

**Evaluation of different miniature roses (*Rosa chinensis minima*) under Prayagrajagro-climatic conditions**

**Comment [DB1]:** Suggest for the title  
"Evaluation of miniature roses (*Rosa chinensis minima*) in Prayagraj'sagro-climate conditions.

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## Abstract

...An experiment entitled “Evaluation of different miniature roses (*Rosa chinensis minima*) under Prayagrajagro-climatic conditions” was carried out in the Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology And Sciences, Prayagraj, from November, 2023 to May, 2024.... The experiment was conducted in Randomized Block Design with twelve varieties replicated thrice. Varieties were Red Hot, Magic Carousel, Rosy, Calpoly, Beauty Secret, Hocky Pocky, Ruby Ruby, Rainbow's End, Jet Trail, Cricket, Black Jade, and JeaneKennealy. Variety Ruby Ruby emerged promising for parameters like plant height (25.9 cm), number of branches (10.9), duration of flowering (164 days), number of flower per plant (285.9) whereas, plant spread (31.4 cm<sup>2</sup>) was better in variety JeaneKennealy. Variety Red Hot performed better in days taken to first flowering (32 days). Bud diameter (1.1 cm) was better in variety Magic Carousel. ....

**Keywords:** *Miniature rose, varieties, growth, flowering*

## 1.Introduction

...Roses are particularly one of the most attractive and in demand flowers among the world's various floriculture crops. Rose word springs from a Latin word “Erose” denoting that the “God of love” (Rajesh and Ramesh, 1999). Rose, genus *Rosa*, belong to family Rosaceae is one of the nature's beautiful creation. It is universally acclaimed as the Queen of Flowers and is one of the world's most popular flowers. The history of miniature roses is relatively unknown. .... Miniature roses first came as an accidental result of rose hybridization. Miniature roses are dwarf bushes with little leaves and flowers. According to American Rose Society, miniature rose are of 3 types micro-mini rose is the smallest class which only reach 12–14 inches in height and the bloom is the size is very small when fully opened and can be grown in a flower pot. Large miniature rose are little bigger than the micro- mini roses, can get 2-3 feet high and its blooms are 1–2 inches across. Another is mini flora which is relatively new class of rose due to its size. Plants reach 3–4 feet in height and blooms can be 3 inches across. It got its name because it is bigger than a miniature and not as big as a Floribunda. Miniature roses have gained much popularity mainly because of the diverse and interesting flower forms and colour (except true blue or black) and growth habits. Miniature roses tend to be quite hardy and can be grown in beds and in containers. They do best in full sun, at least six to eight hours per day. Though they can tolerate a bit of shade, often times their foliage and flowers will become sparse in shady conditions.

**Comment [DB2]:** Add the general information's both of variables

**Comment [DB3]:** What is this type of research?

**Comment [DB4]:** Add more discussion based on results and novelty in this research

**Comment [DB5]:** Add more information of Roses

**Comment [DB6]:** Use references from the last 5 years, please.

**Comment [DB7]:** Add research gaps based on previous research

Miniature roses have multipurpose uses planted in pots, garden display, landscape plantings, miniature bushes, little cut bouquets, etc. They are stunning and cheerful in the garden. They can also be used as lovely low hedges and borders. Many miniatures rose varieties make adorable little cut bouquets for the home and special occasions. Their small size makes miniature roses ideal for edging, mass plantings, and rock or herb gardens.

Today miniature roses are produced by the million in countries all over the world. In some countries most miniature roses are sold as budded or grafted stock. Mini are sold at the exact point when they are in full bloom. The beauty of these miniatures is that they are produced in 11 weeks and thus are much more economical to market than those currently available. The increasing popularity of miniature roses motivated the hybridizers into breeding programs and successfully developed many new miniatures.

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**Comment [DB8]:** Add research question based on the title in this research

## 2. Materials and Methods

The field experiment was carried out in the Department of Horticulture, Sam Higginbottom University of agriculture, Technology And Sciences, Naini, Prayagraj, during November, 2023 to May, 2024. .... Twelve varieties were used in the experiment, laid out in Randomized Block Design, which was replicated thrice along with 40 cm x 40 cm spacing. Varieties Red Hot, Magic Carousel, Rosy, Calpoly, Beauty Secret, Hocky Pocky, Ruby Ruby, Rainbow's End, Jet Trail, Cricket, Black Jade, and JeaneKennealy were used. The source of the grafted plants was Puspanjali Nursery, Jakpur, Kharagpur, West Bengal. Up to 120 days of observations on vegetative and floral parameters were made at 30-days intervals. |

**Comment [DB9]:** Add research design and sources

**Comment [DB10]:** Add how do analyzing the data

## 3. Results and Discussion Vegetative parameters

The mean data for different vegetative parameters, including plant height, plant spread and number of branches of miniature roses varieties are represented in Table 1.

Significantly taller plants (25.9 cm) were observed in variety Ruby Ruby which was at par with variety Beauty Secret (25.1 cm), Magic Carousel (22.3 cm), Calpoly (22.1cm), JeaneKennealy (22 cm) and Rosy (21.8 cm) whereas shorter plants (13.9 cm) were observed in variety Jet Trail. Significantly more plant spread (31.4 cm<sup>2</sup>) was observed in variety JeaneKennealy which was at par with variety Rosy (31.3 cm<sup>2</sup>), Beauty Secret (28.9 cm<sup>2</sup>), Magic Carousel (27.2 cm<sup>2</sup>), Rainbow's End (25.1cm<sup>2</sup>), Ruby Ruby (24.4 cm<sup>2</sup>) and Black Jade (24.2 cm<sup>2</sup>) whereas lesser plant spread (15.9 cm<sup>2</sup>) was observed in variety Jet Trail. Significantly more number of branches per plant (10.9) was observed in variety Ruby Ruby which was at par with variety Rainbow's End (9.9) and Hocky Pocky (8.6) whereas fewer number of branches per plant (6.3) was observed in variety Jet Trail.

The variation among the varieties for different vegetative parameters like plant height, plant spread and number of branches per plant may be due to differences in the genetic makeup and climatic conditions of the area. Plant height variation may be due to difference in rapid meristematic activity during the early growth stages which results in more cell division and elongation in plants. Similar variation in plant height were recorded by **Sharova et al., (1977)** in gladiolus, **Singh et al., (2013)** in floribunda rose, **Ramzan et al., (2014)** in *Rosa hybrida* and **Soujanya et al., (2014)** in rose. For flower crops, plant spread is a crucial growth characteristic. It helps to utilize the sunlight to maximum extent. This was in accordance with the findings of **Mohanty et al., (2011)** in rose, **Chandrashekaraihet et al., (1973)** in hybrid tea rose, **Dias and Patil et al., (2003)** in elite rose and **Sharma and Sharma et al., (2003)** in rose. Number of branches could be because of inherent genetic factors that encourage the synthesis of substances such as auxin, cytokinin, and gibberellin at a faster rate. Similar differences in the number of branches were also noted by **Wasniket et al., (2016)** in scented rose and **Atramet et al., (2015)** in hybrid tea rose.

**Table 1. Vegetative Parameters of different miniature rose varieties**

| Variety        | Plant height (cm) | Plant spread (cm <sup>2</sup> ) | Number of branches |
|----------------|-------------------|---------------------------------|--------------------|
| Red Hot        | 14.7              | 18.2                            | 6.5                |
| Magic Carousel | 22.3              | 27.2                            | 7.8                |
| Rosy           | 21.8              | 31.3                            | 8.3                |
| Calpoly        | 22.1              | 23.4                            | 8.2                |
| Beauty Secret  | 25.1              | 28.9                            | 8.3                |
| Hocky Pocky    | 21.4              | 22.3                            | 8.6                |
| Ruby Ruby      | 25.9              | 24.4                            | 10.9               |
| Rainbow's End  | 19.8              | 25.1                            | 9.9                |
| Jet Trail      | 13.9              | 15.9                            | 6.3                |
| Cricket        | 18.5              | 19.3                            | 8.3                |
| Black Jade     | 18.1              | 24.2                            | 8.3                |
| JeaneKennealy  | 22                | 31.4                            | 8.1                |
| <b>F-TEST</b>  | S                 | S                               | S                  |
| <b>SE(d)±</b>  | 3.22              | 3.54                            | 1.14               |
| <b>CD0.05</b>  | 6.72              | 7.39                            | 2.39               |
| <b>CV</b>      | 19.27             | 17.85                           | 16.92              |

Comment [DB11]: Better add the pictures miniature rose varieties before and after

### Floral Parameters

The mean data for different floral parameters, including days to first flowering, bud diameter (cm), duration of flowering (days), number of flowers per plant of miniature roses varieties are represented in Table 2.

Significantly lesser number of days for first flowering (32 days) was observed in variety Red Hot which was at par with variety JeaneKennealy (33 days), Calpoly (38 days), Hocky Pocky (38 days),

Black Jade (39 days) and Rainbow's End (39.3 days) whereas more number of days for first flowering (44.3 days) was observed in variety Beauty Secret. Significantly bigger flower bud diameter (1.1 cm) were observed in variety Magic Carousel which was at par with variety Rosy (0.9 cm), Cricket (0.9cm) and Rainbow's End (0.9 cm) whereas smaller flower buds diameter (0.5 cm) were observed in variety Jet Trail. Significantly longer flowering duration (164 days) was observed in variety Ruby Ruby which was at par with variety Beauty Secret (148 days) and JeaneKennealy (147 days) whereas shorter flowering duration (67 days) was observed in variety Jet Trail. Significantly more number of flowers per plant (285.9) was observed in variety Ruby Ruby which was followed by variety Beauty Secret (241.2) whereas lesser number of flowers per plant (52.6) was observed in variety Jet Trail.

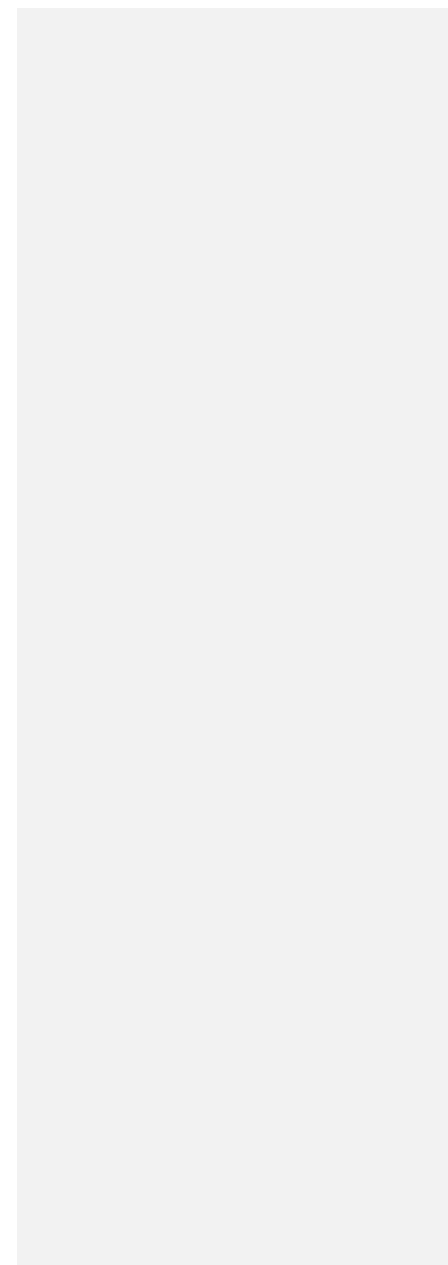
May be due to the inherent characters, genetic composition of the different varieties and the agroclimatic conditions of the region. The varieties adapting well to the given agro-climatic conditions might have performed better while varieties struggling to adapt might have performed poorly. Variation in flowering parameters such as days taken to first flowering, bud diameter, flowering duration and number of flowers per plant. Variation in days taken to first flowering was reported by **Chandrashekaraihet al., (1973)** in hybrid tea rose. Variation in bud diameter was reported by **Singh et al., (1995)** in rose. Variations in flowering duration were reported by **Gaikwad and Patil, (2001)** in chrysanthemum and **Pal et al., (2003)** in Gerbera. Variations in number of flowers per plant was observed by **Ramzan et al., (2014)** in *Rosa hybrida*. This might be due to increase in morphological characteristics such as plant height, number of leaves and area of leaves, which may have initiate the production of more photosynthates resulting in greater accumulation of dry matter which in turn produces more number of flowers per plant.

**Table 2. Floral Parameters of different miniature rose varieties**

| Variety        | Days to 1 <sup>st</sup> flowering | Bud diameter (cm) | Duration of flowering (days) | Number of flowers per plant |
|----------------|-----------------------------------|-------------------|------------------------------|-----------------------------|
| Red Hot        | 32                                | 0.6               | 131                          | 63.3                        |
| Magic Carousel | 42                                | 1.1               | 117                          | 117.3                       |
| Rosy           | 43                                | 0.9               | 114                          | 97.2                        |
| Calpoly        | 38                                | 0.8               | 112                          | 142.7                       |
| Beauty Secret  | 44                                | 0.6               | 148                          | 241.2                       |
| Hocky Pocky    | 38                                | 0.7               | 126                          | 95.3                        |
| Ruby Ruby      | 41                                | 0.7               | 164                          | 285.9                       |
| Rainbow's End  | 39                                | 0.9               | 108                          | 144.1                       |
| Jet Trail      | 42                                | 0.5               | 67                           | 52.6                        |
| Cricket        | 42                                | 0.9               | 113                          | 105.9                       |
| Black Jade     | 39                                | 0.8               | 107                          | 133.5                       |
| JeaneKennealy  | 33                                | 0.7               | 147                          | 177.8                       |
| <b>F-TEST</b>  | S                                 | S                 | S                            | S                           |
| <b>SE(d)±</b>  | 3.48                              | 0.09              | 13.92                        | 10.24                       |
| <b>CD0.05</b>  | 7.26                              | 0.19              | 29.05                        | 21.38                       |
| <b>CV</b>      | 10.78                             | 13.71             | 14.08                        | 9.09                        |

Comment [DB12]: Add pictures Floral Parameters of different miniature rose varieties

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#### 4. Conclusion

It is concluded from the present investigation that 12 miniature rose varieties under study showed significant variation in all the parameters studied. Variety Ruby Ruby showed significantly better performance in vegetative parameters including plant height, plant spread, number of branches per plant and flowering parameters including longer flowering duration, more number of flower per plant. Variety JeaneKennealy showed significantly better performance in vegetative parameter plant spread and flowering parameters including first flowering and longer flowering duration. Also Variety Beauty Secret performed better in vegetative parameters including plant height, plant spread and flowering parameters like longer flowering duration and more number of flowers per plant. Variety Red Hot performed better in days taken to first flowering. Bigger flower buds were observed in variety Magic Carousel.

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Comment [DB13]: Add new references

