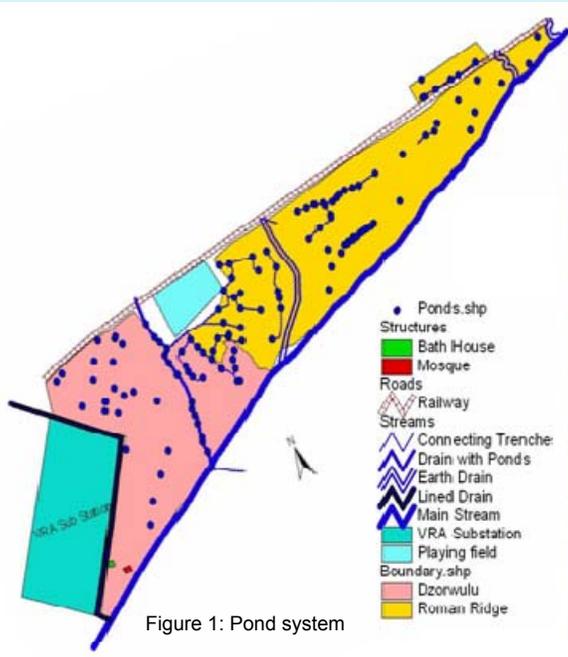


Site description: A vegetable farming site of 500 farmers using polluted water of varying quality. Individual ponds and networks of interconnected ponds are a common feature (Fig 1). Pond systems are managed by two or more farmers depending on their size. This project upgrades an existing 5-pond network for enhanced risk control. Farmers participated in construction and maintenance. The design doubled the water volume and reduced “short-circuiting” (rapid flow), increasing the overall water retention time from one to two days.



The Demo site in Accra, Ghana, drawing water via pumps from polluted streams and wastewater drains

Technology Description: Trenches were slightly widened and ponds were deepened and their shape regularized. Steps were built to facilitate entry into ponds and avoid sediment re-suspension. Simple baffles were placed to increase the water retention time (see figure 2)

Required inputs: Mostly labor for construction (two man-days) and USD 50 per farmer for construction materials.



Figure 2: Interconnected pond with hardwood baffles.

Pathogen removal

The systems enhance fecal coliform removal from 10^6 - 10^7 MPN/100ml by at least 2 log units from the first to the last pond. Individual ponds showed a removal of 1-1.5 log units over two days. Helminth eggs were not frequently found in the source water (up to two eggs/litre) but when present, dropped below one egg/litre in the first pond.

TIP: the retention trenches account for a quite stable permanent improvement and a barrier (raising the height of the inflow pipe above the diversion weir) stopped the continuous inflow of pathogen-rich water from the main stream during the watering period, preventing re-contamination.

Adoption and out-scaling potential:

Whilst this case does not illustrate a perfect solution, it shows that farmer initiatives can contribute to pathogen reduction and also offer opportunities for improvements through participatory research. Important site criteria were sufficient tenure security, space, and an adequate slope to allow flow by gravity for interconnected systems. Given the load of two 15 l watering cans to carry each time, farmers cooperate if modifications can reduce transport time. The system is not suitable in flood-prone areas.