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Thesis Title

CHARACTERIZATION OF FISH FARMING SYSTEMS IN KIAMBU AND MACHAKOS COUNTIES, KENYA

Thesis Abstract

The purpose of this study was to characterize the fish farming and marketing practices in Kiambu and Machakos counties in Kenya. To achieve this a descriptive survey design targeting fish farmers was conducted in Kiambu and Machakos Counties in Kenya. The areas were selected because of the following reasons: The two counties border Nairobi Metropolitan area which is an important fish market and they have no long history of fish farming. A semi-structured questionnaire was used to collect data from 250 respondents selected randomly from the sampling frame provided at the District Fisheries Office and the area under study in each County was selected purposively from the sampling frame. Data were collected on socio-economic characteristics of fish farmers, pond management practices and fish feeding practices. The role of the ESP in funding input supply and service delivery, fish harvesting, marketing and consumption was also evaluated. The data were analyzed for descriptive statistics using SPSS version 16. The results showed only 23.8 percent and 16 percent of the fish farmers in Kiambu and Machakos County respectively, did not complete primary education. Majority of the farmers (over 70 percent) were men who controlled most of the income generating activities. Fish farming was practiced by a relatively large proportion of farmers below fifty years of age – 79 percent in Kiambu and 54.6 percent – both categories combined in Machakos counties. The average land size was 2.5±3.47 and4.27±4.78 hectares in Kiambu and Machakos Counties respectively. The means were statistically different between the two counties (p=0.05) The study also showed that in Kiambu County 79.6 and 91 percent of ESP and self-funded farmers respectively kept fish mainly for commercial purposes while in Machakos County it was 56 and 72 percent respectively. Of the 250

	respondents interviewed, 85.3 percent and 75 percent in Kiambu and Machakos counties respectively were recruited through the ESP. The main source of information on fish farming was government extension agents as reported by 93.8 percent and 92 percent of ESP farmers in Kiambu and Machakos counties respectively. The results were significantly different between the two categories of farmers (p= 0.01). Stocking of Nile tilapia (*Oreochromis niloticus*) in mixed sex monoculture was the most dorminant culture method and fish were mainly stocked in earth ponds. The average pond size was 300m^2 stocked with 1000 fingerlins per pond. Majority of the fish farmers (67.2 percent) in Kiambu and (70.7 percent) in Machakos County refilled their pond when water fell below a certain point, usually a point or level which was shown to them by government extension officers. Water quality was poor as indicated by the high percentage of farmers (86 percent and 65 percent in Kiambu and Machakos respectively) who never drained their ponds at the end of the production cycle and pond water colour which was brown or clear in many cases. Most farmers(42.1 percent) fertilized their ponds at least once per production cycle and used manure from their farms. The study also showed that there are no fish diseases in this region because 84 percent indicated that they had not seen any massive fish die offs due to diseases. The highest price for fish was Ksh 180 per piece in both Kiambu and Machakos counties. The main challenge as reported by fish farmers was predation (41.3 percent and 39 percent of farmers in Kiambu and Machakos counties respectively). The common predators were the kingfisher, vultures and frogs. The study therefore recommends provision of training and credit to fish farmers in order to improve on pond management and feeding, conduct extensive baseline survey and feasibility studies before introduction of fish farming in different parts of the country and train farmers on the importance of determining the pond water quality at certain intervals and before stocking the pond to ensure that the water parameters like ammonia are within the required range.