

**Studies on the efficacy of vermicompost, urea and  
*Azotobacter* on growth, yield and quality attributes of  
strawberry (*Fragaria x ananassa* Duch.)**

**SUMMARY OF THESIS**

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Supervisor  
**Prof. R. B. Ram**

By  
**Neeraj Kumar**  
ENROLMENT No. 536/12

**Department of Applied Plant Science (Horticulture)  
School for Biosciences and Biotechnology**

**BABASAHEB BHIMRAO AMBEDKAR UNIVERSITY  
(A CENTRAL UNIVERSITY)**

**Vidya Vihar, Rae Bareli Road, Lucknow-226 025 (U.P.), INDIA**

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The present experiment entitled “**Studies on the efficacy of vermicompost, urea and Azotobacter on growth yield and quality attributes of strawberry (*Fragaria × ananassa* Duch.)**” was carried out at the Horticulture Research Farm-I, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Rae Bareli Road, Lucknow (U.P.) during 2013-2014 and 2014-2015. The salient experimental findings are summarised below:

- The Maximum plant height was observed in T<sub>15</sub> (Vermicompost 50 % + *Azotobacter* 25% + Urea 25%) and minimum plant height was recorded under control.
- The mean value of both years clearly revealed that the maximum plant spread was found in treatment T<sub>15</sub> (Vermicompost 50 % + *Azotobacter* 25% + Urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>, whereas the minimum plant spread was resulted in T<sub>1</sub> (control).
- The maximum numbers of leaves were observed in treatment T<sub>16</sub> (Vermicompost 25 % + *Azotobacter* 50% + Urea 25%) followed by T<sub>15</sub>, while the lowest numbers of leaves were found in control (T<sub>1</sub>) during the both years.
- The mean value of leaf area for both years clearly revealed that the maximum leaf area was found in treatment T<sub>15</sub> followed by T<sub>16</sub> and T<sub>14</sub>. Whereas, minimum leaf area was recorded in (T<sub>1</sub>) control.
- The maximum leaf length was found in treatment T<sub>15</sub> (Vermicompost 50 % + *Azotobacter* 25% + Urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>, while the minimum leaf length was observed under the control treatment.
- The average value of both years regarding to leaf width clearly revealed the significant differences among the various treatments with maximum leaf width in T<sub>15</sub> (Vermicompost 50 % + *Azotobacter* 25% + Urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>, whereas the minimum leaf width was observed in control.
- Maximum number of runners were found in T<sub>16</sub> (vermicompost 25 % + *Azotobacter* 50 % + urea 25%) followed by T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%), whereas the lowest number of runners were produced under the control.
- The maximum number of flowers per plant were recorded T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%) followed by T<sub>16</sub> and T<sub>14</sub>, whereas the minimum number of flowers per plant were noted in control.
- The maximum number of fruits was found in treatment T<sub>16</sub> (vermicompost 25 % + *Azotobacter* 50 % + urea 25%) followed by T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%), whereas the minimum was observed in T<sub>14</sub>.

- The longest fruits were observed in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%), whereas the shortest fruit was recorded in control.
- The maximum fruit width in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%) followed by T<sub>14</sub> (vermicompost 25% + *Azotobacter* 25% + Urea 50%).
- The maximum fruit weight was observed in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 50%) followed by T<sub>16</sub> and T<sub>14</sub>, respectively.
- That maximum fruit volume was observed in T<sub>15</sub> (vermicompost 50 % + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> (vermicompost 25% + *Azotobacter* 25% + urea 50%) and T<sub>14</sub> (vermicompost 25% + *Azotobacter* 25% + urea 50%). The minimum fruit volume was obtained in control (T<sub>1</sub>).
- The highest specific gravity was measured in T<sub>11</sub> (*Azotobacter* 75% + urea 25%) and T<sub>12</sub> (*Azotobacter* 50% + urea 50%).
- The maximum fruit yield per plant was recorded in T<sub>15</sub> (vermicompost 50 % + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>, whereas the minimum yield per plant was observed under control.
- The maximum fruit yield per plot observed in T<sub>15</sub> (vermicompost 50 % + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> and T<sub>14</sub> whereas the minimum yield per was recorded in T<sub>1</sub> (control).
- The maximum total soluble solids observed in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> (vermicompost (25%) + *Azotobacter* (25%) + urea (50%)) and T<sub>14</sub>. (Vermicompost (25 %) + *Azotobacter* (25%) + urea (50%).
- The maximum titratable acid content was observed in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>.
- The maximum vitamin- A content were observed in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25% + urea 25%) followed by T<sub>14</sub> and T<sub>16</sub>, respectively.
- The maximum ascorbic acid in T<sub>15</sub> i.e. Vermicompost (50%) + *Azotobacter* (25%) + urea (25%) followed by T<sub>16</sub> i.e. vermicompost (25%) + *Azotobacter* (50%) + urea (25%).
- The maximum pectin was recorded under T<sub>15</sub> vermicompost (25 %) + *Azotobacter* (50 %) + urea (25%) followed by T<sub>16</sub> vermicompost (25%) + *Azotobacter* (50%) + urea (50%).
- The fruits with maximum anthocyanin under T<sub>15</sub> (vermicompost 50 % + *Azotobacter* 25% + urea 25%) followed by T<sub>16</sub> and T<sub>14</sub>, respectively.

- The maximum reducing sugar was recorded in fruits produced T<sub>15</sub> (vermicompost 50 % + *Azotobacter* 25% + urea 25%).
- The maximum total sugars was recorded in berries produced under T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25 % + urea 25%) followed by T<sub>16</sub>.
- The mean value of both years revealed that the maximum non sugar was recorded in fruits in T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25 % + urea 25%) followed by T<sub>16</sub> vermicompost (25%) +*Azotobacter* (50%) + urea (25%), respectively.

## **COCLUSION**

Consequently, it can be concluded that the T<sub>15</sub> (vermicompost 50% + *Azotobacter* 25 % + urea 25%) was found most effective treatment combination regarding to plant growth (plant height, plant spread, leaf area, leaf length, leaf width, number of flowers, fruit length, fruit width, fruit yield per plant, fruit yield per plot and quality (TSS, titratable acidity, vitamin-A, ascorbic acid, pectin, anthocyanin, reducing sugar, non-reducing sugar and total sugars) of strawberry.

T<sub>11</sub> (*Azotobacter* 75% + Urea 25%) was found most effective treatment combination regarding to specific gravity. Whereas T<sub>16</sub> (vermicompost 50% + *Azotobacter* 25 % + urea 25%) was found most effective for number of leaves, number of fruits and number of runners per plant accordingly.