curve (0.2-20 µg Al/mL) prepared from analytical grade Al metal. All the determinations were done in duplicates.

$$\text{Element (ppm or mg/1000g)} = \frac{(\mu\text{g / mL}) \times 100}{\text{Sample weight (g)}}$$

Where:  $\mu\text{g/mL}$  is concentration of analyte and 100 is original volume in mL. Finally the result was expressed in  $\text{mg}/100\text{g}$

Reference [18] is correct as follows.

[18] AOAC (Association of Official Analytical Chemists). Official Methods 920.09, 920.39, 920.87, 923.03 and 925.10. In: Official Methods of Analysis of AOAC International, Vol. II 17th edition, 2000, Washington, DC, USA

[40] AACC (American Association of Cereal Chemists). AACC Method 40-70. In: Approved Methods of the American Association of Cereal Chemists, 10<sup>th</sup> ed., 2000, St. Paul, MN, USA.