

AGRO-WELL DEVELOPMENT IN THE DRY ZONE TANK CASCADES AND ITS IMPACT ON TANK RESERVATIONS IN THE NORTH CENTRAL DRY ZONE OF SRI LANKA

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With the inadequacy of rainfall and irrigated water for agricultural activities in the dry season of the Dry Zone of Sri Lanka, farmers are motivated to extract groundwater through agro-wells. The emergence of agro-well based agricultural systems has been significant in tank cascades due to easy access of shallow groundwater in the dry season. It has been very rapid in the recent years and this has been discussed among the research community as well as the regional resource planners. Currently, there is a common belief that the agro-well based land development has drastically changed the overall land use pattern in the tank cascades recently. Especially the tank reservations are one of the most important components in the tank cascade land use pattern and they are contributory towards hydro-ecological services. Accordingly, this study was conducted to examine whether there are impacts on tank reservations due to agro-well development and whether such impacts are significant. The study was conducted covering 20 tank cascades in the North Central Dry Zone. An agro-well survey in the tank reservations, a tree survey in reservations, maps interpretations (Geo eye 1 satellite images and GIS maps) and significant tests were used for the study. It was revealed that although there are relevant regulations to monitor development activities, agro-wells have been constructed in tank reservations. The results have shown that there is a positive relationship between the agro-well density in tank cascades and the number of agro-wells in tank reservations. Further, it was revealed that “*Gasgommana*” (strip of large trees located around the tank, serving as a windbreak to reduce the evaporation losses) area has been damaged more than the “*Kattakaduwa*” (reserved land strip located between the tank bund and the paddy field, acting as a salinity interceptor belt) area within the sub category of tank reservations. Different types of damage to tank reservations, including the removal of the forest patch, physical damage, agricultural land development within the reservations, and reducing the tree density of reservations have been recorded. Furthermore, according to differentiate mean T test, agro-well availability in tank reservations has been significant (P value = 0.0447) when compared with the low agro-well density cascades.

Keywords: Dry Zone, Agro-wells, Tank cascades, Tank reservations