Innovating Across Boundaries: Bridging Science, Technology, and Humanities
September 2024
ISBN Number: 978-93-95305-66-2

Effects Of Different Sowing Dates on The Yield Performance Of Hybrid Maize Under Namsai Condition

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Abstract

The study on "effects of different sowing dates on yield performance of hybrid maize (Nem-33) under Namsai condition" was conducted in Namsai, during the period 10th February to 11th September 2023 in a randomized block design-RBD method. First Sowing dates was started from 10th February followed by 20th February, 2nd March, 12th March, 22nd March, 1st April, 11th April, 21st April, 1st May and 11th May respectively at 10 days interval. The yield parameters viz. number of cobs per plant, number of grains per cobs,100 grain seed index and grain yield per hectare has been observed and evaluated. On evaluation it was noted that maize sown on 1st April gave maximum number of 8.00 cobs per plant, maximum number of 31.27 grains per cob, highest seed index of 41.33 and highest grain yield of 23.867 qtl/ha when compared to all other sowing dates. Thus, sowing on 1st April has paramount effect on production of hybrid Maize (Nem-33) in Namsai condition. Further study may be needed to investigate precise sowing dates of local maize in Namsai region.

Keywords: maize, morphological characters, yield, sowing dates.

INTRODUCTION

Maize (Zea mays L.) belongs to family Poaceae and is one of the most important cereal crops of the world as food for human beings and feed for animals. There are six major types of maize-dent corn, flint corn, pod corn, popcorn, flour corn and sweet corn. It has a very high yield potential and because of which it is called as "Queen of cereals". Maize originated in Mexico has the diploid chromosome number 2n=20. The word "maize" is from the Spanish connotation "maize" which is the best way of describing the plant. Various other synonyms like zea, silk maize, makka, barajavar, etc. are used to recognize the plant (Kumar & Jhariya, 2013). It was introduced to India about the beginning of the seventeenth century during the days of the East India Company. Maize is also a good feed for poultry, piggery and other animals. It

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provides huge quantities of green fodder for farm animals. Several industries both in urban and rural areas rely on its products and by-products such as starch milling, cornmeal, grils, flour, tortillas, snacks etc.

According to Tajamul et al. (2016) maize is a rich source of nutrition as well as phytochemical compounds. Phytochemicals play important role in preventing chronic diseases. It contains various major phytochemicals such as carotenoids, phenolic compounds and phytosterol. It is believed to have potential anti-HIV activity due to the presence of Galanthus nivalis agglutinin (GNA) lectin or GNA maize. Decoction of maize silk, roots. Leaves and cob are used for bladder problems, nausea, and vomiting and stomach complaints. Zein an alcohol-soluble prolamin found in maize endosperm has unique novel applications in pharmaceutical and nutraceuticals areas. Phytochemicals are bioactive chemical compounds naturally present in plants that provide human health benefits and have the potential for reducing the risk of chronic diseases (Liu, 2004). Carotenoids belong to a family of red, orange and yellow pigments. There is a large quantity of carotenoid pigments present in yellow maize grains, especially in horny and floury endosperm (Liu, 2007). According to Watson and Ramstad (1987) and Moros et al. (2002), a phytochemical compounds concentration in per 100 mg maize have Carotene 100 mg, Xanthophylls 2.07 mg, Lutein 1.50 mg and Zeaxanthin 0.57 mg.

Phenolic compounds are most widely distributed category of phytochemicals in the plant kingdom (Saxena et al., 2013). They are classified as phenolic acids, flavonoid acids, stilbenes, Coumarin and tannins (Liu, 2004). According to Zhoo et al. (2005) and Salinas et al. (1999), 100 gm of maize contains Phenolic such as Ferulic acid (FA) 174mg and Anthocyanins 141.7 mg. Phytosterol also called plant sterols are essential components of plant cell walls and membranes (Piiron et al., 2000). Most commonly consumed phytosterol from maize oil are sitosterol, stigmasterol and campestterol. Their distribution varies in different fractions of maize kernel such as endosperm, pericarp and germ (Harrabi et al.2008). According to Locatelli and Berardo (2014) per 100 gm of maize contains 9.91 mg Sitosterol, and 1.52 mg Stigmasterol. Maize contains vitamin C, Vitamin E, vitamin K, vitamin B_1 (thiamine), vitamin B_2 (nician), vitamin B_3 (riboflavin), vitamin B_5 (pyridoxine), folic acid, selenium, N-p-coumaryl tryptamine and N-ferrulyl tryptamine and potassium (Kumar and Sanjay, 2013). Maize germ contains about 45-50% oil that is used in cooking, salads and is obtained from wet milling process (Orthoefer, Eastman & List, 2003).

The maize oil contains 14% saturated fatty acids, 30% monounsaturated fatty acids and 56% polyunsaturated fatty acids. The refined maize oil contains 54-60% linoleic acid, 25-31% oleic acid, 11-13%palmitic acid, 2-3% stearic acid and 1% linoleic acid (CRA, 2006). According to Shah et al., (2016)

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100 gm of edible portion of maize contains 71.88g Carbohydrate, 8.84g Protein, 4.57g Fat, 2.15g Fibre, 348mg Phosphorus, 0.10mg Riboflavin, 1.78 mg Amino acids, 1.5g Minerals, 10mg Calcium, 2.3mg Iron, 286 mg Potassium, 0.42 mg Thiamine, 0.12 mg Vitamin C, 139 mg Magnesium and 0.14 mg Copper. Maize is grown in almost all the states of India and is next to rice, wheat and sorghum in regard to area and production. Over 85% of maize produced in the country is consumed as human food. Varieties of dishes are prepared from maize such as "Chapatis" from maize flour and grains. Green cobs are roasted and eaten by people. Maize grain contains about 10 per cent protein, 4 per cent oil, 70 per cent carbohydrate, 2.3 per cent crude oil, and 10.4 per cent albuminoides. The largest producer of the maize in the world is the United States of America contributing 35% of the total world maize production.

It is considered as the mother grain of Americans and is the driver of the US economy. In India, the major maize producing states are Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Punjab, Haryana, Maharashtra, Andhra Pradesh, Himachal Pradesh, West Bengal, and Karnataka jointly accounting over 95% of the national maize production (Miliand & Isha, 2013).

In Arunachal Pradesh, Maize crop is cultivated in area of 54215 hectares with production of 85399 metric tonnes (Deptt. of Agril. Govt. of A.P, Agril. Census, 202122). However, due to lack of knowledge on actual and suitable time for maize cultivation farmers of the state and Namsai district in particular are not taking up maize cultivation on commercial scale to meet the increasing demands of maize grains and its by-products. Instead, people of the state and Namsai depend on Assam for most of its maize demand. As per previous researchers it is also said that sowing dates is effective in increasing the total annual yield of maize and therefore growers are concerned about the yield response of maize to sowing dates. The present investigation of the researcher is aimed at finding out the suitable time for sowing maize under Namsai district of Arunachal Pradesh so that the yield potential and overall production of maize can be enhanced to some extent which will provide information and guide to farmers and stakeholders in selecting appropriate time for growing maize in Namsai and other regions of Arunachal Pradesh.

With this background, the following objectives have been taken in the experiment:

- To evaluate the effects of different sowing dates on the yield performance of hybrid maize for recommending precise sowing time for hybrid maize under Namsai condition.

Materials and Methods

Experimental Site and Location

The research experiment on the title "Effects of different sowing dates on morphological characteristics and yield of hybrid maize" under Namsai condition, Arunachal Pradesh was carried out Namsai from

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February to September 2023.The site was situated at geo-coordinates of 27º30′ to 27º55′N and 95º45’ to 96º20’ E with elevation of 157 m above mean sea level. The field was flat land without drainage provision and subjected to water logging during rainy days. The soil was clayey loam with slightly acidic with low nutrient contents. The soil sample from the experimental site was collected and tested at the Farmer’s Training Centre, Kherem, Namsai district Arunachal Pradesh to assess the nutrient status of the soil before the start of the experiment. Fertilizers in the form of Urea, Single Super Phosphate (SSP) and Muriate of Potash (MOP) were applied based on soil test result and fertilizer recommendation. The weather parameters prevailed during the entire experimental period for Namsai was recorded for studying their influence on the growth and yield of the maize. The experiment was carried out using randomized block design (RBD) with three replications and ten treatments having plot size of 2 x 1.5 m² each. Maize hybrid Nem-33 was sown at 10 days interval started from 10th February and lasted up to 11th May 2023. The maize hybrid Nem-33 was purchase from the Namsai market for the experimental purpose. The field experiment was completed by 13th September 2023.

Experimental design and layout

Experiment was conducted using the randomized block design (RBD) with three replications and ten treatments including control. The different sowing dates and design of the present experiment are presented in Table 1. The details of technical programme and layout of the experimental design is given below.

Name of crop : Maize

Variety : Nem-33

Features of Nem 33 : plant height- 170-180 cm, plant type- semi erect, grain colour- orange yellow, grain texture- semi dent, days to maturity- 100-105 days, resistance to late blight or downy mildew, special feature- green cob.

Design : RBD

Number of replication : 3

Number of treatments : 10

Experimental area : 90 m²

Plot size : 1.5 x 2 m²

Spacing : 60 x 40 cm²

Seed rate : 20 kg/ha

Table 1 : Treatment details of different sowing dates of hybrid maize

Treatments	Sowing dates

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S0D0	10th February 2023
S1D1	20th February 2023
S2D2	2nd March 2023
S3D3	12th March 2023
S4D4	22nd March 2023
S5D5	1st April 2023
S6D6	11th April 2023
S7D7	21st April 2023
S8D8	1st May 2023
S9D9	11th May 2023

Legend: SD = Sowing Dates

Land Preparation

The land was ploughed using hired tractor mounted with rotovator and with hired labourers.30 sub-plots of size 1.5 m x 2 m each were well prepared and were raised 30 cm above to avoid water logging as maize being very sensitive to excessive water.100 cm space was allowed between the sub-plots for easy movement and interculture operations like weeding, watering etc., maintaining randomized block design (RBD) chosen for the field experiment using local materials around the experimental plots to protect the crop from the possible damage by animals. All the stubbles, weeds, gravels etc were removed off and soils broken into pieces.

Seed sowing

Fertilizers (NPK) were applied @ 120:60:40 kg/ha. Full dose of Phosphorus and Potassium and half dose of Nitrogen was applied immediately before sowing seeds and remain half of nitrogen was applied in two split doses one at knee high stage and other at tasseling stage. Line sowing of 12 seeds was done in each sub-plot maintaining planting distance of 60 cm between the rows and 40 cm between the plants at every

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10 days interval starting from 10th February 2023 to 11th May 2023. However, no nutrients were applied to control treatment (S0D0) which was sown on 10th February.

Weed Management

As pre-plant application one round of glyphosate 50 EC @ 5ml per water was sprayed 1 week before sowing of seeds to kill the germinated weeds as glyphosate non-selective broad spectrum herbicide. A three round of manual weeding were done one each at 30 DAS, 60 DAS and 90 DAS to keep the weeds under control which otherwise would cause 50-60 per cent of yield reduction.

Tagging

Five plants were randomly selected from each treatment of the three replications and were tagged. And data on yield variables namely number of cobs/plants, were recorded from the randomly tagged plants manually which were subjected to statistical analysis using grapes RBD software.

Water Management

Experimental site was flat land with no drainage provision to drain out excess water especially during rainy days. The drainage problem was further compounded by the clayey loam nature of soil having high water retentive capacity. However, to evade the problem of water logging the seed beds were raised 30 cm from the ground. During extreme hot dry day irrigation was provided to the crops by bringing water from the nearby dug out ponds especially at tasseling and silking stages.

Pest and Disease management

The crop was attacked by fall armyworm during the mid-whorl and late whorl stages of the maize crop. The larvae of the insect bored into the growing whorl and feed inside damaging the growing shoots. As management measures field was monitored regularly and larvae were manually killed in the initial stage. Later, Chlorpyriphos 50 EC @ 5ml per litre water was sprayed 3 times at 5 days interval. However, no disease was noticed in the crop during the experimental period.

Harvesting

Harvesting of cobs was done from each tagged plants when the plants attained fully maturity and started drying. The number of grains of the harvested cobs was counted and weighed using electronic weighing balance to determine the fresh weight of grains and then dried in the shade to bring down the moisture level. After shade drying the again weighed and counted the number of seeds per cob and averaged. Then weight of 100 grain seeds was recorded.

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Yield Parameters

Plant yield parameters viz. Number of cobs/plant, number of grains/cob, 100 grain seed index and grain yield (qtl/ha) of the randomly selected and tagged plants were subjected to statistical analysis using grapes RBD software.

Number of cobs/plants

Number of cobs from each tagged plant for all the treatments of size 1.5 m x 2 m area each were counted at maturity and harvested and averaged which were then subjected to statistical analysis.

Number of grains/cobs

Number of grains from each harvested cob of all the treatments were counted manually and recorded and then statistically analyzed.

Seed Index

100 numbers of grains from each treatment were counted manually and weighed and recorded separately which were then statistically analyzed using grapes RBD software.

Grain yield per hectare (qtl/ha)

Grain yield of each treatment of size 1.5 m x 2 m area was recorded and analyzed statistically and converted in terms of qtl/hectare for each treatment for all the three replications.

Results and Discussion

The results of the present investigation on "Effect of different sowing dates on yield of hybrid maize under Namsai condition" are illustrated in this chapter. The results obtained are supported by suitable headings, tables and figures. The results obtained are also discussed in the light of findings of earlier researchers.

Number of cobs

In the present study sowing dates significantly influenced number of cobs per plant. The maximum number of cobs per plant (8.00) was observed in 1st April sown crop, followed by 11th April sown crop (7.00) and the minimum number of cobs per plant was recorded in 10th February sown crop (0.33) and that sown on 1st may (0.66) (Table 2 and Figure 1).

Naseer et al. (2000) in study on performance of maize cultivars under late sowing conditions observed that sowing dates had significant effect on number of cobs/plants. Early sowing in July gave maximum cobs/plant (1.30) but the delayed sowing of 15th August had decreased number of cobs/plants during that year.

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Yousafzai et al. (2002) studied effects of sowing dates on maize cultivars revealed that in their investigation early sowing July gave maximum cobs/plant but delayed sowing in August decreased cob numbers per plant.

Maga et al. (2015) in an experiment on Influence of Sowing Dates on the Growth and Yield of Two Maize (Zea mays L.) under Southern Guinea Savannah Agro-Ecological Zone at

three different sowing dates viz.4 May, 18 May and 1st June and observed the owing date had positive effect on ears/plant as the 4 and 18 May sowing produced the highest number of cobs/plant compared to when sowing was delayed to 1 June (1.67). Delayed sowing in June

considerably reduced the number of ears/plant by -0.66/plot.

Buriro et al. (2015) studied Effect of sowing dates on growth, yield and grain quality of hybrid maize and observed that sowing dates significantly affected number of cobs per plant. Early sowing produced maximum number of cobs per plant than too early and late sowing.

The current investigation confirms the results of the investigation of Naseer et al. (2000), Yousafzai et al. (2002), Maga et al. (2015) and Buriro et al. (2015) that sowing dates have profound effects number of cobs/ears/plant. The reason for highest number of cobs per plant in 1st April and 11th April sown crops might be due to favourable rainfall and other weather parameters during that month for better seed germination, plant stand and subsequent crop growth and cob formation and development in the later phase.

Table 2 : Observation of mean number of cobs/plant in hybrid maize with different sowing dates

Treatment	Number of cobs/plants
S_0D_0- 10th February	0.33
S_1D_1- 20th February	2.16
S_2D_2- 2nd March	3.16
S_3D_3- 12th March	4.17
S_4D_4- 22nd March	5.16
S_5D_5- 1st April	8.00
S_6D_6- 11th April	7.00

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S_7D_7- 21st April	6.00
S_8D_8- 1st May	0.66
S_9D_9- 11th May	1.00
SEm (±)	0.16
CD (P=0.05)	0.50

Legend: SD = Sowing dates

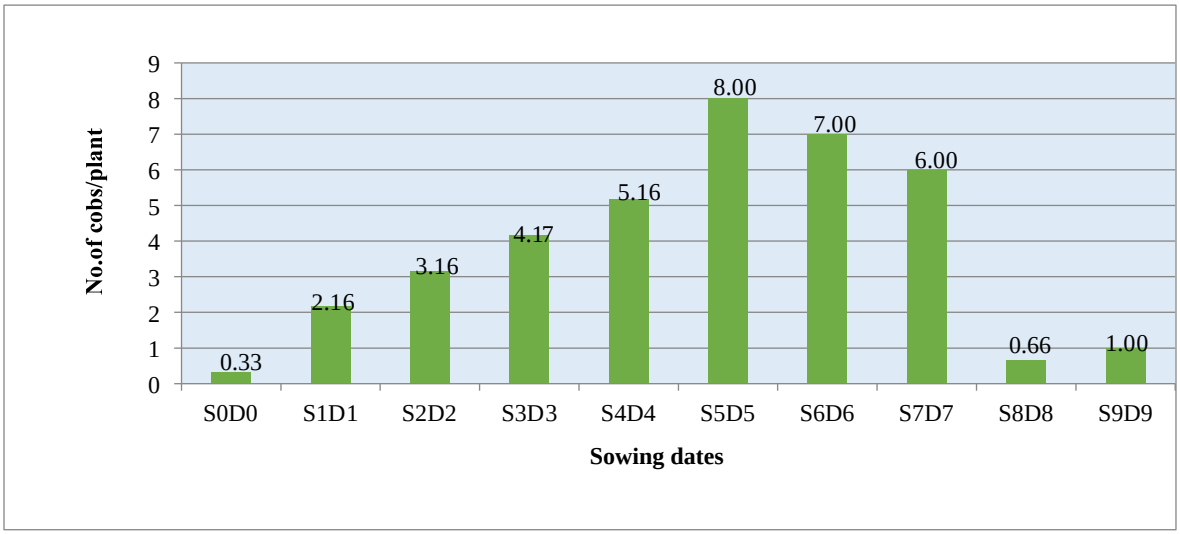

Fig. 1: Graphical representation of mean number of cobs/plants of hybrid maize with different sowing dates

Legend: S0D0 = 10th February, S1D1 = 20th February, S2D2 = 2nd March, S3D3 = 12th March, S4D4 = 22nd March, S5D5 = 1st April, S6D6 = 11th April, S7D7 = 21st April, S8D8 = 1st May, S9D9 = 11th May

Number of grains per cob

A significant difference in grains per cob of maize variety Nem-33 was observed due to difference in sowing dates. Positive effects on grains per cob was observed in 1st April sowing (31.27) and 10th April sowing (26.16). While the least number of grains per cob was recorded in that sown on 10th February (8.83) and 11th May (7.16) (Table 3 Figure 2). This might be April sown crop had optimum growing period and the temperature and other growth factors were favourable during April. While the February sown crop being too early and that sown after April had unfavourable growing conditions which resulted

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in low grains per cob and low grain yield. The result of the present study is to some extent agrees with the results of many earlier workers such as Ahmed et al. (2011) who revealed that sowing dates cause variation in grains per cob of maize.

Ahmed et al. (2011) In terms of sowing dates, higher number of grains ear-1 (503.86) were produced by the early sowing in June while lower number of grains ear-1 (287.39) were recorded from the late sown crop in July. It happened because may be the June was optimum growing period, while late sown crop had mostly unfavorable conditions and therefore produced less number of grains/cobs.

Jewel Alam et al. (2016) in field study on effect of different sowing dates on performance of hybrid maize by planting BARI Hybrid Butta-09 variety on nine different sowing dates viz.3rd (S1) & 4th (S2) week of October;1st (S3),2nd (S4),3rd (S5) & 4th(S6)) week of November;1st (S7),2nd (S8) & 3rd (S9) week of December respectively found that 1st week of November sowing gave better yield of grain/cob (641.21) and grain weight/cob (235.16) when compared all other sowing dates.

Table 3: Observation of mean number of grains/cobs in hybrid maize with different sowing dates

Treatments	Number of grains/cobs
S_0D_0- 10th February	6.83
S_1D_1- 20th February	8.33
S_2D_2- 2nd March	10.16
S_3D_3- 12th March	13.50
S_4D_4- 22nd March	17.90
S_5D_5- 1st April	31.27
S_6D_6- 11th April	26.16
S_7D_7- 21st April	23.00
S_8D_8- 1st May	21.50
S_9D_9- 11th May	19.20
SEM±	0.28
CD (P=0.05)	0.84

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Legend : SD = Sowing dates

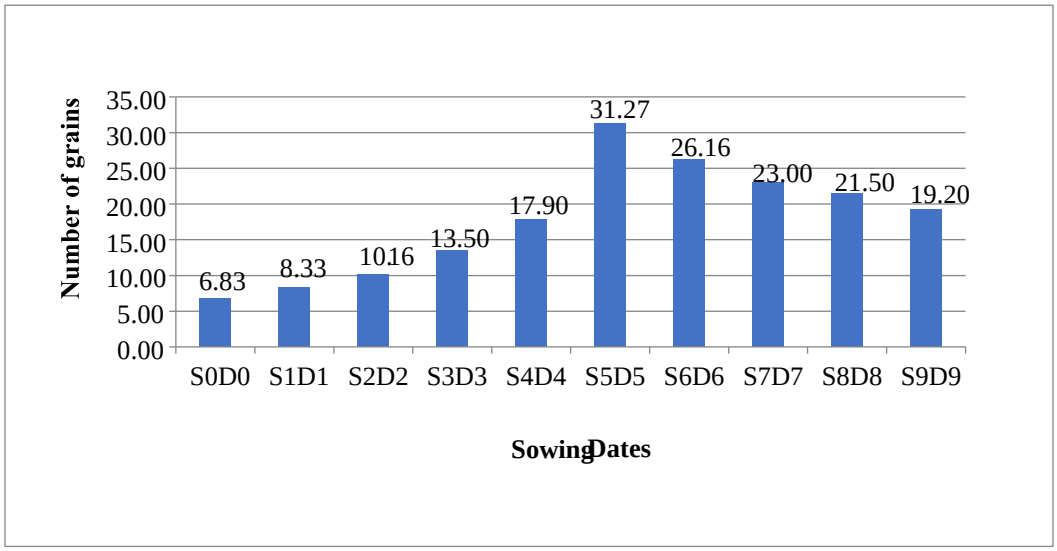

Fig. 2: Graphical representation of mean number of grains/cobs in hybrid maize with different sowing dates

Legend: S0D0 = 10th February, S1D1 = 20th February, S2D2 = 2nd March, S3D3 = 12th March, S4D4 = 22nd March S5D5 = 1st April, S6D6 = 11th April, S7D7 = 21st April, S8D8 = 1st May, S9D9 = 11th May

Seed Index

The seed index of 100 grains of maize seed from each treatment was also determined in the present study. On statistical analysis it was observed that 1st April sown crop gave highest seed index (47.33) which was followed by 11th April sown crop (41.33). On the other hand, 11th May sown crop had lowest seed index (10.16) and 1st May crop (14.16). Which confirms the work of previous workers Ahmed et al. (2011), Babak and Mohammadreza (2012) and Kolo et al. (2012) that sowing dates significantly affect seed index/test weight.

Ahmed et al. (2011) yield and yield components of maize as affected by sowing dates and sowing methods in analysis of the data indicated that thousand grain weights was significantly affected by planting dates. Higher thousand grains weight (235 g) was attained by the early sowing in June. While lower thousand grain weight (153 g) was recorded from the late sown July crop. Early sown crop had produced bold and plump grains, it may be due to the reason that because it prolong period for growth and development and grain filling period and faster growth of late sown crop has affected the grain size and produced lighter grains.

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Kolo et al. (2012) in study on influence of planting date and weed management practice on weed emergence, growth and yield of maize (Zea mays L.) in southern Guinea savanna of Nigeria during 2nd July, 16th July, 30th July and 13th August conducted field experiment and revealed that crop planted on 2nd July and 16th July had the100-seed weight (g) while it declined in later sown crops.

The result of seed index of present study on effect of different sowing dates on morphological characteristics and yield of maize under Namsai condition is illustrated by the Table 4 and Figure 3. The result indicated that sowing also significantly affect the seed index/test weight. It was observed that planting in April gave the highest 100 grain seed index. While the May sown crops had the lowest 100 grain seed index that confirms delayed sowing declines seed index.

Table 4: Observation of seed index in hybrid maize with different sowing dates.

Treatments	**Seed Index (100 grain seeds)**
S_0D_0- 10th February	18.28
S_1D_1- 20th February	21.83
S_2D_2- 2nd March	25.73
S_3D_3- 12th March	30.06
S_4D_4- 22nd March	34.13
S_5D_5- 1st April	47.50
S_6D_6- 11th April	41.33
S_7D_7- 21st April	37.51
S_8D_8- 1st May	14.16
S_9D_9- 11th May	10.16
SEM (±)	0.36
CD (P=0.05)	1.08

Legend: **SD =** Sowing dates

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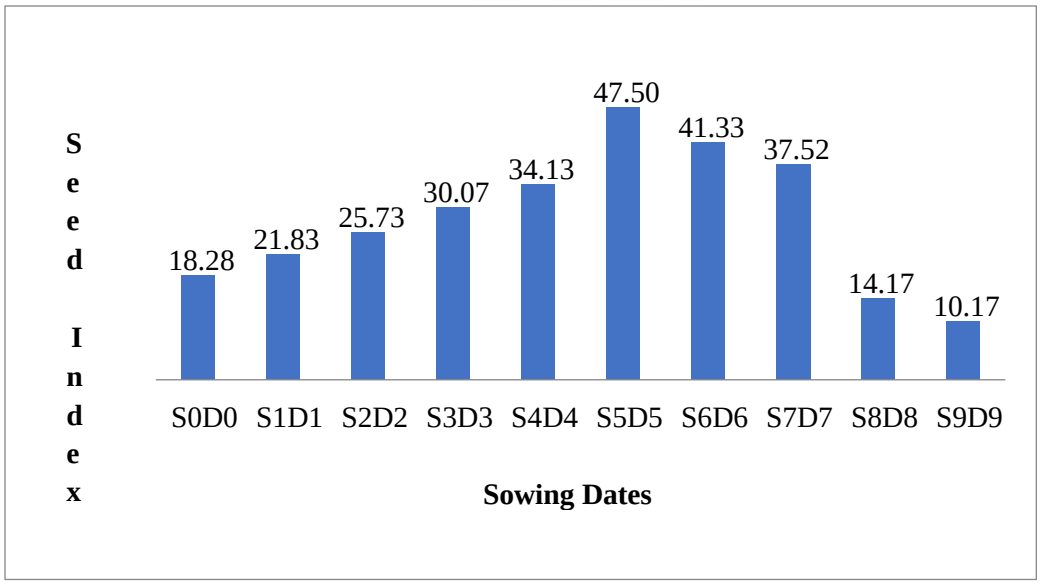

Fig. 3: Graphical representation of mean seed index of maize with different sowing dates

Legend: S0D0 = 10th February, S1D1 = 20th February, S2D2 = 2nd March, S3D3 = 12th March, S4D4 = 22nd March, S5D5 = 1st April, S6D6 = 11th April, S7D7 = 21st April, S8D8 = 1st May, S9D9 = 11th May

Grain yield per hectare

Significant variation in grain yield was observed in each treatment due to different sowing dates of hybrid maize Nem-33. Statistical analysis of data indicated highest grain yield for crop sown on 1st April (23.86 qtl/ha) and 11th April (21.19 qtl/ha). Least grain yield was recorded in 10th February planted crop (0.88 qtl/ha) followed by 20th February sown crop (10.16 qtl/ha) and 12th May sown crop (13.11 qtl/ha). Data regarding grain yield are presented in the Table 6 and Figure 6. The low grain yield during February planting may be due low soil temperature (Maximum 29 ºC and minimum of 14.4 ºC) because of cold laden north-east monsoon rain during February which affected seed germination and seedling emergence. While lower grain yield of maize during May planting might be water logging condition of field due to high rainfall during growth, tasseling and silking period.

Bonea (2020) studied phenology, yield and protein content of maize hybrids as affected by different sowing dates at ARDS Simic, Craiova using two maize hybrids viz.PR39D81 and

LG3350 in a randomized field experiment on three different sowing dates viz.9th April, 16th April and 23rd April revealed that the maize hybrids viz.PR39D81 and LG3350 sown on 9th April gave maximum yields of 11.4 t/ha and 11.42 t/ha respectively when compared to 16th April and 23rd April sowings.

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Imran et al. (2021) studied growth and yield of Maize hybrids as effected by different sowing Dates in Swat Pakistan recorded the delayed sowing on 30th June decreased grains/ear to 460 grain yield to 6060 kg/ha, biological yield to 15972 kg/ha and plant height to 185 cm. There was no effect of sowing dates on ear m-2 and thousand grains weight.

Yousafzai et al. (2002) studied effects of sowing dates on maize cultivars revealed that in their investigation that July sowing gave maximum emergence/m2 (12.11), plant height (152 cm), cobs/plant (1.3), grains/cob (378.1), thousand grain weight (209.1 g) and grain yield (4419 kg/ha). Delayed sowing in August decreased all the above parameters.

Ahmed et al. (2011) Higher grain yield (2907 kg/ha) was obtained by the mid sowing of 26th June, while lower grain yield (1797 kg/ha) recorded from the late sown crop on 26th July. There is a random response because the grain yield increases from the first sowing date up to the 3rd and after 3rd sowing date the yield again start declining. Lesser grain yield of earliest sown crop might be attributed to the fact that earliest sown crop had minimum grains/ear and also a less population because a lot of plants were lodged due to the rainy season in month of August. The mid sown crop has higher grain yield because drop of temperature and unfavorable conditions for growth at late sowing had decreased the grain yield.

Optimum sowing date resulted in higher grain yield than early and late planting dates as revealed by Otegui et al. (1995) in their investigation “Sowing date effects on grain yield components for different maize genotypes in Argentina.

The result of the present investigation also confirms the findings of Khan et al. (2002), Aziz et al. (2007), Jaliya et al. (2008) and Namakka et al. (2008) who reported that grain yield was reduced by advance and delay in sowing dates. The significant correlation between grain yield and thousand grain weights revealed that grain yield reduction associated with delayed sowing was probably due to reduction in thousand grain weight.

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Table 5: Evaluation of yield in hybrid maize with different sowing

Treatments	Yield (qtl/ha)
S0D0 -10th Feb'	0.88
S1D1-20th Feb'	10.16
S2D2-2nd March	12.00
S3D3-12th March	14.18
S4D4-22nd March	16.18
S5D5-1st April	23.86
S6D6-11th April	21.19
S7D7-21st April	19.45
S8D8-1st May	17.41
S9D9-11th May	13.11
SEm (±)	0.18
CD (P=0.05)	0.55

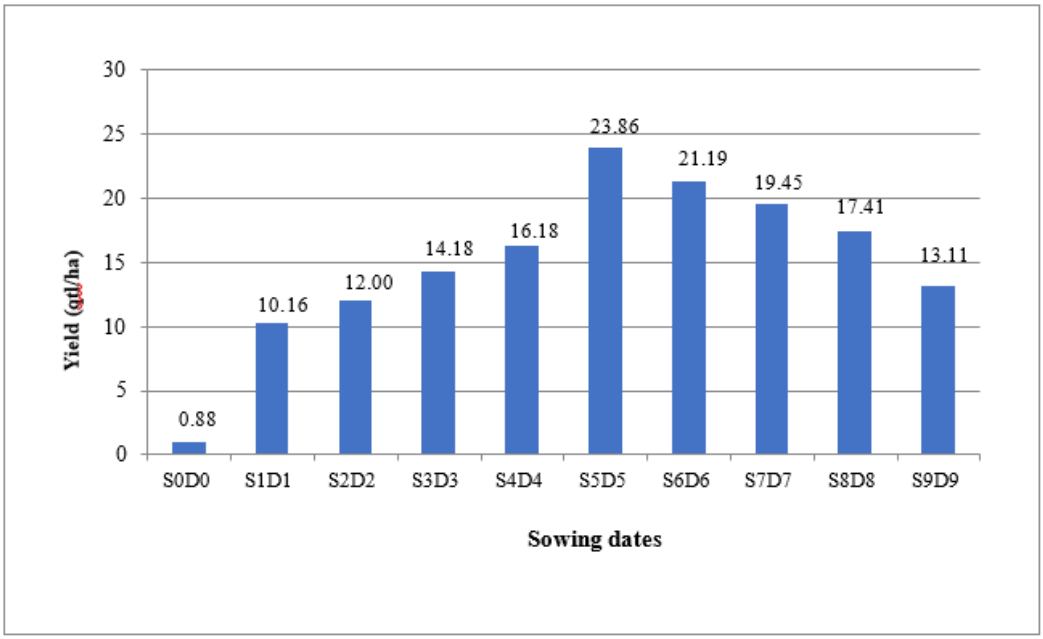

Fig.4: Graphical representation of mean maize grain yield

Legend: S0D0 = 10th February, S1D1 = 20th February, S2D2 = 2nd March, S3D3 = 12th March,

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S4D4 = 22nd March S5D5 = 1st April, S6D6 = 11th April, S7D7 = 21st April,

S8D8 = 1st May, S9D9 = 11th May

Summary and conclusion

Observation on all the yield parameters viz. number of cobs per plant, number of grains per cob,100 grain seed index and grain yield per hectare (qtl). On evaluation it was noted that maize sown on 1st April gave maximum number of cob **8.00** cobs/plant, number of 31.27 grains/cob, highest seed index of 41.33 and highest grain yield of **23.867** qtl/ha compared to all other sowing dates.

It was revealed that sowing on 1stApril has paramount effect on production of hybrid Maize (Nem-33) in Namsai condition. Thus, it is concluded from the above findings that 1st April sowing gives better performance over other sowing dates in case of hybrid maize in Namsai agro-climatic condition.

Further study may be needed to investigate precise sowing dates of local maize in Namsai region.

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