

Past and present of the use of check dams for controlling soil erosion and runoff

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Check dams serve multiple purposes, such as reducing sediment erosion, favoring flood mitigation, avoiding soil fertility losses and recharging aquifers. Moreover, check dams have been proved to be a useful tool for controlling soil erosion and runoff on a catchment scale. In this context, the effectiveness of check dams depends on multiple characteristics, including watershed area, the physical properties of the soil, types of vegetation, the farming system, and land uses. Hence, check dams are a topic of interest in many different countries. Conducting a review of the check dams in several countries where erosion control has experienced a pioneering period is interesting, because it can help explain cultural similarities, and explore the different approaches taken to manage soil and water conservation. This study presents the extant research conducted on the usefulness and development of check dams globally. Check dam development and utilization has a long history in China. Indeed, the Loess Plateau occupies 3200 km² of check-dam farmland, and another 3512 km² of check-dam farmland is located in the black soil, windy, sandy, hilly and mountainous regions. In Spain, numerous studies have been conducted on check dams, as the interest in researching them has increased considerably over the last 30 years. After check dams were installed in northern Italy, significant differences were determined in sediment, vegetation development and channel formation. Several studies have also been undertaken to determine the varying effects of check dams in Iran. Moreover, more than 150 years of research has reported that check dams are landmark civil engineering structures used in the French Soil Conservation Program. This paper will be helpful for policy makers to extend check-dam projects in erosion-prone, arid and semi-arid areas. It is suggested that more research is needed on this subject to formulate strategies and implement plans for sustainable river basin management.

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