

Olive Bud Fate Depends on Node Formation Date. Implications for Flower Induction Timing.

M.A. Piedra¹, M. González² and J. Cuevas¹

¹ Departamento de Producción Vegetal, Universidad de Almería, Almería, Spain.

² Estación Experimental de la Fundación Cajamar, El Ejido, Almería, Spain.

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Abstract

Olive flowers develop laterally in leaf axils of 1-year-old shoots. In these shoots, basal nodes are formed earlier than apical ones and, as a result, bud formation date can be tracked according to the bud node position in the shoot. Although still a matter of controversy, most authors defend that olive flower induction takes place in late summer. With the hypothesis that buds formed after flower induction are not reproductive, we monitored bud fate (floral, vegetative, dormant or abscised) according to the date in which the node was formed in “on” and “off” ‘Hojiblanca’ trees. With the aim to infer flower induction date, all nodes of 16 shoots in each of six “on” and six “off” ‘Hojiblanca’ trees were tagged as soon as they were formed and bud nature recorded next spring. In a different sample of eight shoots per tree, leaves were removed periodically in one out of two nodes to check the effects of their removal on subsequent flowering and fruit set. Our results show that shoot growth in length fitted to a sigmoid curve in “on” and “off” trees, although a higher number of nodes were formed in “off” trees. No new nodes were formed after October despite the orchard was irrigated and located in a mild winter area (Tabernas, Almería, Spain). In “off” trees, most buds formed before mid-September developed flowers in the next spring, while most buds formed in October remained dormant or abscised. Only a few buds from “on” trees formed flowers, and only when they were located in nodes formed before mid-July. Partial leaf removal slightly reduced shoot length, and flowering (in both components: panicles per node and flowers per panicle) but did not definitively condition bud fate neither in “off” nor in “on” trees. The results suggest that olive flower induction in ‘Hojiblanca’ off trees occurred in September and/or that favourable conditions leading to flowering transition persisted that date. A positional and nutritional effect on bud fate can not, however, be completely discarded.