

# Crop diversification and irrigation scheduling

*An irrigation scheduling to enhance water use efficiency of off-season crops in rainfed lowlands*



## Introduction

Crop diversification is considered as an effective approach to improving farmers' livelihoods and nutritional security, and builds their resilience to climate change. However, little is known about irrigation scheduling to introduce diversification options in inland valleys, particularly during the dry season when water scarcity limits crop production. Here, we developed an irrigation scheduling for off-season vegetable and legume production in inland valley rice-based systems in Côte d'Ivoire. The irrigation scheduling is based on the supply of 30% soil water holding capacity, corresponding to 52.5 m<sup>3</sup>/ha of water for loamy soil in inland valleys of the derived savannah agro-ecological zone of Côte d'Ivoire. When supplied every 5 days, this irrigation scheduling resulted in 68–95 mm (680–950 m<sup>3</sup>/ha) of water supplied per growing season, and increased crop yield, water productivity, economic benefit and benefit–cost ratio for the off-season crops most preferred by farmers (tomato, okra and cucumber) by 36–74, 23–55, 52–177 and 46–163%, respectively, compared to the farmers' irrigation management practices that consisted of supplying 18.75 m<sup>3</sup>/ha every 2 days, because of lower soil water loss through evaporation. The irrigation scheduling based on the supply of 52.5 m<sup>3</sup>/ha of water every 5 days can be used in inland valleys where water is available for irrigation during the dry season.



End-of-season farmer assessment of diversification options under optimal irrigation scheduling in rainfed lowland.

## How to use this innovation

Irrigation scheduling for introducing off-season crops in rainfed lowlands is an approach that identifies a suitable irrigation regime for off-season crops. In the case of tomato, cucumber and okra, a suitable irrigation regime consists of supplying 30% of soil water holding capacity, corresponding to 52.5 m<sup>3</sup>/ha of water, every 5 days during the dry season on loamy soils of inland valleys belonging to the derived savannah agro-ecological zone of Côte d'Ivoire.



### Dry season irrigation scheduling for loamy soils of inland valleys of the derived savannah agro-ecological zone of Côte d'Ivoire

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Supply water at 52.5 m <sup>3</sup> /ha	No water	No water	No water	No water	Supply water at 52.5 m <sup>3</sup> /ha

Continue to supply water at the same intervals throughout the dry season.

## Additional information

For an off-season crop selected by a farmer, it is advised to follow the recommended crop management practices in terms of crop establishment, fertilizer, and weed, pest and disease management.

## Contact information

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