

EFFECTS OF INTERCROPPING SWEET POTATO ON THE POPULATION DENSITY
OF SWEET POTATO WEEVIL, Cylas formicarius (F.)
(COLEOPTERA: CURCULIONIDAE)

By

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ABSTRACT

M.Sc

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ENTOMOLOGY

EFFECTS OF INTERCROPPING SWEET POTATO ON THE POPULATION DENSITY OF SWEET POTATO WEEVIL, Cylas formicarius (F.) (COLEOPTERA: CURCULIONIDAE)

Field experiments were conducted during the 1989 dry season (July to December) at the Manggoapi Farm of the Faculty of Agriculture, Cenderawasih University in Manokwari, Irian Jaya, Indonesia. The objectives of the experiments were to determine the effects of four sweet potato cropping systems on the population density of sweet potato weevils (SPW) and on the diversity of other insects within these agroecosystems.

Fewer SPW were found in intercropped sweet potato + corn (2 weevils per kg infected tubers), sweet potato + soybean (21 weevils), sweet potato + corn + soybean (8 weevils) than in monoculture sweet potato (37 weevils); percentage of damaged tubers followed the same trend, ranging from 2.6 % to 14.0 % in intercropped sweet potato, to 21.9 % in the sweet potato monoculture. However, the higher number of SPW and damaged tubers in the monoculture did not reduce yield below that in the intercropped plots, which had lower yields because of reduced sweet potato density and higher interspecific plant competition. Consequently, numbers and weight of tubers per plant, as well as marketable yield, were highest in the monoculture.

Insect and spider populations were more diverse in the intercropped sweet potato systems than in monoculture. Number of arthropods increased throughout the growing season, reaching a peak at 56 days after planting (DAP). Intercropping may reduce the population density of other insect pests associated with sweet potato (e.g., the spotted tortoise beetle Aspidomorpha sp. was less abundant), and may increase the population density of natural enemies (e.g., the spider Lycosa sp. was more abundant).

RESUME

M.Sc

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ENTOMOLOGIE

EFFETS DE DIVERS TYPES D'ASSOCIATIONS DE CULTURE DE LA PATATE DOUCE SUR LA DENSITE DE POPULATION DU CHARANÇON DE LA PATATE DOUCE, Cylas formicarius (F.) (COLEOPTERE: CURCULIONIDAE)

Des essais en champs ont été réalisés pendant la saison sèche 1989 (Juillet à Décembre) à la ferme Manggoapi de la Faculté d'Agriculture de l'Université Cenderawasih en Manokwari, de la province d'Irian Jaya, en Indonésie. Les objectifs de ces expériences visaient à déterminer les effets de quatre systèmes de culture de la patate douce sur la densité de population du charançon de la patate douce et sur la diversité de l'entomofaune à l'intérieur de ces divers agroécosystèmes.

Le nombre de charançons était bas dans les associations patate douce - maïs (2 charançons [ch.]/kg de tubercules infestés [t.i]), patate douce - fève soya (21 ch./kg de t.i.), patate douce - maïs - fève soya (8 ch./kg de t.i.) comparé au nombre de charançons présent dans la monoculture de patate douce (37 ch./kg de t.i.). Le pourcentage de tubercules attaqués suit cette même tendance; 2,6 à 14 % des tubercules étaient attaqués dans les associations de culture et 21.9 % dans la monoculture. Tout de même, le nombre plus élevé de charançons et de plants infestés retrouvé en monoculture ne correspond pas à une baisse de rendement de la patate douce car il était plus élevé dans la monoculture que dans

les cultures associées; le rendement inférieur dans ces dernières est attribué à une densité plus faible de plants et à la compétition interspécifique des plants. Par conséquent, le nombre et le poids de tubercules frais ainsi que la récolte commercialisable étaient donc plus élevés dans la monoculture. L'entomofaune était plus diversifiée dans les systèmes de polyculture que dans la monoculture. Le nombre d'arthropodes a augmenté au cours de la saison, pour atteindre un maximum 56 jours après le repiquage. La polyculture a semblé réduire la densité de population des autres insectes ravageurs de la patate douce (ex. la casside, Aspidomorpha sp. y était moins abondante) et augmenter la densité des ennemis naturels (ex. l'araignée Lycosa sp. y était plus nombreux).

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