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18 Investigation of plant growth and flower performance on a semi-extensive green roof

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## 20 **Highlights**

21 • Plant phenology was investigated over 1 year on a semi-extensive green roof.

22 • Flowering times of plants varied between 2 weeks and over 5 months.

23 • The growth characteristics were categorized into six patterns.

24 • High plant species diversity affect plant growth and flower performance

25

26

27 Abstract

28 Understanding of plant growth and flower performance is crucial for appropriate planting design. This study was

29 aimed to understand characteristics of growth pattern and flower performance in green roof plants and how plant

30 species diversity effect these characteristics. A semi-extensive green roof was installed in 2005 and 54 species

31 plant species were planted in 10 cm and 20 cm of the substrate in Rotherham, UK. Thirty-two quadrats (50 cm

32 × 50 cm) were set up through the combinations of plant species diversity (high and low), planting density (high

33 and low). Percentage of coverage and height of each species were recorded at every month from February to

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