

Water Supply and the Risk of Mosquito Breeding Sites

People in rural poverty live a fragile existence that is closely linked to subsistence farming and a barrage of health risks, both of which are highly dependent on water supply. Maintaining the continuity of water supply creates a Catch-22 situation. On one hand, it is essential for subsistence farmers to produce crops and maintain livestock in arid areas. On the other, still water poses a major health risk by substantially increasing mosquito borne disease by providing the necessary mosquito breeding sites. Mosquitoes transmit a range of diseases affecting people and livestock, including malaria, one of the most significant causes of mortality and morbidity in Africa.

In the past, rain-fed irrigation was often sufficient for subsistence farmers. Climate change, however, has compromised the continuity of water supply for the rural poor. Longer dry periods and erratic rainfall patterns place the poorest community members, those engaged in the most direct struggle for survival, at the highest risk. To produce sufficient food they must store water in ponds and pools so that they can maintain supply over dry periods. The increasing need for water storage for irrigation and livestock places the members of these rural communities at a higher risk of mosquito borne disease. Vector mosquitoes breed in standing water, and stored water comes with the inherent risk of large numbers of mosquitoes by providing more breeding sites.

Little is known about the actual preference of female mosquitoes for egg laying sites. However, we do know that mosquito selection of breeding sites is far from random. The positioning of open water relative to villages, and the abiotic condition of the water in terms of pH and turbidity have been suggested as affecting the selection of egg laying sites by mosquito females. In addition, the water quality is very important for the survival and development of mosquito larvae. The core of the project is to minimize the health risks associated with the increasing necessity of irrigation. We will address the placement of water storage ponds on the egg laying of mosquitoes, and further investigate the role of water quality in the growth and development of mosquito larvae.

Work will be performed in Ethiopia, in association with at EIWR and SLU.

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