

Abstract

Agriculture in over 84% of world farmlands is rainfed but yields just over half of the crops produced. In East Africa 60% of the landmass is arid and semi-arid land (ASAL), where rainfall is inadequate for arable agriculture. The ASAL environment is harsh. Rainfall is low, unreliable and bimodal, and the seasons have unequal production potential. In Kenya, the short rains contribute 55% of the annual rainfall, while the long rains contribute 35%. Frequent droughts cause crop failure raising the dilemma whether farmers can apply fertilizer to crops in either season. Fertilizer and hybrid seeds are expensive and farmers no longer keep sufficient livestock for manure due to small land units and lack of herdsmen occasioned by free primary education. Poor farmers plant inferior cultivars without fertilizer or manure and fail to apply pesticides or manage weeds. Illiteracy and low mechanization limit the ability to maintain required plant population, and planting is late due to inability to prepare land early. Crops are therefore unable to utilize all available moisture. Farmers must use recommended cultural practices including appropriate cultivars, fertility, seed, planting time, weeding and pesticide application. The produce must also attract competitive market prices. Investing in production, including use of fertilizer, is risky and can be done during the short rains. The government must be courageous in formulating enabling policies. Policy should regulate use of land based on size and potential. Planting grass for livestock, not maize for humans, gives better results in ASALs. Overcoming these dilemmas empowers the ASALs to power the green revolution.