

## Effect of spraying with organic and liquid fertilizer on vegetative and flowering growth and active components of *Calendula officinalis* L.

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### Abstract

The experiment was conducted in the agricultural season 2022-2023 in the fabric shade of the College of Agriculture - Aljamieuh of Basrah, as the experiment aimed to study the effect of spraying with organic fertilizer and Aljamieuh fertilizer on the vegetative and Flowering growth of *Calendula officinalis* plant. The experiment included 9 factorial treatments in which two factors interacted: foliar spraying with organic fertilizer at three concentrations of zero, 4, 6 g. L<sup>-1</sup> and spraying with Aljamieuh fertilizer at concentrations of zero, 5, 10 mg. L<sup>-1</sup>, and the spraying was in three batches with an interval of 15 days between each batch. Spraying with organic fertilizer at a concentration of 6 mg. L<sup>-1</sup> led to a significant increase in plant height, number of lateral branches, number of leaves, percentage of dry matter of the vegetative group, number of flowers, flower diameter and percentage of dry matter in flowers, while this concentration caused a significant delay in flowering. Spraying plants with organic fertilizer at a concentration of 4 mg.L<sup>-1</sup> led to a significant increase in the number of petals. Spraying with Aljamieuh fertilizer at the highest concentration of 10 mg.L<sup>-1</sup> led to a significant increase in plant height, number of lateral branches, number of leaves, percentage of dry matter of the vegetative group, number of flowers, number of petals, flower diameter, and percentage of dry matter in flowers, while this concentration caused a significant delay in flowering. The bilateral interactions had a significant effect on all the traits under experiment.

The highest number of active compounds was recorded in plants treated with organic fertilizer, which amounted to 41 compounds, while the treatment with liquid fertilizer recorded the number of active chemical compounds 37 compounds compared to the control treatment, which had 35 compounds.

**Key word: spraying, organic and liquid, fertilizer and flowering**

### Introduction

*Calendula officinalis* L. is a medium-height plant belonging to the Asteraceae family. It contains many medically active compounds. The roots are white-yellow to light brown in color, about 20 cm long and 7 mm thick, and carry many root branches (Al-Mayah et al., 2016). The stem is long and strong, reaching 30 cm. The leaves are simple, spoon-shaped, and oblong, 15-20 cm long, dark green in color. The flowers are a compound

inflorescence with a main axis ending in a round disc, on the outer edges of which there are a number of yellow or orange ray flowers. The original habitat is the Mediterranean basin and it grows wild in southern and central Europe, North Africa, and Canada, and is cultivated in most parts of the Arab world. Its flowers were used to treat joint diseases and as an antidote to poisons. It was grown in homes to repel flies and was used in garden and