

Analysis of Rainfall Variability on Irish Potato Production in Ol-joro-orok Division, Nyandarua County, Kenya. 2014

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Abstract:

This study analysed the effect of rainfall variability on potato yields in Oljoro-orok Division, Nyandarua County. The objective was to investigate the relationship between rainfall variability and Irish potato production in Oljoro-orok division. Specific objectives were: to assess the seasonal and annual rainfall and potato production trends and variability between 1999 and 2009, to analyse seasonal and annual rainfall characteristics and correlate them with potato production, to evaluate farmers' adaptation measures to rainfall variability in potato production. Primary data were obtained from randomly selected farmers through questionnaires. Secondary data on rainfall and potato production were collected from Nyahururu Meteorological Station and District Agriculture Office respectively for the period of eleven years. Purposive sampling was used to select 300 farmers in the division. Proportionate sampling was used to select the sample of farmers in each of the three locations. The data collected were analyzed using descriptive statistics namely frequencies, percentages and means with the aid of Statistical Package for Social Science (SPSS) version 17.0. The results were presented using line and bar graphs, tables and pie charts. The findings were that annual rainfall and potato yield shows an increasing trend between 1999 and 2009. Rainfall has shown a decreasing trend during the long rain season and an increasing trend during short rain season. Rainfall variability is significant in both seasonal and annual trends ranging from -25.2473 in 2009 to +48.9891 in 2007 on the annual trend, -61.0170 in 2008 to +105.7627 in 2007 during the long rain season and -69.7561 in 2007 to +61.7886 in 2006 during the short rain season. Potato yield variability is also significant in both seasonal and annual trends ranging from -33.1369 in 2000 to +60.8892 in 2007 on the annual trend, -30.9963 in 2000 to +34.989802 in 2007 during the long rain season and -45.2353 in 2000 to +144.0588 in 2007 during the short rain season. Rainfall variations, lack of clean seeds and crop diseases have been found to be the major challenges facing potato production in the division. Forty five percent (45%) of the respondents see rainfall variation as the main cause of decreased potato yields 33% lack of clean seeds and 6% crop diseases. From the findings Pearson's $r = 0.839$ is close to 1 showing that there is a strong relationship between rainfall trend and potato production. From the findings, the study recommends that soil and water management practices such as mulching, digging of trenches and earth dams and use of irrigation during the dry spell as adaptation measures should be applied to cope with rainfall variation. Farmers should be encouraged to enhance crop diversification to caution them from rainfall variability. They should practise crop intensification to increase potato production. The farmers' field day organized by Farmers Training College should be done more frequently to enable more farmers to attend. The findings will benefit the Ministry of Agriculture, District Agriculture Officers, Kenya Agricultural Research Institute, and Agricultural Extension Officers, to mitigate seasonal variations of rainfall not only in Oljoro-orok but also in the entire Country.

