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Engpässe und Verbesserungsmöglichkeiten von Large-Scale Bewässerungsprojekten in Thailand am Beispiel des Nong Wai-Nam Pong Projektes im Nordosten des Landes

Thesis at the Section of Agricultural Engineering and Land Management

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Abstract

The paper is based on information and data collected during a seven months stay in Thailand in 1988/89. In that period, various project side and institutions concerned with irrigation were visited. The study is focused on con-strains and obstracles in the management of irrigation projects. A large scale irrigation project named Nong Wai-Nam Pong located in the Northeast of the country served as a case study. The River Pong (Lam Nam Pong) divides the project area in two parts: the right and the left distribution system. "The 'Right Distribution System' consists of 1 main canal of 47.490 km, 15 laterals of 80.115 km, and 240 ditches of 530 km to convey water to the cultivated areas of 22,026 ha." (Royal Irrigation Department, 1988) "The 'Left Distribution System consists of 1 main canal of 82.900 km to convey water to the cultivation areas of 19,478 ha.' (Royal Irrigation Department, 1988) The main system, an upstream controlled gravity irrigation system, is under the responsibility of the Royal Irrigation Department (RID). The on-farm system, a basin irrigation system, is managed by the farmers themselves. According to a definition, "irrigation management" not only consists of water management itself (allocation and distribution) but also of management of all persons concerned with irrigation (irrigation administration, farmers' organizations, etc.) (IRRINEWS, 1986, page 4B) In the field of irrigation the main aspects are the questions when, where and how much water is needed. The estimate water demand depends on the planted crop and its stage of growth. But it is also necessary to calculate a so called "Gross Water Requirement", because during water distribution different kinds of losses occure. I.e. deep percolation losses in fields, evapotranspiration from water surfaces in the reservoir and conveyance channels, water consumption from aquatic plants and weed - growing alongside and in the distribution system - avoidable and unavoidable operational wastes. The kind and amount of losses vary in different projects. A measurement of losses affecting irrigation systems is the term "irrigation efficiency". The efficiency is characterised by the relation between water input into the irrigation system and the amount of water available to the plant roots. A low efficiency mostly depends on the management. Insufficient management leads inevitable to a deterioration in quality and quantity of yields.

According to an analysis carried out in the Nong Wai-Nam Pong Project, the efficiency of the main system amounted to 88%, whereas the efficiency of the on-farm system turned out to be 43%. The result pointed out that water losses within the on-farm system are more serious than those noticed in the main system.
Other sources of mismanagement derive from inadequate planning and design especially those carried out by badly organized operation and maintenance services. Certain problems result from the lack of cooperation and sense of responsibility on farm level. These problems are more difficult to analyse and to solve than those of a mere technical nature. These difficulties are identified as the crucial factor in the pursue of the purpose to improve the irrigation efficiency and therefore demand special attention.
The difficulties mentioned above illustrate that it is of utmost importance for the management limitate these contrains in order to increase the "irrigation efficiency" and the farmers income.
But all management activities and implementations are limited by the project itself. "Once a project has been completed, managers can do no more than operate what exists as well as they are able-and this may sometimes mean to make the best of a bad (planning) job" (Bottral, 1978, page 311)