

## **SOME NUTRIENTS CONCENTRATION IN SOME PLANTS GROWN IN THE SOILS OF GIZA GOVERNORATE.**

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### **ABSTRACT**

Thirty six plant samples were collected in January 2001 from twelve locations of Giza governorate. Twelve plant samples were collected from berseem (*Trifolium alexandrinum*), parsley (*Petroselinum crispum* Mill) and rocket (*Eruca vesicaria* L.) plants, Thirty six surface soil samples (0-15 cm) were taken to represent twelve locations and three plants. The plant samples were analyzed for the elements of P, Ca, Mg, Na, K, Fe, Mn, Zn, Cu. Soil samples were analyzed for CaCO<sub>3</sub>% and soil particle distribution. Data of three plants cultivation survey in giza governorate were collected (1996-2000) and the results were summarized as follow.

Area cultivating berseem represent 54.59% of total cultivable area in Giza governorate and the production represent 3.5% of the total cultivated berseem in Egypt. The total production of parsley and rocket in Giza represent 73% and 37% as percent of their total production in Egypt.

Surface soil samples of giza area had low calcium carbonate content (4.24%) and relatively high silt and clay contents (24.37% and 42.75%).

The average values of the element concentrations of P, Ca, Mg, Na, and K in berseem were 0.185, 2.04, 0.24, 1.48, 1.3%, in parsley were 0.257, 2.76, 0.42, 0.57 and 2.45%, and in rocket were 0.370, 2.82, 0.44, 0.28 and 2.38%, respectively.

The average values of the element concentrations of Fe, Zn, Mn and Cu in berseem were 849, 46, 55 and 10.5 µg/g, in parsley were 791, 52, 69 and 12.4 µg/g, and in rocket were 1222, 78, 72 and 6.9 µg/g, respectively.

Generally, plants had proper values of Ca and Fe for berseem and Ca, K and Fe for parsley. Rocket plants were rich in P, Ca, K, Fe and Mn.

### **INTRODUCTION**

Morton *et al.* (1998) reported that mean critical nutrient concentrations have been reported as 0.35% P and 2.05% K of an early stage of white clover. Stockdale (1999) revealed that the ranges in mineral elements recorded were 0.16-0.43% for phosphorus, 1.18-3.41% for potassium, 0.26-1.49% for calcium, 0.20-0.54% for magnesium, 0.05-0.44% for sodium, for white clover, ryegrass and paspalum. White clover was richer in a number of minerals than were the grasses, particularly calcium, potassium and magnesium, although phosphorus was also generally higher in white clover, phosphorus, calcium, magnesium and sulfur were more concentrated in the leaves than in the stem. White clover stems had higher concentrations of potassium and chlorine than leaves,

Salim *et al.* (1995,a) said that the copper content was greatest in the leaves in comparison with the other parts of treated plants. Only very small portions of the added copper were translocated from soil into parsley plants. Salim *et al.* (1995,b) reported that both copper and zinc ions had an inhibitory effect on the growth of parsley when applied in solution to the soil in which the plants were growing.

Boland *et al.* (1995) reported that in spite of the critical concentration of P was different when measured for samples collected at about the same time in different years at the same site or different sites, the concentration consistently decreased with increasing maturity of clover. Mean critical P concentrations (%) were: April, 0.63; May, 0.56; June, 0.49; July, 0.44; August, 0.34; September, 0.32; October, 0.25; and November, 0.19.

Maliwal *et al.* (1986) reported that increasing P<sub>2</sub>O<sub>5</sub> rates (0-180 kg/ha) significantly increased the fresh fodder yields of *T. alexandrinum*. Bansal and Nayyar (1997) pointed out that the dry matter yield and Mn concentration varied greatly with different soils. The critical deficiency level of Mn in plants at 50 days was 19 µg/g dry matter. El-Kenawy *et al.* (1997) reported that shoot weight of white clover decreased with increasing Zn concentration. Tindall (1983) reported that parsley plants contain 85% moisture content, and contain 200, 47, 8 of Ca, P and Fe for every 100g edible portion respectively.

This research aims to throw light on some soil characteristics and element contents of berseem, parsley and rocket under extensively cultivation of these plants.

## **MATERIALS AND METHODS**

Twelve locations were chosen in Giza Governorate cultivated with Egyptian berseem (*Trifolium alexandrinum*) and two leaf vegetables (parsley (*Petroselinum crispum* Mill) and rocket (*Eruca vesicaria* L.)), (Table 1). Thirty six plant samples were collected in January 2001 from these locations concern berseem, parsley and rocket plants, where twelve samples for each plant. Thirty six surface soil samples (0-15 cm) were taken to represent twelve locations and three plants. Plant sample was dried and digested. Determination of Ca, Mg, Fe, Mn, Zn, Cu was done using an atomic absorption. P determined colorometrically and Na and K using aflame photometer. CaCO<sub>3</sub>% of soil samples was determined according to Jackson (1967) and soil particle distribution according to Piper (1950). Survey data concern the three plants and animals of Giza governorate were collected from Economic Affairs Sector, Agricultural Economic Central Administration, (1996-2000).

**Table (1): Locations of the plant cultivated fields**

| <b>Location No.</b> | <b>Location area (Village name)</b> | <b>Location No.</b> | <b>Location area (Village name)</b> |
|---------------------|-------------------------------------|---------------------|-------------------------------------|
| 1                   | El-Mansoria                         | 7                   | Nahia                               |
| 2                   | Oseem                               | 8                   | Koniasa                             |
| 3                   | Kombera                             | 9                   | Abu El-Nomors                       |
| 4                   | Berk El-Khiam                       | 10                  | Met Rahina                          |
| 5                   | Kerdasa                             | 11                  | Dahshor                             |
| 6                   | Saft Ellaban                        | 12                  | El-Aiat                             |

## RESULTS AND DISCUSSION

### 1- Plant Production:

Data of area and production of berseem, parsley and rocket in Giza governorate through five years (1996-2000) were collected from Economic Affairs Sector shown in Table (2). The area cultivating plants as percent of total area in Egypt cultivated the same indicator plants ranged from 2.95 to 3.45%, 33 to 44% and 16 to 24% for berseem, parsley and rocket, respectively, and their averages are 3.14, 38 and 21%. The production ranged from 3.46 to 4.25%, 56 to 84% and 29 to 49% and their averages are 3.89, 73 and 37%. The average area of five years cultivated berseem (73820 fed) represent 54.59% as percent of total cultivable Giza area (135225 fed in 1998). Also, the average of the animal feeding fodder in Giza through 1995-1999 were 3.1, 4.35, 3.29, 2.59 and 5.13% for cow, buffalo, goat, sheep and camel related to the total number in Egypt. These values throw light on the magnitude of berseem for animal and the majority cultivation of parsley and rocket in Giza governorate.

**Table (2): The area (fed.) cultivated with berseem, parsley and rocket and the production (ton/area) in the last five years (1996-2000) in Giza governorate.**

| Plants Type | Year | Area (fed.) |         |     | Production (ton/area) |          |     |
|-------------|------|-------------|---------|-----|-----------------------|----------|-----|
|             |      | Giza        | Egypt   | %   | Giza                  | Egypt    | %   |
| Berseem     | 1996 | 74208       | 2347029 | 3.2 | 2132810               | 50156859 | 4.3 |
|             | 1997 | 71613       | 2307296 | 3.1 | 1902457               | 48468097 | 3.9 |
|             | 1998 | 73565       | 2423049 | 3.0 | 2108485               | 54464635 | 3.9 |
|             | 1999 | 72251       | 2447473 | 3.0 | 2042012               | 58960243 | 3.5 |
|             | 2000 | 77461       | 2245251 | 3.5 | 2122061               | 53968095 | 4.0 |
|             | Mean | 73820       | 2354020 | 3.1 | 2063765               | 53203586 | 3.9 |
| Parsley     | 1996 | 578         | 1415    | 41  | 22751                 | 27085    | 84  |
|             | 1997 | 668         | 1522    | 44  | 26273                 | 32219    | 82  |
|             | 1998 | 892         | 2144    | 42  | 35278                 | 42702    | 83  |
|             | 1999 | 660         | 1977    | 33  | 13740                 | 22468    | 61  |
|             | 2000 | 631         | 2063    | 31  | 11001                 | 19560    | 56  |
|             | Mean | 686         | 1824    | 38  | 21809                 | 28807    | 73  |
| Rocket      | 1996 | 275         | 1229    | 22  | 6450                  | 13283    | 49  |
|             | 1997 | 134         | 823     | 16  | 2784                  | 8397     | 33  |
|             | 1998 | 227         | 1240    | 18  | 5202                  | 11414    | 46  |
|             | 1999 | 320         | 1316    | 24  | 3116                  | 10289    | 30  |
|             | 2000 | 329         | 1439    | 23  | 3166                  | 10964    | 29  |
|             | Mean | 257         | 1209    | 21  | 4144                  | 10869    | 37  |

### 2- CaCO<sub>3</sub> % and particle size distribution of Giza soil:

Data presented in Table (3) reveal that the values of CaCO<sub>3</sub> content range from 0.64 to 8.59% with average of 4.24%. The values of coarse sand range from 0.59 to 55.71% with average of 9.91%, fine sand range from 5.32 to 37.09% with average of 18.34%, silt range from 5.96 to 34.74% with average of 24.37% and clay range from 19.60 to 60.52% with average of 42.75%. Samples collected from different locations are relatively low calcium content, low sand content and more or less high silt and clay contents.

**Table (3): Calcium carbonate content and particle size distribution of soil cultivated with berseem, parsley and rocket in Giza govenorate.**

| Plants  | Location No. | CaCO <sub>3</sub> % | C.sand % | F.sand % | Silt % | Clay % |
|---------|--------------|---------------------|----------|----------|--------|--------|
| Berseem | 1            | 0.64                | 55.71    | 15.56    | 5.96   | 21.66  |
|         | 2            | 2.92                | 3.22     | 7.69     | 27.54  | 60.52  |
|         | 3            | 4.87                | 6.72     | 10.90    | 23.56  | 59.64  |
|         | 4            | 7.72                | 5.49     | 21.67    | 27.84  | 41.14  |
|         | 5            | 4.13                | 8.79     | 17.85    | 20.14  | 49.88  |
|         | 6            | 8.59                | 7.01     | 16.05    | 28.56  | 39.60  |
|         | 7            | 4.54                | 11.35    | 14.80    | 18.20  | 50.72  |
|         | 8            | 4.84                | 4.86     | 37.09    | 29.16  | 19.60  |
|         | 9            | 4.49                | 2.10     | 24.33    | 19.90  | 46.30  |
|         | 10           | 3.64                | 8.32     | 18.58    | 23.72  | 41.38  |
|         | 11           | 3.97                | 10.11    | 15.47    | 30.20  | 42.58  |
|         | 12           | 2.50                | 4.30     | 23.33    | 23.04  | 46.50  |
| Parsley | 1            | 1.54                | 21.00    | 10.23    | 26.88  | 38.62  |
|         | 2            | 3.72                | 3.55     | 12.42    | 26.44  | 51.10  |
|         | 3            | 3.59                | 4.40     | 12.76    | 25.38  | 55.78  |
|         | 4            | 8.41                | 4.60     | 20.42    | 31.30  | 38.36  |
|         | 5            | 3.59                | 8.33     | 22.02    | 17.66  | 44.82  |
|         | 6            | 8.21                | 6.73     | 29.09    | 28.90  | 23.36  |
|         | 7            | 3.97                | 6.08     | 18.61    | 16.74  | 55.08  |
|         | 8            | 5.51                | 4.07     | 31.30    | 34.74  | 21.18  |
|         | 9            | 4.74                | 4.85     | 32.63    | 31.68  | 20.96  |
|         | 10           | 2.44                | 10.82    | 19.48    | 20.04  | 47.06  |
|         | 11           | 2.97                | 17.16    | 18.58    | 18.02  | 45.60  |
|         | 12           | 3.00                | 0.59     | 13.91    | 24.40  | 58.12  |
| Rocket  | 1            | 1.41                | 30.38    | 9.37     | 20.58  | 38.48  |
|         | 2            | 3.85                | 2.78     | 5.32     | 31.74  | 53.10  |
|         | 3            | 4.97                | 4.62     | 12.83    | 22.44  | 54.26  |
|         | 4            | 6.05                | 4.37     | 20.04    | 29.80  | 42.78  |
|         | 5            | 5.31                | 8.33     | 16.59    | 22.60  | 49.02  |
|         | 6            | 7.69                | 9.00     | 25.50    | 28.18  | 30.46  |
|         | 7            | 3.21                | 20.54    | 14.78    | 13.42  | 48.12  |
|         | 8            | 5.64                | 3.15     | 31.50    | 33.50  | 22.96  |
|         | 9            | 3.15                | 1.93     | 22.85    | 22.46  | 45.54  |
|         | 10           | 2.90                | 23.22    | 11.86    | 26.10  | 37.28  |
|         | 11           | 3.36                | 20.19    | 12.66    | 18.46  | 47.96  |
|         | 12           | 2.87                | 0.94     | 19.08    | 25.92  | 49.76  |

**3- Nutrients concentration of the indicator plants:**

The values of moisture content (MC) of berseem plants range from 86.24 to 92.54% with average of 89.40%. The ranges of the concentration values of the tested elements in berseem are shown in Table (4a). The average values of the major elements of P, Ca, Mg, Na, and K are 0.185, 2.04, 0.24, 1.48, 1.3%, as for miner elements of Fe, Zn, Mn and Cu are 849, 46, 55 and 10.5 µg/g plant. Berseem plants have the proper values of Ca and Fe.

**Table (4a): The concentration of major and minor elements in berseem plants.**

| Loc. No. | MC %  | P %   | Ca % | Mg % | Na % | K %  | Fe µg/g | Zn µg/g | Mn µg/g | Cu µg/g |
|----------|-------|-------|------|------|------|------|---------|---------|---------|---------|
| 1        | 89.54 | 0.23  | 1.74 | 0.20 | 0.88 | 1.67 | 805     | 23      | 36      | 10.0    |
| 2        | 89.54 | 0.188 | 1.65 | 0.27 | 1.58 | 0.90 | 934     | 25      | 55      | 9.5     |
| 3        | 90.80 | 0.181 | 1.25 | 0.16 | 1.72 | 0.94 | 815     | 30      | 54      | 12.5    |
| 4        | 89.79 | 0.214 | 3.35 | 0.37 | 1.06 | 1.82 | 1147    | 22      | 84      | 9.0     |
| 5        | 91.25 | 0.252 | 2.20 | 0.29 | 1.58 | 1.37 | 559     | 60      | 87      | 10.5    |
| 6        | 87.01 | 0.130 | 1.75 | 0.22 | 2.70 | 0.78 | 479     | 32      | 37      | 8.5     |
| 7        | 91.18 | 0.224 | 2.17 | 0.27 | 1.33 | 1.28 | 497     | 30      | 46      | 11.5    |
| 8        | 89.44 | 0.205 | 1.93 | 0.27 | 2.14 | 1.09 | 1277    | 48      | 59      | 10.0    |
| 9        | 92.54 | 0.178 | 1.97 | 0.24 | 1.84 | 1.56 | 712     | 45      | 67      | 14.5    |
| 10       | 87.44 | 0.175 | 3.04 | 0.21 | 0.98 | 1.37 | 1310    | 97      | 59      | 13.0    |
| 11       | 87.86 | 0.134 | 1.51 | 0.13 | 1.33 | 1.28 | 754     | 78      | 53      | 10.5    |
| 12       | 86.24 | 0.134 | 1.75 | 0.20 | 0.57 | 1.75 | 1494    | 66      | 70      | 8.0     |
| Avg.     | 89.40 | 0.185 | 2.04 | 0.24 | 1.48 | 1.30 | 849     | 46      | 55      | 10.5    |
| Stdv     | 1.70  | 0.036 | 0.57 | 0.06 | 0.52 | 0.31 | 319     | 24      | 14      | 1.7     |
| Max      | 92.54 | 0.252 | 3.35 | 0.37 | 2.70 | 1.82 | 1494    | 97      | 87      | 14.5    |
| Min      | 86.24 | 0.130 | 1.25 | 0.13 | 0.57 | 0.78 | 479     | 22      | 36      | 8.0     |

Loc. = location

MC = moisture content (%)

The values of moisture content (MC) of parsley plants (Table 4b) range from 84.21 to 95.02% with the average of 90.00%. The ranges of the concentration values of the tested elements in parsley are shown in table (4b). The average values of the major elements of P, Ca, Mg, Na, and K are 0.257, 2.76, 0.42, 0.57 and 2.45%, as for trace elements of Fe, Zn, Mn and Cu are 791, 52, 69 and 12.4 µg/g plant. Parsley plants have the in proper values of Ca, K and Fe.

**Table (4b):The concentration of major and minor elements in parsley plants.**

| Loc. No. | M.C. % | P %   | Ca % | Mg % | Na % | K %  | Fe µg/g | Zn µg/g | Mn µg/g | Cu µg/g |
|----------|--------|-------|------|------|------|------|---------|---------|---------|---------|
| 1        | 90.54  | 0.281 | 4.52 | 0.39 | 0.31 | 2.39 | 969     | 41      | 61      | 10.0    |
| 2        | 93.06  | 0.259 | 4.47 | 0.45 | 0.59 | 2.67 | 685     | 44      | 72      | 36.5    |
| 3        | 90.06  | 0.311 | 1.95 | 0.31 | 0.39 | 2.34 | 1217    | 78      | 78      | 14.5    |
| 4        | 89.25  | 0.242 | 1.32 | 0.34 | 0.40 | 2.34 | 1010    | 54      | 75      | 11.0    |
| 5        | 95.02  | 0.247 | 2.73 | 0.45 | 1.93 | 1.81 | 1240    | 48      | 122     | 10.0    |
| 6        | 89.29  | 0.291 | 2.24 | 0.38 | 0.52 | 3.28 | 139     | 37      | 49      | 8.0     |
| 7        | 90.36  | 0.254 | 1.46 | 0.81 | 0.50 | 2.17 | 542     | 53      | 56      | 8.5     |
| 8        | 90.85  | 0.207 | 1.10 | 0.28 | 0.55 | 2.70 | 673     | 53      | 63      | 14.0    |
| 9        | 91.77  | 0.283 | 4.11 | 0.41 | 0.29 | 2.85 | 677     | 55      | 68      | 11.0    |
| 10       | 88.57  | 0.271 | 4.52 | 0.57 | 0.52 | 3.00 | 631     | 54      | 67      | 10.0    |
| 11       | 84.21  | 0.216 | 3.08 | 0.35 | 0.27 | 1.56 | 673     | 39      | 63      | 8.0     |
| 12       | 87.83  | 0.160 | 1.58 | 0.24 | 0.57 | 2.34 | 639     | 63      | 56      | 7.5     |
| Avg.     | 90.00  | 0.257 | 2.76 | 0.42 | 0.57 | 2.45 | 791     | 52      | 69      | 12.4    |
| Stdv     | 2.70   | 0.042 | 1.34 | 0.15 | 0.45 | 0.48 | 307     | 11      | 19      | 7.9     |
| Max      | 95.02  | 0.311 | 4.52 | 0.81 | 1.93 | 3.28 | 1240    | 78      | 122     | 36.5    |
| Min      | 84.21  | 0.160 | 1.10 | 0.24 | 0.27 | 1.56 | 139     | 37      | 49      | 7.5     |

The values of moisture content (MC) of rocket plants ( Table 4c) range from 91.64 to 94.69% with the average of 93.35%. The ranges of the concentration values of the tested elements in rocket are shown in (Table 4c). The average values of the major elements of P, Ca, Mg, Na, and K are 0.370, 2.82, 0.44, 0.28 and 2.38%, as for miner elements of Fe, Zn, Mn and Cu are 1222, 78, 72 and 6.9 µg/g plant. Rocket plants are rich in P, Ca, K, Fe and Mn.

**(Table4c): The concentrations of major and minor elements in rocket plants.**

| Loc. No. | M.C % | P %   | Ca % | Mg % | Na % | K %  | Fe µg/g | Zn µg/g | Mn µg/g | Cu µg/g |
|----------|-------|-------|------|------|------|------|---------|---------|---------|---------|
| 1        | 92.59 | 0.361 | 2.05 | 0.39 | 0.25 | 2.34 | 1525    | 39      | 89      | 7.0     |
| 2        | 94.31 | 0.344 | 1.02 | 0.44 | 0.25 | 3.00 | 1215    | 40      | 77      | 5.5     |
| 3        | 93.85 | 0.385 | 7.22 | 0.68 | 0.31 | 2.45 | 818     | 24      | 70      | 6.0     |
| 4        | 94.69 | 0.388 | 1.16 | 0.27 | 0.21 | 2.67 | 803     | 43      | 56      | 5.5     |
| 5        | 83.55 | 0.500 | 1.29 | 0.48 | 0.17 | 3.93 | 1744    | 58      | 89      | 6.5     |
| 6        | 93.39 | 0.358 | 1.98 | 0.44 | 0.21 | 2.57 | 1482    | 348     | 73      | 9.0     |
| 7        | 94.41 | 0.448 | 5.53 | 0.74 | 0.21 | 2.57 | 569     | 53      | 66      | 7.0     |
| 8        | 92.64 | 0.293 | 1.25 | 0.39 | 0.57 | 2.15 | 781     | 37      | 40      | 7.0     |
| 9        | 93.82 | 0.433 | 1.95 | 0.28 | 0.17 | 1.73 | 1376    | 57      | 75      | 4.0     |
| 10       | 92.97 | 0.443 | 3.64 | 0.33 | 0.17 | 1.97 | 1570    | 127     | 85      | 7.0     |
| 11       | 91.64 | 0.273 | 2.32 | 0.36 | 0.39 | 1.50 | 1608    | 51      | 75      | 6.5     |
| 12       | 92.39 | 0.216 | 4.41 | 0.51 | 0.42 | 1.68 | 1177    | 61      | 67      | 12.0    |
| Avg.     | 93.35 | 0.370 | 2.82 | 0.44 | 0.28 | 2.38 | 1222    | 78      | 72      | 6.9     |
| Stdv     | 0.89  | 0.078 | 1.89 | 0.14 | 0.12 | 0.64 | 375     | 85      | 13      | 1.9     |
| Max      | 94.69 | 0.500 | 7.22 | 0.74 | 0.57 | 3.93 | 1744    | 348     | 89      | 12.0    |
| Min      | 91.64 | 0.216 | 1.02 | 0.27 | 0.17 | 1.50 | 569     | 24      | 40      | 4.0     |

#### **Future research need**

More than three cuts of bersem and more than six cuts of parsley are taken before remove them completely from the soil. Also, rocket plants could cultivate in winter or summer. Therefore, more researches needed to be undertaken through periodically interval and their fertilizer demand of different elements..

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تركيز بعض العناصر في بعض النباتات النامية في اراضى محافظة الجيزة  
صادق على أحمد الرئيس  
معهد بحوث الأراضى و المياه و البيئة ، مركز البحوث الزراعية ، الجيزة

تم جمع 36 عينة نبات في شهر يناير 2001 من 12 موقع في محافظة الجيزة تمثل نباتات البرسيم و البقدونس و الجرجير حيث تم أخذ 12 عينة من كل نبات. و تم جمع 36 عينة تربة سطحية (0 - 15سم) تمثل 12 موقع للثلاث نباتات. تم تحليل العينات النباتية لعناصر الفوسفور و الكالسيوم و الماغنسيوم و الصوديوم و البوتاسيوم و الحديد و المنجنيز و الزنك و النحاس. تم تحليل عينات التربة و تقدير محتواها من كربونات الكالسيوم و التوزيع الحجمى للحبيبات. كما تم جمع بيانات احصائية عن الإنتاج الزراعى للنباتات موضع الدراسة فى محافظة الجيزة وتبين النتائج ما يلى:

تمثل مساحة البرسيم 54.59% من جملة المساحة الكلية المنزرعة فى المحافظة و يمثل الإنتاج 3.5% من جملة إنتاج البرسيم فى الجمهورية و أن إنتاج البقدونس و الجرجير فى المحافظة يمثل 73% و 37% من جملة انتاجهما فى الجمهورية على التوالى.

يبين تحليل التربة للعينات السطحية أن مناطق أخذ العينات منخفضه فى محتواها من كربونات الكالسيوم (4.24%) و مرتفعه فى محتوى السلت و الطين (24.37% ، 42.75%). أن القيم المتوسطة لتركيز عناصر الفوسفور و الكالسيوم و الماغنسيوم و الصوديوم و البوتاسيوم فى نباتات البرسيم هى 0.185، 2.04، 0.24، 1.48، 1.3% ، فى نباتات البقدونس هى 0.257، 2.76، 0.42، 0.57، 2.46% ، فى نباتات الجرجير هى 0.37، 2.82، 0.44، 0.28، 2.38% على التوالى.

أن القيم المتوسطة لتركيز عناصر الحديد و المنجنيز و الزنك و النحاس فى نباتات البرسيم هى 849، 46، 55، 10.5 ميكروجرام/جرام. و فى نباتات البقدونس هى 791، 52، 69، 12.4 ميكروجرام/جرام، و فى نباتات الجرجير هى 1222، 78، 72، 6.9 ميكروجرام/جرام على التوالى.

تعتبر نباتات البرسيم ذات قيم مميزة بالنسبة للكالسيوم و الحديد وفيما يخص البقدونس فأنها ذات قيم مميزة بالنسبة للكالسيوم و البوتاسيوم و الحديد. وتعتبر نباتات الجرجير غنيه بعناصر الفوسفور و الكالسيوم و البوتاسيوم و الحديد و المنجنيز.