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Growth and yield evaluation of marigold (*Tagetes erecta*) landraces at Bhaktapur, Nepal

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Abstract

Marigold (*Tagetes erecta* L.) is an economically important floricultural crop widely cultivated for decoration, religious offerings, and its carotenoid and essential oil content. Despite growing domestic demand for flowers, which is currently met by local production at only about 20 %, no indigenous Nepalese marigold landraces have been formally characterised or recommended for commercial cultivation. This study was conducted to evaluate seven elite marigold landraces (Co16861, Co16864, Co16868, Co16874, Co16875, Co16881, and Co16883) that were collected, morphologically characterised, and genetically assessed by the project "Agro-Morphological and Genetic Characterisation of Marigold (Tagetes spp.) Landraces of Eastern Nepal". The experiment was laid out in a Randomised Complete Block Design (RCBD) with three replications. Growth parameters, including plant height, plant spread, number of branches, number of nodes, and inter-nodal length, were recorded at 30, 60, and 90 days after transplanting (DAT). Floral traits, including days to bud formation, days to first harvest, number of harvests, number of flowers per plant, flower weight, flower diameter, and petaloid number, were also recorded. Data were analysed using R 4.2.1. Significant differences were observed among landraces for plant height at 30 and 60 DAT, number of nodes at 60 DAT, and inter-nodal length at all three observation periods. All floral quality traits, flower weight, flower diameter, and petaloid number differed highly significantly among genotypes. Landrace Co16883 emerged as the top performer, recording the highest number of flowers per plant (127.66) and maximum harvests (12), while Co16868 produced the heaviest flowers (9.58 g) and the largest flower diameter (6.84 cm). Similarly, landraces Co16881 and Co16861 also showed strong commercial potential, with Co16861 having the shortest duration to bud initiation and first harvest (60.66 and 71.66 days), while Co16881 had the highest petaloid number. These findings suggest that several Nepalese marigold landraces possess strong commercial potential and could be integrated into formal breeding programmes to develop high-yielding, locally adapted varieties for Nepal's growing floriculture sector.

Keywords: Agro-morphological characterisation, floral quality, floriculture, growth parameters, randomised complete block design

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