

IMPACTS OF DROUGHT ON AGRICULTURAL PRODUCTION AND AVAILABILITY OF IRRIGATION WATER IN DPR KOREA

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In 2015, the Government State Committee for Emergency and Disaster Management (SCDEM) reported that nine percent of agricultural land became unsuitable for cultivation due to a prolonged drought in 2014/15. In 2015, total production in terms of cereal equivalent was 5.06 million tonnes which fell below the production level of 2014 (5.71 million tonnes) by 11 percent. The Ministry of Agriculture has attributed this decrease in production to the 2014–2015 drought.

According to meteorological data provided by NCC, annual precipitation in 2015 was less than the historical average in nine out of 11 provinces of DPRK. Among the nine provinces, Nampo received the lowest annual rainfall (73.4 percent of historical average) and North Hwanghae the highest (98.3 percent). In most provinces, the distribution of rainfall in the main cropping season from May to September was much less than the historical average which exposed growing crops to soil moisture stress. There are also widespread shortages of irrigation water. As of January 10, 2016, water resources available nationally for irrigation were estimated at 2.330 billion m³ against the minimum need of 3.574 billion m³ that constituted 65 percent deficit. The extent of deficit of irrigation water varied in a broad range among the provinces with the highest 83 percent in South Hamgyong and lowest 42 percent in Pyongyang.

This clearly shows that dwindling fresh water availability and/or drought conditions are major concerns for agricultural sustainability. Low organic matter and imbalanced use of fertilizers are affecting crop productivity. Enhancing water use efficiency in agriculture including animal husbandry, and fisheries can hardly be overemphasized. In this context “per drop more crop” should be adopted as a mission statement aimed at improving water productivity. There is need of technology solutions for smart water use like precision irrigation, zero tillage wheat system, and short duration crop varieties. There is urgent need to accelerate efforts to develop water efficient and drought tolerant varieties. Further, the new technologies including new varieties equipped with water use efficiency and drought tolerance should reach the farmers immediately for alleviating malnourishment in the population specially the women and children. A deficient rainfall followed by dry spell affects agricultural production in subsequent year as well. We need to focus on climate-resilient technological solutions. Innovation in agricultural production techniques in broad context must be supported through infusion of funds, mentoring of ideas, and technical assistance. The risk taking ability of farmers must be boosted. Under these adverse climate conditions including impacts of climate change, research in agricultural institutes should focus on minimizing production cost, enhancing profitability in the entire “field to plate” food chain and introducing greater mechanization and automation to reduced drudgery.

We need to create a large pool of competent manpower empowered with state-of-the-art research infrastructure. A strong network of scientists, learners and practitioners will facilitate lab-to-land

dissemination of good agricultural practices to enhance water use efficiency and development of drought tolerant short-duration cultivars in the field and vegetable crops.

Agriculture institutes are the foundation on which success of farm sector and welfare of people depends. Performance indicator of the scientists is the quality of the products as per need of the farmers and the consumers under given circumstances. Committed and industrious professionals from these institutes backed by favourable policies are the need of the hour to spearhead the required farm revolution to the next level. We all must rise and seize the opportunities and contribute to the transformation in agriculture under less water and drought situations.