Effect of different levels of phosphorus and potassium on yield, yield attributes and oil content of Sesame (*Sesamum Indicum* L.)

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**Abstract**

A field experiment was carried out during *Zaid* season of 2020 at Crop Research Farm, Department of Agronomy, SHUATS, Prayagraj, (U.P.). The soil of experimental site was sandy loam in texture, nearly neutral in soil reaction (pH 7.2), EC (0.34 dS/m), low in available N (203.7 kg/ha), medium in available P (17.2 kg/ha) and medium in available K (208.8 kg/ha). The experiment was laid out in Randomized block design and having nine treatment consisted of three levels of Phosphorus (P) viz., (40, 30 and 20 kg/ha) and three levels of Potassium (K) viz., (30, 20 and 10 kg/ha) which replicated thrice and effect was observed on Gujarat Til-4 sesame variety. The result showed significantly higher yield and yield attributes viz., Number of Capsules per plant (49.80), Seeds per capsule (56.4), Test weight (3.90 g), Seed yield (361 kg/ha), Biological yield (2002.15 kg/ha) and quality analysis i.e. Oil content (50.53%) were recorded maximum in application of 40 kg P/ha plus 20 kg K/ha.

**Key words:** Oil content, Sesame, Phosphorus, Potassium, Yield

**Introduction**

Sesame (*Sesamum indicum* L.) is the oldest oil seed crop and used by human beings. Sesame is variously referred to as Til, Sesamum, Beniseed, Rasi, Sim sim, Gergelim etc. Sesame is the member of family Pedaliaceae with chromosome number 2n=26. Sesame crop was known as “Queen of oil seed” due to the presence of stable unsaturated fatty acid (Palmitic acid (16%), linoleic acid (18.2%), oleic acid (18.1%) and Stearic acid (18%)) which causes resistance to rancidity (Uzun *et al*. 2008). Because of good quality characters, sesame is also used as substitute ghee for poor man’s food (Pagal *et al*. 2017). Sesame seed is cultivated for seed purpose, which contains oil (38-54%) and protein (18-20%) consisting of both methionine and tryptophan, Vitamin- B₃ (niacin) and minerals (P & Ca) (Malik *et al*. 2003). Sesame seed also contains sesamine and sesamolin, sesamolin on hydrolysis yields sesmol, which has marked antioxidant activity, so it has a higher lifespan and is caused “Seed of immortality”. White seeded sesame is extensively used in Bakery products, whereas black seeded sesame used for medicinal purposes (Jadav, 2004). Nearly 78% of sesame is used for oil extraction in India (Kalegore *et al*. 2018). Sesame nutrition remained very agonistic for a long time (Okpara *et al*. 2007). The dynamics of the nutrients in terms of their translocation, distribution and uptake in sesame plant is a crucial phase that will help in taking deciding ameliorating in its production management (Shehu *et al*. 2010). It will assist in the adjustment of proper package and practice for sesame crop and reduce the cost of fertilizer. Phosphorus is the major plant nutrients for enhance the crop yield. Phosphorus plays an important role in developement of energy-rich phosphate bond like nuclear protein, ADP and ATP and phospholipid and it is compulsory constitute of nucleic acids (DNA and RNA), nucleoprotein, amino acids, phytin, phosphatides and several co-enzymes viz., thiamine, pyrophosphate and pyridoxyl phosphate (Jahan *et al*. 2019). Phosphorus is associated with enhanced root density proliferation, which aids in the supply of nutrients, extensive exploration and water to growing plant parts, thus rise growth and yield, as well as enhance the yield of succeeding crop and come up with resistance against diseases (Shehu *et al*. 2010). Phosphorus also associates with energy transfer metabolic processes and basic reaction of transformation of sugars, photosynthesis, starch and...
nutrient movements in the plant. It also promotes extensive root system thereby enabling plant to take out moisture and mineral nutrition optimally (Adisu et al. 2020). Potassium enhances the yield and quality of agricultural produce and products and enhances the capability of plants to resist diseases, insect attacks, cold and drought stresses (Ahmad et al. 2018). Potassium shows a very important character in the activation of enzymes (Younis et al. 2020). Potassium helps in the development of a strong and healthy root system. Potassium shows an essential role in many metabolic actions in plants. Potash is involved in the transport of the products of photosynthesis to the pods and transformation into oil (Jat et al. 2017). A good supply of potassium leads to an increase in photosynthesis, which is actively concerned with the process of sugar formation and translocation of starch as well as photosynthesis. In view of these investigations, the experiment was under taken to find out suitable phosphorus and potassium levels on the application for maximizing the yield, quantity and quality of sesame under eastern Uttar Pradesh conditions.

Materials and Methods

The experiment entitled “Effect of different levels of Phosphorus and Potassium on Yield, Yield attributes and Oil content of Sesame (Sesamum indicum L.)”, was held at Crop Research Farm, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj. The experiment was carried out during Zaid season of 2020 under irrigated condition at Crop Research farm, Department of Agronomy, Naini Agricultural Institute, SHUATS, Prayagraj (Allahabad) which is located at 25º 24’ 42” N latitude, 81º 50’ 56” E Longitude (Fig.1) and 98 m altitude above the mean sea level. It has a tropical climate with temperature ranges between 43ºC- 47ºC. The Experiment was carried out in Randomized Block Design having nine treatment consisted of Phosphorus levels viz., (40, 30 and 20 kg/ha) and Potassium levels viz., (30, 20 and 10 kg/ha) which replicated thrice on Gujarat Til-4 sesame variety. On the basis of treatment details, treatment combination are T1- Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 30 kg/ha, T2- Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha, T3- Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 10 kg/ha, T4- Phosphorus (P) @ 30 kg/ha + Potassium (K) @ 30 kg/ha, T5- Phosphorus (P) @ 30 kg/ha + Potassium (K) @ 20 kg/ha, T6- Phosphorus (P) @ 30 kg/ha + Potassium (K) @ 10 kg/ha, T7- Phosphorus (P) @ 20 kg/ha + Potassium (K) @ 30 kg/ha, T8- Phosphorus (P) @ 20 kg/ha + Potassium (K) @ 20 kg/ha, T9- Phosphorus (P) @ 20 kg/ha + Potassium (K) @ 10 kg/ha. Sowing was done by line sowing method with row spacing 30 cm and plant spacing 10 cm. The commended cultural practices were under taken as per recommendation. Hand weeding was done at 15 and 30 Days after sowing (DAS). Data on yield attributes viz., Number of Capsules per plant, Number of Seeds per capsule, Test weight (g), Seed yield (kg/ha), Biological yield (kg/ha) and Quality analysis viz., Oil content (%) were analyzed by analysis of variance (ANOVA) (Gomez and Gomez 1984). The data collected from the experiment at various growth stages and at the time of harvest was subjected to statistical analysis using Dry soft ICRISAT software. The level of significance used in F-test was P=0.05. Critical difference values were calculated wherever F-test was found significant.

Figure 1: Geotagged photos of the experimental field at Crop Research Farm, SHUATS, Prayagraj (Allahabad)
Results and Discussion

Plant height
Data on plant height by different treatment combinations are presented in Table 1. The plant height was increased with the improvement in crop stage, without consideration of the treatment and reached a maximum height at the time of harvest. The plant height of sesame was recorded at 15, 30, 45, 60 DAS and at the time of harvest differed significantly with different treatment combinations. Data on 30, 45, 60 DAS and at time of harvest shown significantly influenced among all treatments, increase with maximum plant height (29.61 cm, 78.53 cm, 116.09 cm and 116.91 cm) were recorded in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha as compared to other treatment combinations respectively. T1 and T3 were statistically at par with T2 at 30 DAS, 60 DAS and at harvest, and only T2 was statistically at par with T2 at 45 DAS. The data on plant height at 15 DAS showed there is no significant dissimilarity among the treatments. The progressive increase in levels of phosphorus i.e. Phosphorus (P) @ 40 kg/ha significantly enhanced the growth attributing characters of sesame i.e. number of primary and secondary branches per plant was reported by Jahan et al. (2019) and Shelke et al. (2014) in Sesame. The effect of potassium on growth parameters may be due to augment of cell expansion and cell division. These results are found similar to the results of Thakur et al., (2015) in sesame.

Leaf area (cm²)
Phosphorus and Potassium levels had significantly influenced mean leaf area/plant at all stages of crop growth except at the time of harvest. The effect of different treatment on leaf area at 15, 30, 45, 60 and at harvest are presented in Table 3. Data on 30, 45, 60 DAS and at harvest, the maximum leaf area (227.80 cm², 2074.57 cm², 2270.49 cm² and 2568.70 cm²) were recorded by application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha which was significantly superior overall treatment combinations respectively. T1, T3 and T5 were statistically on par with T2 at 45, 60 DAS and at harvest, and T1 and T3 were statistically on par with T2 at 30 DAS. The data on leaf area at 15 DAS showed there is no significant difference among the treatments. Optimum moisture in root zone which favours uptake of phosphorus; resulting in better growth of the crop was parallelism with De et al. (2013) and Unde et al. (2017). The increase in levels of potassium also significantly increased the leaf area of sesame due to uptake and beneficial crop activity, similar results was also conformity by Sarkar and Pal (2005) in sesame.

Number of branches per plant
The data on number of branches per plant at 45, 60 and 75 DAS influenced by different treatment in sesame are presented in Table 2. The number of branches of sesame was recorded at 45, 60 and at harvest differed significantly with different treatment combinations. Data on 45 DAS, 60 DAS and at the time of harvest shown significantly increase with higher number of branches per plant (2.73, 3.73 and 3.73) respectively were recorded in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha as compared to other treatment combinations. T1 was statistically on par with T2 at 45 DAS and at harvest and both T1 and T3 were statistically at par with T2 at 60 DAS. The progressive increase in levels of phosphorus i.e. Phosphorus (P) @ 40 kg/ha significantly enhanced the growth attributing characters of sesame i.e. number of primary and secondary branches per plant was reported by Jahan et al. (2019) and Shelke et al. (2014) in Sesame. The effect of potassium on growth parameters may be due to augment of cell expansion and cell division. These results are found similar to the results of Thakur et al., (2015) in sesame.

Effect of different treatment on leaf area index at 15, 30, 45, 60 DAS and at harvest time are presented in Table 4. and the data pertaining to the leaf area index were obtained lowest at 15 DAS and then it increases with development of crop growth stages. Data on 30, 45, 60 DAS and at harvest time, the maximum leaf area index (0.76, 6.58, 7.57 and 8.56) were recorded by application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha which was significantly superior overall treatment combinations respectively. The data on leaf area index at 15 DAS shown there is no significant dissimilarity among the treatments. The progressive increase in levels of phosphorus i.e. Phosphorus (P) @ 40 kg/ha significantly enhanced the growth attributing characters of sesame i.e. number of primary and secondary branches per plant was reported by Jahan et al. (2019) and Shelke et al. (2014) in Sesame. The effect of potassium on growth parameters may be due to augment of cell expansion and cell division. These results are found similar to the results of Thakur et al., (2015) in sesame.
### Table 1: Influence of Phosphorus and Potassium levels on Plant height of Sesame

| Treatments                  | Plant height (cm) | 15 DAS | 30 DAS | 45 DAS | 60 DAS | 75 DAS |
|-----------------------------|-------------------|--------|--------|--------|--------|--------|
| 1. 40 kg P/ha + 30 kg K/ha  | 13.43             | 27.27  | 70.73  | 110.55 | 112.07 |
| 2. 40 kg P/ha + 20 kg K/ha  | 13.59             | 29.61  | 78.53  | 116.09 | 116.91 |
| 3. 40 kg P/ha + 10 kg K/ha  | 13.12             | 26.61  | 66.59  | 108.08 | 109.39 |
| 4. 30 kg P/ha + 30 kg K/ha  | 11.81             | 24.43  | 60.58  | 103.57 | 105.83 |
| 5. 30 kg P/ha + 20 kg K/ha  | 12.34             | 25.76  | 61.05  | 107.48 | 108.33 |
| 6. 30 kg P/ha + 10 kg K/ha  | 11.39             | 23.12  | 60.26  | 103.20 | 104.36 |
| 7. 20 kg P/ha + 30 kg K/ha  | 11.71             | 23.93  | 61.47  | 94.84  | 95.55  |
| 8. 20 kg P/ha + 20 kg K/ha  | 12.07             | 25.63  | 64.72  | 101.38 | 104.43 |
| 9. 20 kg P/ha + 10 kg K/ha  | 11.51             | 22.62  | 59.15  | 93.30  | 94.09  |

SEm±: 0.69 1.22 3.39 2.73 2.68

CD (P=0.05): - 3.65 10.17 8.18 8.02

Phosphorus (P) @ 40 kg/ha significantly enhanced the growth attributing characters of sesame i.e. leaf area index was ultimately maximum in sesame (Chang *et al.* (2005)). The increase in levels of potassium also significantly increased the leaf area index of sesame plant. These results are similar to Sarkar and Pal (2005) in sesame.

### Table 2: Influence of Phosphorus and Potassium levels on Number of Branches/plant of Sesame

| Treatments                  | No. of Branches per Plant | 45 DAS | 60 DAS | 75 DAS |
|-----------------------------|---------------------------|--------|--------|--------|
| 1. 40 kg P/ha + 30 kg K/ha  | 2.20                      | 2.67   | 3.13   |
| 2. 40 kg P/ha + 20 kg K/ha  | 2.73                      | 3.73   | 3.73   |
| 3. 40 kg P/ha + 10 kg K/ha  | 1.80                      | 2.60   | 2.73   |
| 4. 30 kg P/ha + 30 kg K/ha  | 1.60                      | 2.27   | 2.60   |
| 5. 30 kg P/ha + 20 kg K/ha  | 1.87                      | 2.40   | 2.67   |
| 6. 30 kg P/ha + 10 kg K/ha  | 1.53                      | 2.20   | 2.53   |
| 7. 20 kg P/ha + 30 kg K/ha  | 1.67                      | 2.33   | 2.47   |
| 8. 20 kg P/ha + 20 kg K/ha  | 1.80                      | 2.40   | 2.67   |
| 9. 20 kg P/ha + 10 kg K/ha  | 1.60                      | 2.07   | 2.27   |

SEm±: 0.22 0.23 0.27

CD (P=0.05): 0.66 0.69 0.80

### Table 3: Influence of Phosphorus and Potassium levels on leaf area in Sesame

| Treatments                  | Leaf area (cm^2) | 15 DAS | 30 DAS | 45 DAS | 60 DAS | 75 DAS |
|-----------------------------|-----------------|--------|--------|--------|--------|--------|
| 1. 40 kg P/ha + 30 kg K/ha  | 50.79           | 224.55 | 1972.91| 2196.02| 2200.12|
| 2. 40 kg P/ha + 20 kg K/ha  | 54.78           | 227.80 | 2074.57| 2270.49| 2568.70|
| 3. 40 kg P/ha + 10 kg K/ha  | 44.99           | 222.82 | 1798.18| 1974.22| 2192.17|
| 4. 30 kg P/ha + 30 kg K/ha  | 47.21           | 148.10 | 1407.41| 1741.69| 1747.82|
| 5. 30 kg P/ha + 20 kg K/ha  | 50.58           | 168.15 | 1636.20| 1785.89| 2121.41|
| 6. 30 kg P/ha + 10 kg K/ha  | 37.31           | 107.14 | 1376.72| 1695.73| 1569.66|
| 7. 20 kg P/ha + 30 kg K/ha  | 28.49           | 105.31 | 1018.28| 1282.76| 1435.49|
| 8. 20 kg P/ha + 20 kg K/ha  | 46.22           | 167.95 | 1093.71| 1434.21| 1625.35|
| 9. 20 kg P/ha + 10 kg K/ha  | 26.94           | 91.11  | 927.09 | 946.77 | 1199.31|

SEm±: 0.69 1.22 3.39 2.73 2.68

CD (P=0.05): 0.66 0.69 0.80 0.80 0.80

Phosphorus (P) @ 40 kg/ha significantly enhanced the growth attributing characters of sesame i.e. leaf area index was ultimately maximum in sesame (Chang *et al.* (2005)). The increase in levels of potassium also significantly increased the leaf area index of sesame plant. These results are similar to Sarkar and Pal (2005) in sesame.
Yield and Yield attributes
Observations regarding yield and yield attributes like Number of capsules per plant (No.), Number of seeds per capsules (No.) and Test weight (g), Seed yield (kg/ha) and Biological yield (kg/ha) of sesame depicted in Table 5.

Number of capsules per plant
The number of capsules per plant was significantly increased due to the different treatment combinations. Higher Number of capsules per plant (49.80) was recorded significantly higher in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. T₁ and T₅ were statistically at par with T₂. The more number of capsules per plant under higher Phosphorus doses might be due to proper availability of P at reproductive phase when plant needs more energy. These findings are similar with Thentu et al. (2014). Favorable enhance in levels of phosphorus significantly increased the yield attributing characters of sesame like number of capsules/plant Shelke et al. (2014). Higher uptake of nutrients viz., potassium and higher dry matter accumulation and translocation might be attributed to reproductive plant parts was reported by Thakur et al., (2015) in sesame.

Table 4: Influence of Phosphorus and Potassium levels on leaf area index in Sesame

| Treatments                  | Leaf area index |
|----------------------------|-----------------|
|                            | 15 DAS | 30 DAS | 45 DAS | 60 DAS | 75 DAS |
| 1. 40 kg P/ha+ 30 kg K/ha  | 0.16   | 0.74   | 6.57   | 7.33   | 7.33   |
| 2. 40 kg P/ha + 20 kg K/ha | 0.18   | 0.76   | 6.58   | 7.75   | 8.56   |
| 3. 40 kg P/ha + 10 kg K/ha | 0.15   | 0.74   | 5.25   | 6.58   | 7.08   |
| 4. 30 kg P/ha + 30 kg K/ha | 0.16   | 0.50   | 4.69   | 5.81   | 6.94   |
| 5. 30 kg P/ha + 20 kg K/ha | 0.17   | 0.56   | 5.45   | 5.95   | 6.96   |
| 6. 30 kg P/ha + 10 kg K/ha | 0.12   | 0.36   | 4.59   | 5.65   | 5.23   |
| 7. 20 kg P/ha + 30 kg K/ha | 0.09   | 0.35   | 3.39   | 4.28   | 4.78   |
| 8. 20 kg P/ha + 20 kg K/ha | 0.15   | 0.56   | 3.65   | 4.78   | 5.42   |
| 9. 20 kg P/ha + 10 kg K/ha | 0.09   | 0.30   | 3.09   | 3.15   | 4.00   |
| SEm±                       | 0.03   | 0.06   | 0.45   | 0.57   | 0.76   |
| CD (P=0.05)                | -      | 0.17   | 1.36   | 1.72   | 2.27   |

Table 5: Influence of Phosphorus and Potassium levels on yield, yield attributes and Oil content in Sesame

| Treatments                  | At harvest |
|----------------------------|------------|
|                            | Capsules per plant (No.) | Seeds per capsule (No.) | Test weight (g) | Seed yield (kg/ha) | Biological yield (kg/ha) | Oil content (%) |
| 1. 40 kg P/ha+ 30 kg K/ha  | 40.40      | 51.33   | 3.82    | 311.67     | 1771.60                | 47.62           |
| 2. 40 kg P/ha + 20 kg K/ha | 49.80      | 56.40   | 3.90    | 361.00     | 2002.15                | 50.53           |
| 3. 40 kg P/ha + 10 kg K/ha | 36.87      | 49.67   | 3.47    | 297.67     | 1729.03                | 41.75           |
| 4. 30 kg P/ha + 30 kg K/ha | 31.67      | 49.27   | 3.35    | 292.00     | 1656.20                | 43.18           |
| 5. 30 kg P/ha + 20 kg K/ha | 39.87      | 50.07   | 3.48    | 299.00     | 1753.93                | 41.58           |
| 6. 30 kg P/ha + 10 kg K/ha | 29.73      | 48.93   | 3.10    | 281.33     | 1597.60                | 40.00           |
| 7. 20 kg P/ha + 30 kg K/ha | 30.67      | 47.60   | 3.17    | 270.00     | 1557.73                | 41.97           |
| 8. 20 kg P/ha + 20 kg K/ha | 34.40      | 49.87   | 3.19    | 271.67     | 1579.37                | 43.40           |
| 9. 20 kg P/ha + 10 kg K/ha | 29.53      | 45.07   | 3.00    | 254.33     | 1425.73                | 37.72           |
| SEm±                       | 3.44       | 1.84    | 0.19    | 19.04      | 77.21                  | 2.13            |
| CD (P=0.05)                | 10.33      | 5.52    | 0.58    | 57.08      | 231.46                 | 6.37            |
Number of seeds per capsules
An insight into the data declared distinct variation of number of seeds/capsules due to treatment differences. Number of seeds/capsule (56.40) was recorded significantly higher in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. T₁ was statistically on par with T₂. Higher uptake of nutrients viz., phosphorus and potassium and higher dry matter accumulation and translocation might be attributed to reproductive plant parts. These results are found similar with the results of Patel (2017) in sesame.

Test weight (g)
Maximal 1000 seed weight was recorded (3.90 g) in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. T₁, T₃ and T₅ were statistically at par with T₂. Ample amount of water at capsule and development stages resulted in the more accumulation of P and other nutrients ultimately in the grains which help to increase seed weight per plant. These results are similar with Khadse et al. (2017) in sesame. The test weight and size of the seed of sesame was increased under application of phosphorus. These results are in conformity with Jadav (2004) in sesame.

Seed yield (kg/ha)
Data on seed yield of sesame specified that significant differences due to different treatments combination of higher dose of inorganic fertilizers brought significant enhancement in seed yield over all the treatment combinations. The highest number of seed yield was recorded significantly superior seed yield (361 kg/ha) in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. T₁ was statistically at par with T₂. The beneficial effect of phosphorus on seed yield of sesame due to the stimulating effect of phosphorus on different yield attributing character viz., number of capsules/plant, number of seeds per capsule and test weight etc. These results are conformity with Choudhari and Patel (2007). Number of capsules per plant, number of seeds per capsule and test weight of seed has helped in enhancing the translocation of starch from source to sink and dry matter production, which promotes increasing the number of seeds per capsule. These results are in conformity with Bhosale (2009) in sesame.

Biological yield (kg/ha)
Data on Biological yield of sesame indicated significantly higher biological yield (2002.2 kg/ha) value in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. With an increase in phosphorus level biological yield increasing significantly. These results are similar to the findings of Hafiz et al., (2012). The Biological yield of sesame increased steadily with an increase in phosphorus levels. It might be attributed to higher dry matter accumulation and higher uptake of nutrients and translocation to reproductive plant parts. These results are in parallelism with Choudhari and Patel (2007) in sesame. The definite effect of potassium on Biological yield might be due to the effective role of potassium in photosynthesis and to its importance in cell elongation, carbohydrates synthesis more ever; higher nutrient uptake resulted in maximum plant height and number of branches per plant and eventually helped in increasing higher Stover yield. These results are in match up with those reported by Bhosale (2009) in sesame.

Quality parameters

Oil content
Data presented in Table 5. stated that the oil content in sesame indicated significant variation due to different treatments. The maximum oil content was recorded significantly highest in oil content (50.53%) in application of Phosphorus (P) @ 40 kg/ha + Potassium (K) @ 20 kg/ha. T₁ was statistically on par with T₂. The favorable impact of phosphorus on seed yield of sesame might be due to the stimulating effect of phosphorus on different yield attributing character viz., number of capsules/plant, number of seeds per capsule and test weight etc. These results are conformity with Choudhari (2007). Progressive increase in level of potassium significantly increased the quality i.e. oil content (46.75%). These results are equality with Jat et al. (2017) of sesame.

Conclusion
This study concluded that application of Phosphorus (P) @ 40 kg/ha plus Potassium (K) @ 20 kg/ha was found to be best that recorded the higher number of Capsules per plant, Seeds per capsule, Test weight, Seed yield, Biological yield. However, it produced significantly higher Oil content in sesame.
Effect of different levels of phosphorus and potassium

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