

# A transdisciplinary perspective on the links between malaria and agroecosystems in Kenya

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## **Abstract:**

An ecosystem approach was applied to study the links between malaria and agriculture in Mwea Division, Kenya. The study was organized into five phases. Phase I had two components including a stakeholder workshop conducted with community representatives and other key stakeholders, and the collation of data on common diseases from outpatient service records at the local hospital. Phase I aimed at an a priori needs-assessment in order to focus the research agenda. Workshop participants directly contributed to the selection of two villages with rice irrigation and two non-irrigated villages for detailed health studies. In Phase II, various Participatory Rural Appraisal (PRA) tools were used to gather more detailed qualitative information from the study villages. The qualitative results indicated that Mwea residents considered malaria and lack of clean drinking water to be their most important health problems, and this was corroborated by local hospital records. Phase III consisted of a comprehensive household survey developed with inputs from Phases I and II. Phase IV involved a comparative evaluation of entomological and parasitological aspects of malaria in the villages with and without rice irrigation. The malaria parasitological survey found an average *Plasmodium falciparum* parasite rate of 23.5% among children up to 9 years of age. Results of the entomological evaluation showed a 30-300-fold increase in the number of the local malaria vector, *Anopheles arabiensis*, in villages with rice irrigation compared to those without irrigation yet malaria prevalence was significantly lower in these villages (0-9% versus 17-54%). The most likely explanation of this 'paddies paradox' in Mwea appeared to be the tendency for *A. arabiensis* in irrigated villages to feed overwhelmingly on cattle. The results suggested that zooprophylaxis was potentially a practical option for long-term malaria control in the rice irrigated areas, in spite of the large number of *A. arabiensis*. Phase V consisted of end-of-project workshops for the dissemination of research results and participatory decision-making regarding follow-up actions. Owing to the utilization of a transdisciplinary and participatory approach to research, it was possible to identify opportunities for maintaining zooprophylaxis for malaria in Mwea, through the integration of agroecosystem practices aimed at sustaining livestock systems within a broader strategy for rural development.