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Farmers’ and academia’s views”

Optimum planting dates and season length for maize in Kano, Nigeria

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Abstract

Maize is a staple food crop in Northern Nigeria and most of the cropping is under rainfed farming. Rainfed farming is susceptible to climate change. Climate change has impacts on rainfall and temperature variability which has a significant impact on maize yields. There is therefore need for continued research on strategies to improve climate change adaptation in maize. One such strategy involves use of, low-cost strategies such as planting dates and variety choice. The study was based in Northern Kano, which is the maize belt of Nigeria. The study used historical climate data (1980-2020) from NASA as input data. Using the DSSAT 4.7 crop model a series of plantings were undertaken every 10 days from 1 May to 31 August each year. Simulations for yields were undertaken at each planting date each year across the Kano State, Nigeria. The planting date with the highest yields each season was the optimum planting date. The study also assessed season length at scale by computing the difference in season commencement and termination of effective rainfall (1980-2020). The DSSAT model simulations were undertaken at scale of 10km² across the state. Generally, in Northern Kano the optimal planting dates range from 20-May to 29-June. This was more notable in the years 1985, 1990, 1995, 2010, 2015 and 2020. In 2000 and 2005 the optimal planting dates were generally delayed across the state and ranged from 29-June to 8-August. The season length is generally shorter in Northern Kano compared to Southern Kano. The season length in Northern Kano ranged from 80-110 days. Northern Kano is therefore suitable for short to medium season length varieties. In contrast the season length was 110 to 130 days in southern Kano. Southern Kano is therefore suitable for medium to long seasoned varieties. The study concludes that there is need for use of different varieties in different areas of Kano to ensure considerable yields across the state. Similarly, use of optimum planting dates by farmers will lead to relatively high yields. There is need to include seasonal forecast data for use in determination of the optimum date and season length.

Keywords: Crop model, planting date, season length, variety