

# Influence of time of planting on yam performance and pest infestation in humid rainforest of southwestern Nigeria

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**Summary:** Yams (*Dioscorea* spp.) are annual or perennial tuber-bearing and climbing plants that belong to the family Dioscoreaceae. Only six principal species are grown for human consumption, while several others are produced for medicinal purposes. This study was designed to determine the influence of time of planting on yam performance and pest infestation in humid rainforest of southwestern Nigeria. The experiment was conducted in Randomized Complete Block Design (RCBD) with three treatments replicated five times. The planting materials are dipped into wood ash and allowed to dry up. The number of yam setts required for this work is 4 pieces, each of white yam sett, seed yam, and 4 pieces of water yam setts for the different planting times. The planting is done in five (5) phases. In each phase 12 heaps are planted, 4 white yams (seed yam), 4 yam setts (white yam) and 4 water yam setts. No significant difference was observed in 50% sprouting both in treatments and replication. There is significant difference in yield both in treatment and block. Yam planted in April (R5) has the highest yield with 3.7 kg, followed by those planted in ending March (R4) with 2.83 kg, followed by those planted in mid-February (R1) with 1.43 kg, then those planted in February ending (R2) with 1.2 kg and those planted in mid-March (R3) with 1.17 kg respectively. The highest level of destruction was witnessed in white seed yam planted in Mid-March and Mid-April as well as white yam sett planted in Mid-February. The lowest level of destruction was found in water yam sett planted in February ending. Shifting planting date can reduce larval survival and pest populations in yam tuber.

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**Key words:** *Dioscorea* spp., pest infestation, destruction, sprouting, yam performance

## Introduction

Yams (*Dioscorea* spp.) are annual or perennial tuber-bearing and climbing plants that belong to the family Dioscoreaceae. Only six principal species are grown for human consumption, while several others are produced for medicinal purposes (Aighewi et al., 2020; Falade et al., 2024). Yams are a versatile crop and can be consumed in a variety of ways, including boiled yam, fried yam, porridge, baked yam, roasted yam or pounded yam with palm oil, stews, or sauces (Etokeren, 2016; Ikeh et al., 2023). 93% of the world's yam production comes from West Africa, the crop is grown in many other tropical countries outside of the region (Aighewi et al., 2020; Pouya et al., 2022; Alabi et al., 2023). With approximately 50,052,977 million tonnes in 2020, Nigeria is the largest producer of yams in Africa, followed by Ghana with an annual production of approximately 8,532,731 million metric tonnes (Ikeh & Ndaeyo, 2021; Alabi et al., 2023; Ohwofadjeke et al., 2024).

Yam is a crucial tropical tuber crop, particularly in Nigeria, where it plays a vital role in humid tropical farming systems (Agbede & Adekiya, 2012). It is valued socio-culturally, influencing its market price (Ikeh & Ndaeyo, 2021). While *D. alata* is more widely distributed, *D. rotundata* is the most significant species utilised as food in the West African yam belt. Yam provides sustenance for millions and generate revenue for smallholder farmers, processors, and marketers in the area. Yams also enhance food security due to their long

shelf life, making them essential during food scarcity (Ikeh et al., 2023). In southern Nigeria, yams constitute about 32% of farm income and serve as an important source of foreign exchange for producers, including those in Ghana and South America (Aighewi et al., 2020). Yams are predominantly cultivated in Nigeria's derived savannah and are deeply intertwined with traditional and religious ceremonies in southern Nigeria, marking a unique cultural significance that no other crop shares in Africa (Ikeh et al., 2023). They play a central role in ritual worship, marriage, and thanksgiving, and are a crucial element of the bride dowry among the Yoruba and Ibo tribes (Ikeh et al., 2023). Despite their importance, there is minimal international trade in yams.

Although yams are a major source of carbohydrates, their production falls short of the country's needs due to a number of issues, including high labour costs, a lack of improved planting materials or seed yam, adoption rate and accessibility of new yam varieties, low soil fertility, lack of knowledge on planting time, lack of staking materials, harvesting difficulties, and an increase in field and storage pests and diseases (Morse, 2018; Ikeh et al., 2023; Exilien et al., 2024; Ohwofadjeke et al., 2024). The majority of these losses are the result of pre-harvest invasion or infection of yam tubers, as well as harvest and transportation activities. A significant portion of the losses that occur in the field and storage phases of yam production are caused by pests, diseases, and pathogens. Numerous insects

attack yams in the field and during storage, with foliar insect pests being less serious than tuber pests (Ikeh & Ndaeyo, 2021; Exilien et al., 2024; Ohwofadjeke et al., 2024). Pests are a key obstacle that deters or diminishes farmers' enthusiasm in growing yams. In most yam-producing areas in Nigeria, the majority of post-harvest damage to the tubers occurs in storage, and insect pests can cause significant production losses in stored tubers (Ikeh et al., 2023).

The dominant species in Nigeria is *Crioceris livida*, while other insects include Mealybug, yam cricket, leaf miner *Lacoptera* sp, and termite (Ikeh & Ndaeyo, 2021; Ohwofadjeke et al., 2024). Yield loss attributed to termite attack ranges from zero to 15%. The major constraints to optimal yam production in yam growing zones of south and southeastern Nigeria are the damage inflicted on yam tubers by *Monophagous dynastid* beetles, *Heteroligus* species, belonging to the Coleoptera: Dynastidae order. The beetles are highly voracious and have caused significant losses in field yam tuber (Ikeh & Ndaeyo, 2021). The incidence, distribution, and damage potentials of yam tuber beetles are of current concern throughout the yam growing belts in Nigeria and Africa (Ikeh & Ndaeyo, 2021). Farmers in this region struggle to have information on how to tackle these destructive pests. This study was designed to determine the influence of time of planting on yam performance and pest infestation in humid rainforest of southwestern Nigeria.

## Materials and methods

### Experimental site

This research was carried out during 2023/2024 growing season, at the back of the Crop Production and Horticulture Department, Lagos State Polytechnic, Ikorodu. The site was observed to have grasses shrubs and young trees which were cut down and packed. The soil is a loamy soil having adequate humus. The region is 50 meters above sea level and is located between latitude 5°10' N and longitude 3°16'E of the Greenwich meridian. It has an annual rainfall range of 1670 mm to 2200 mm, a mean average temperature of 25 to 29 °C, and a relative humidity of 65 to 68% (Godonu et al., 2023).

### Experimental design, research materials and planting

The experimental design used was Randomized Complete Block Design (RCBD) with three treatments replicated five times. The planting materials are dipped into wood ash and allowed to dry up. The number of yam setts required for this work is 4 pieces, each of white yam sett, seed yam, and 4 pieces of water yam setts for the different planting times. The planting is done in five (5) phases. In each phase 12 heaps are planted, 4 white yams (seed yam), 4 yam setts (white yam) and 4 water yam setts. The crop is planted in the heap at a depth of 20-25 or at a spacing of 1 m x 1 m between heaps. The planting is done in the month of February, March and April. Bamboo sticks are used to support the vines when they were about 1 m in length (Ohwofadjeke et al., 2024).

### Cultural practices

#### Mulching

This is accomplished by utilising dry grasses positioned on planted mounds to retain soil moisture, lower soil temperature

(crucial during dry season), inhibit weed growth, and enhance tuber yields by 20-30%. A 100% coverage ratio was achieved by completely covering each plot with mulch. When applied early, it improves soil nutrients and promotes improved yam seed germination (Kumar et al., 2024).

#### Staking

Bamboos or branches of trees were cut and pegged into the soil to allow the vine to climb on it when the vines are about 1m in length and weak to stand erect.

#### Weeding

Manually, hoeing was done three (3) times to prevent competition for available soil nutrient, chemical weeding can be done by using chemicals such as pre-emergence (Ohwofadjeke et al., 2024).

#### Fertilizer application

NPK was applied at 6 weeks after planting at an equivalent of one (1) match box/plant. Applying NPK fertiliser to yams six weeks after planting help promotes early tuber production and quick vine growth. one matchbox (8–10 g) of NPK was applied per stand, ideally right before rain, in a ring that is 5–10 cm deep and 10–15 cm distant from the stem to prevent scorching (Pouya et al., 2022).

#### Re-mounding

The yam heaps were re-mounded three (3) weeks after planting in order to maintain loose soil for tuber expansion, enhance drainage, and cover exposed, drying roots. This maintenance step increases tuber size, keeps weeds from stealing nutrients, and shields developing yams from sunlight exposure. Re-mounding of yam heaps was done at each weeding (Tobih & Emuh, 2016; Exilien et al., 2024).

#### Data collection

Data collected were: Days to 50% sprouting, Stem girth at 2, 4 and 6 weeks after sprouting (10 cm above the heap surface level), Number of leaves at 2, 4 and 6 weeks after sprouting, Levels of pest infestation, Yield and Vine length at 2, 4 and 6 weeks (Ikeh et al., 2023; Ohwofadjeke et al., 2024).

Days to 50% sprouting was collected directly on the field by noting the date when 2 plants has sprouted in each treatment. The vine length, stem girth and number of leaves were collected directly on the field by measuring the vine lengths, stem girth, number of leaves at 2, 4, and 6 weeks from sprouting date. Meteorological data was collected from the meteorological station, Lagos State Polytechnic, Ikorodu.

#### Data analysis

Data were analysed using the Statistical Analysis System (SAS Institute Inc., 2016). The experimental data collected were used to calculate mean values and also subjected to Analysis of variance (ANOVA). Mean values were separated using the least significant difference at  $p \leq 0.05$ .

## Results

### Days to 50% sprouting

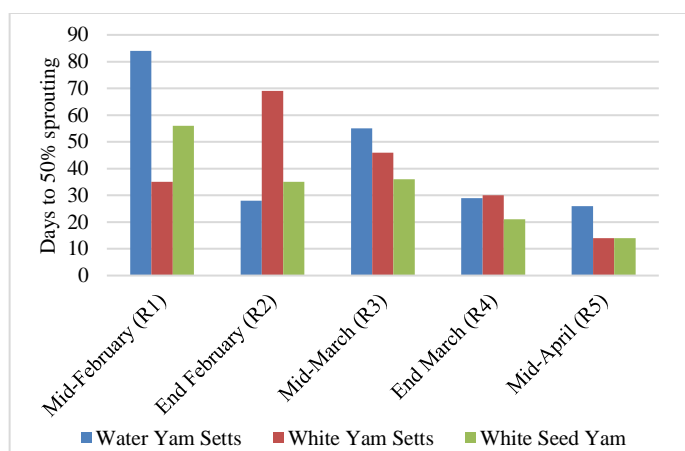
No significant difference was observed in 50% sprouting in treatments, but replication has significant impact on 50%

sprouting (**Table 1**). Yam planted in mid-April (R5) was early to have 50% sprouting, followed by those planted in March ending (R4), followed by those planted in February ending (R2), followed by those planted in mid-March (R3) and then those planted in mid-February (R1) respectively (**Figure 1**).

**Table 1.** ANOVA table showing effect of planting time and planting materials on 50% sprouting in yam.

Source of variation	Degree of freedom	Sum of Square	Mean Square	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	360.53	180.27	1.05 <sup>ns</sup>	4.46
Replication	4	3105.73	160.40	4.50 <sup>*</sup>	3.84
Error	8	1379.47	172.43		
Total	14	4845.73	346.12		

Note: ns means not significant and \*\* means significant



**Figure 1.** Effect of planting time and planting materials on 50% sprouting in yam. Significant difference test at P≤0.05.

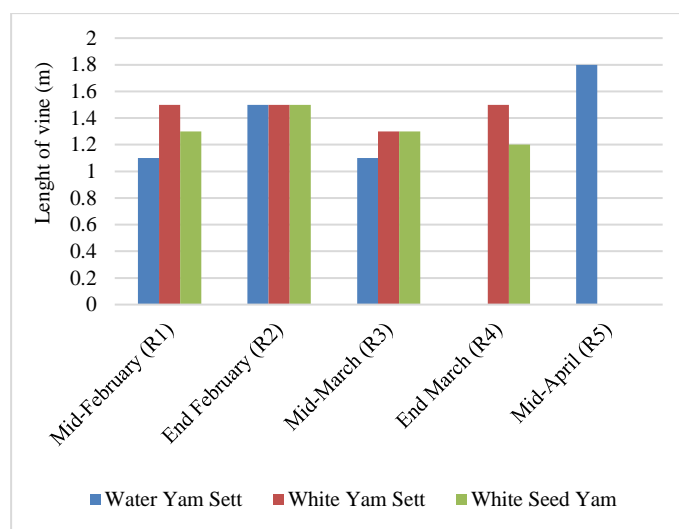
**Vine length at 2, 4 and 6 weeks after planting**

There is significant difference was observed in vine length at 2 weeks both in treatment and block as seen in **Table 2**. Yam planted in mid-April (R5) produced the longest vine length with 1.8 m, followed by those planted in mid-February (R2) with 1.5 m, followed by those planted in March ending (R4) with 1.35 m, followed by those planted in mid-February (R1) with 1.3 m, then those planted in mid-March (R3) with 1.23 m respectively (**Figure 2**). At 4 weeks no significant difference was observed in vine length both in treatment and in block (**Table 3**). Yam planted in mid-April (R5) has the longest vine length 2 m, followed by February 29th (R2) with 1.73 m, R4 (March 30th) with 1.67 m R1 (February 15th) with 1.47 m and R3 (March 15th) with 1.33 m respectively as shown in **Figure 3**. At 6 weeks significant difference was observed in treatment, but no significant difference was observed in replication/block (**Table 4**). Yam planted in mid-April (R5) has the longest vine length 2 m followed by those planted in ending February (R2) with 1.8 m, followed by those planted in March ending (R4) with 1.7 m, followed by those planted in mid-February (R1) with 1.63 m and lastly those planted in mid-March (R3) with 1.43 m respectively. Comparing vine length at 2, 4 and 6 weeks. Yams planted in mid-April (R5) has the longest vine length followed by those planted in February ending (R2), followed by those planted in March ending (R4), followed by those planted in mid-February (R1) and those planted in mid-March (R3) respectively (**Figure 4**).

**Table 2.** ANOVA table showing length of vine at 2 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	12.29	6.15	61.50 <sup>**</sup>	4.46
Replication	4	6.43	1.61	16.10 <sup>**</sup>	3.84
Error	8	0.81	0.10		
Total	14	5.05	0.36		

Note: ns means not significant and \*\* means significant

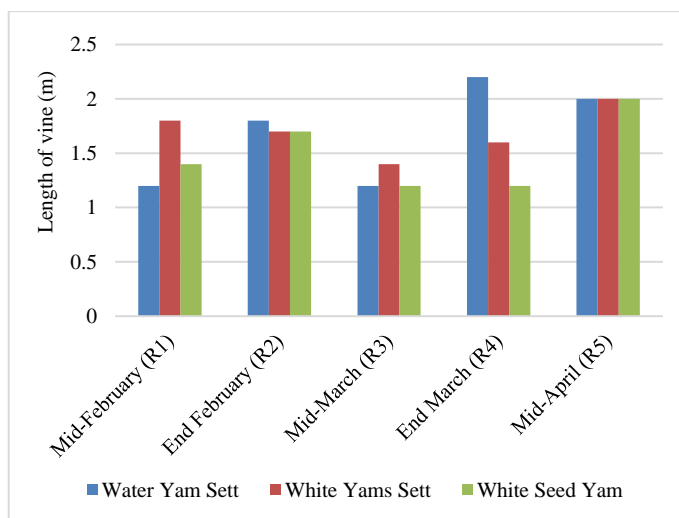


**Figure 2.** Length of vine at 2 weeks after sprouting. Significant difference test at P≤0.05.

**Table 3.** ANOVA Table showing length of vine at 4 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	0.12	0.60	0.78 <sup>ns</sup>	4.46
Replication	4	0.92	0.23	3.03 <sup>ns</sup>	3.84
Error	8	0.61	0.08		
Total	14	1.65	0.12		

Note: ns means not significant and \*\* means significant

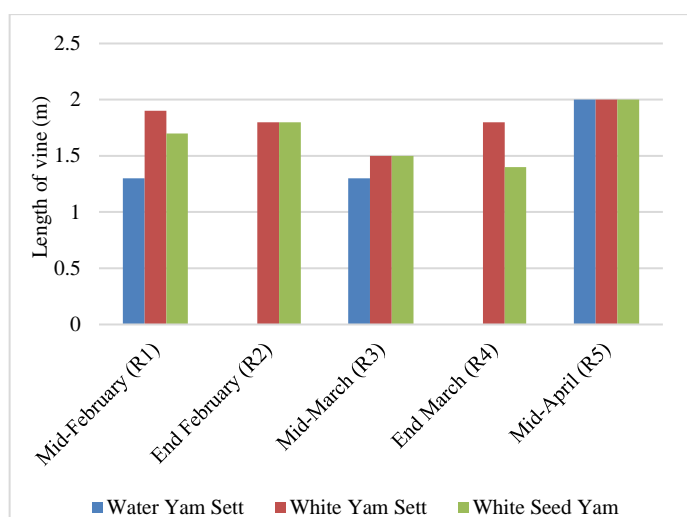


**Figure 3.** Length of vine at 4 weeks after sprouting. Significant difference test at P≤0.05.

**Table 4.** ANOVA table showing length of vine at 6 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	2.28	1.14	4.75**	4.46
Replication	4	1.64	0.41	1.71 <sup>ns</sup>	3.84
Error	8	1.88	0.24		
Total	14	5.80	0.41		

Note: ns means not significant and \*\* means significant



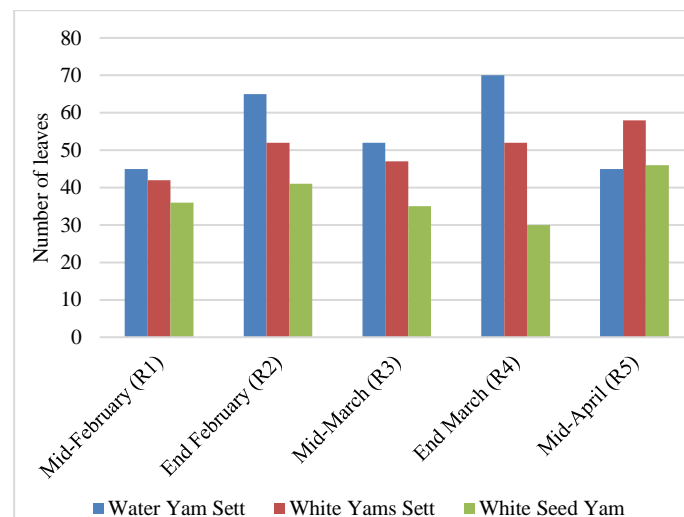
**Figure 4.** Length of vine at 6 weeks after sprouting. Significant difference test at  $P \leq 0.05$ .

Significant different was observed in number of leaves at 2 weeks in treatment but there is no significant difference in replication/block (**Table 5**). Yam planted in mid-February (R2) has the highest number of leaves with 52.7 leaves followed by those planted in March ending (R4) with 50.7 leaves, followed by those planted in mid-April (R5) with 49.7 leaves, then those planted in mid-February (R1) with 41 leaves respectively as shown in **Figure 5**. No significant different was observed in number of leaves at 4 weeks in both replicate and treatment as shown in **Table 6**. Yam planted in February ending (R2) with 65 leaves has the highest number of leaves, followed by those planted in March ending (R5) with 64 leaves, followed by those planted in March ending (R4) with 59.3, followed by those planted in mid-February (R1) with 52 leaves and those planted in mid-March (R3) with 53 leaves respectively (**Figure 6**). Significant difference was observed in number of leaves at 6 weeks in treatment but difference was not significant in replication (**Table 7**). Yam planted in February ending (R2) has the highest number of leaves with 113 leaves, followed by those planted in mid-April (R5) with 81.33 leaves, followed by those planted in March ending (R4) with 73.33 leaves, followed by those planted in mid-February (R1) with 65 leaves and those planted in mid-March (R3) with 61.67 leaves respectively (**Figure 7**). Comparing number of leaves at 2, 4 and 6 weeks, Yam planted in February ending (R2) has the highest number of leaves, followed by those planted in mid-April (R5), followed by those planted in March ending (R4), followed by those planted in mid-February (R1) respectively.

**Table 5.** ANOVA table showing number of leaves at 2 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	837.73	418.86	6.06**	4.46
Replication	4	274.26	68.56	0.99 <sup>ns</sup>	3.84
Error	8	552.94	69.12		
Total	14	1664.93	118.92		

Note: ns means not significant and \*\* means significant

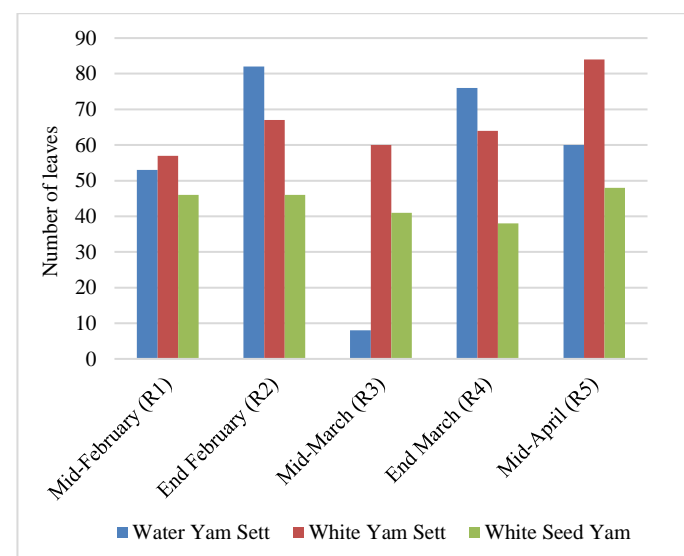


**Figure 5.** Number of leaves at 2 weeks after sprouting. Significant difference test at  $P \leq 0.05$ .

**Table 6.** ANOVA table showing number of leaves at 4 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	1278.53	639.26	2.27 <sup>ns</sup>	4.46
Replication	4	1670.00	417.50	1.48 <sup>ns</sup>	3.84
Error	8	2248.80	281.10		
Total	14	5197.33	371.23		

Note: ns means not significant and \*\* means significant



**Figure 6.** Number of leaves at 4 weeks after sprouting. Significant difference test at  $P \leq 0.05$ .

Table 7. ANOVA table showing number of leaves at 6 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs.0.05</sub>
Treatments	2	1145.73	572.86	6.07**	4.46
Replication	4	760.66	190.16	2.02 <sup>ns</sup>	3.84
Error	8	754.94	94.36		
Total	14	2661.33	190.09		

Note: ns means not significant and \*\* means significant

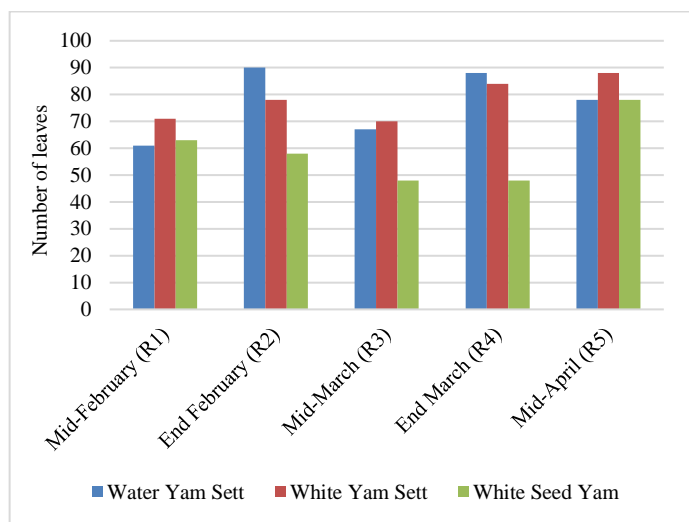


Figure 7. Number of leaves at 6 weeks after sprouting. Significant difference test at P≤0.05.

Stem girth at 2, 4 and 6 weeks after sprouting

Significant difference was observed in stem girth at 2 weeks both in treatment and replicate as seen in Table 8. Yam planted in mid-April (R5) has the highest stem girth with 2.13 cm, followed by those planted in March ending (R4) with 1.8 cm, followed by those planted in February ending (R2) with 1.7 cm, then those planted in mid-March (R3) with 1.47 cm and those planted in mid-February (R1) with 1.33 cm respectively (Figure 8). No significant difference was observed in stem girth at 4 weeks, both in treatment and replicate (Table 9). Yam planted in mid-April (R5) has the highest stem girth with 2.3 cm followed by those planted in February ending (R2) with 1.87 cm, then those planted in March ending (R4) with 1.83 cm, followed by those planted in mid-March (R3) with 1.63 cm and those planted in mid-February (R1) with 1.5 cm respectively (Figure 9). At 6 weeks, no significant difference was observed in treatment but there was significant difference in replicate as reflected in Table 10. Yam planted in mid-April (R5) has the highest stem girth with 2.6 cm, followed by those planted in February ending (R2) with 2.07 cm, followed by those planted in March ending with (R4) with 2.03 cm, followed by those planted in mid-March (R3) with 1.8 cm and those planted in mid-February (R1) with 1.57 cm respectively (Figure 10). Comparing stem girth at 2, 4 and 6 weeks, Yam planted in mid-April (R5) has the highest stem girth followed by those planted in March ending (R4) only at 2 weeks after sprouting (WAS) while at 4 and 6 WAS yam planted in February ending (R2) were next, followed by those planted in mid-March (R3) and those planted in mid-February (R1) respectively. Yam planted in mid-April (R5) has the highest value of stem girth which may be due to the fact that the month of April has the highest amount of rainfall.

Table 8. ANOVA table Showing Stem girth at 2 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs.0.05</sub>
Treatments	2	0.204	0.102	7.28**	4.46
Replication	4	1.16	0.290	20.71**	3.84
Error	8	0.116	0.014		
Total	14	1.92	0.137		

Note: ns means not significant and \*\* means significant

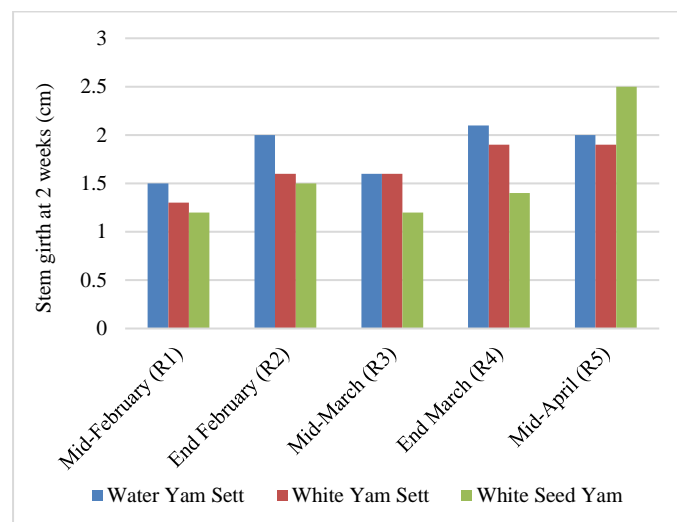


Figure 8. Stem girth at 2 weeks after sprouting. Significant difference test at P≤0.05.

Table 9. ANOVA table showing stem girth at 4 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs.0.05</sub>
Treatments	2	0.118	0.059	0.54 <sup>ns</sup>	4.46
Replication	4	1.200	0.300	2.75 <sup>ns</sup>	3.84
Error	8	0.872	0.109		
Total	14	2.19	0.156		

Note: ns means not significant and \*\* means significant.

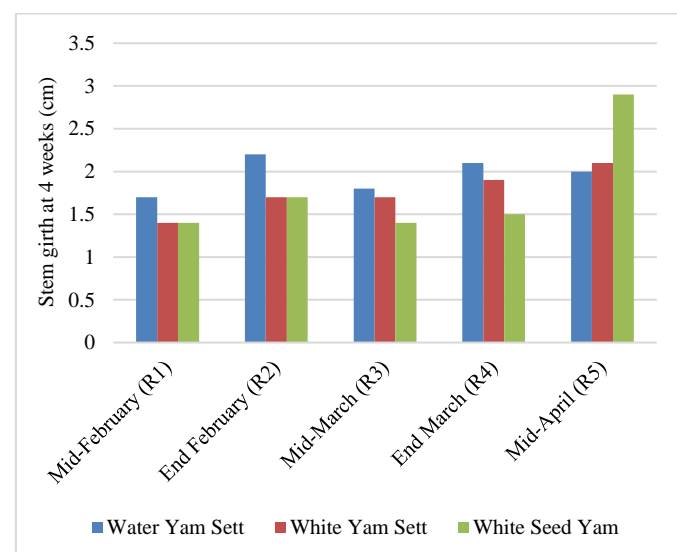
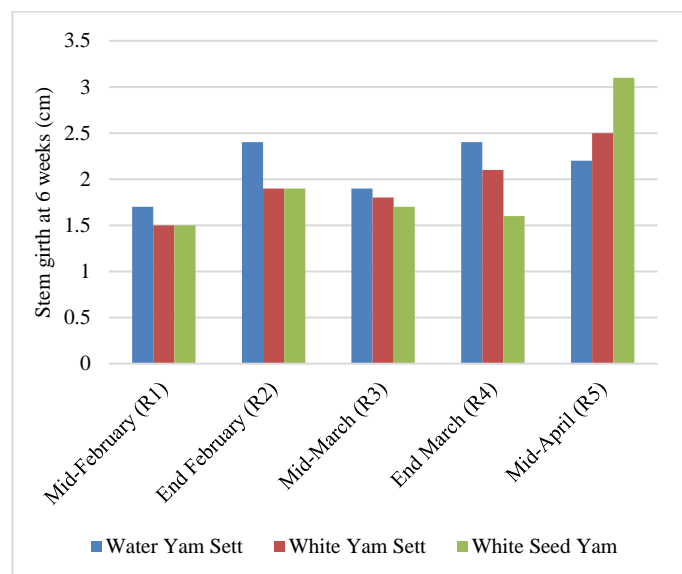


Figure 9. Stem girth at 4 weeks after sprouting. Significant difference test at P≤0.05.

**Table 10.** ANOVA table Showing Stem girth at 6 weeks after sprouting.

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	0.088	0.044	0.40 <sup>ns</sup>	4.46
Replication	4	1.78	0.445	4.08 <sup>**</sup>	3.84
Error	8	0.872	0.109		
Total	14	2.74	0.196		

Note: ns means not significant and \*\* means significant

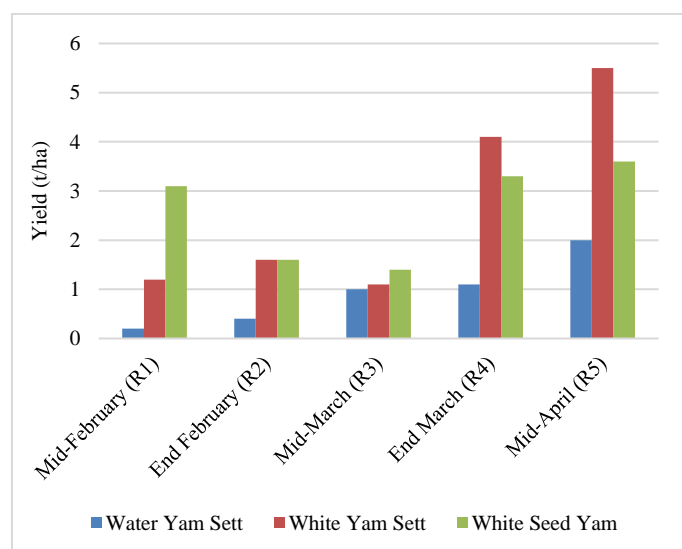


**Figure 10.** Stem girth at 6 weeks after sprouting. Significant difference test at  $P \leq 0.05$ .

**Table 11.** ANOVA table showing yield of yam as affected by time of planting (t/ha).

Source of variation	Df	SS	MS	F <sub>Cal</sub>	F <sub>Obs0.05</sub>
Treatments	2	9.772	4.886	5.94 <sup>**</sup>	4.46
Replication	4	15.411	3.852	4.67 <sup>**</sup>	3.84
Error	8	6.581	0.822		
Total	14	31.764	2.268		

Note: ns means not significant and \*\* means significant



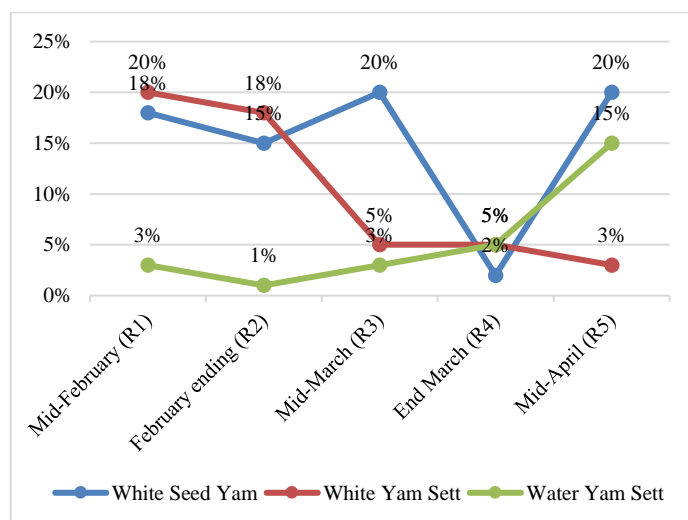
**Figure 11.** Yield of yam as affected by time of planting (t/ha). Significant difference test at  $P \leq 0.05$ .

## Yield

There is significant difference in yield both in treatment and block (**Table 11**). Yam planted in April (R5) has the highest yield with 3.7 kg, followed by those planted in ending March (R4) with 2.83 kg, followed by those planted in mid-February (R1) with 1.43 kg, then those planted in February ending (R2) with 1.2 kg and those planted in mid-March (R3) with 1.17 kg respectively (**Figure 11**). Yam planted in mid-April (R5) having the highest yield could be as a result of the fact that April had the highest rainfall of the three months in which this work was carried out (February, March and April).

## Effect of time of planting and planting materials on tuber destruction

White yam sett planted in Mid-March and March ending have the same level of destruction, as well as Water yam sett planted in March ending. The highest level of destruction was witnessed in White seed yam planted in Mid-March and Mid-April as well as White yam sett planted in Mid-February. The lowest level of destruction was found in water yam sett planted in February ending (**Figure 12**).



**Figure 12.** Effect of time of planting and planting materials on tuber destruction.

## Discussion

The present study reveals that time of planting have an impact on yam tuber performance and infestation. Many researchers previously conducted an admirable study on the impact of planting dates on the incidence of pest in various crops (Ogah & Ogah, 2012; Tobih & Emuh, 2016; Anvesh et al., 2022; Mekonnen, 2024). According to research findings of Marcos et al. (2011), during an experiment on Water yam (*Dioscorea alata* L.) growth and yield as affected by the planting date; it was discovered that the date of planting yam tubers can significantly influences the growth and development of the plant. These findings align with that of Muyeed et al. (2022), who demonstrated that planting time and variety significantly influenced carrot growth and yield. The present study was contrary to the submission of Aighewi et al. (2020), who opined that the time and season of planting had no significant effects on the number of tubers produced per plant.

Length of Vine, Number of leaves, Stem girth after sprouting, yield and yam tuber destruction were influenced

significantly by the time of planting (Eruola et al., 2012; Farag et al., 2019). The influence of length of Vine, number of leaves, stem girth after sprouting, yield and yam tuber destruction in the study agrees with the work carried out by Tobih & Emuh (2016), during an experiment conducted in 2010 and 2011 planting season to evaluate the effect of planting dates on growth pattern and yield of white yam (*Dioscorea rotundata* Poir) in Asaba Area of Delta State, Nigeria. Although the extent of its impact varied, another yam study found that vine length (plant height) in yam contributed to fresh tuber output (Ikeh et al., 2023). Aside from the advantage of having more photosynthetic leaf area for tuber bulking over a longer growing period, planting in between March ending and Mid-April, assures the absorption of phosphorus and mineralised nitrogen, which are naturally higher during early rains (Aighewi et al., 2020; Ikeh et al., 2023). Greater yield and larger tubers are the results of more photosynthates being produced due to the increased number of leaves that come with having more vines per plant (Alieu et al., 2012; Aighewi et al., 2020).

The study found that planting in in Mid-March and Mid-April led to higher yam tuber destruction as compared to February ending, indicating that delayed planting increases pest infestation in yam. These finding aligns with the submission of Egesia et al. (2007) and Exilien et al. (2024), who suggested that planting during early raining season corresponds to pest peak infestation. Planting during reduced rainfall period is less favorable to pest infestation. Planting during early raining period frequently results in higher humidity, which encourages the growth of insect pest larva and makes yams more susceptible to infestation (Ikeh & Ndaeyo, 2021; Exilien et al., 2024). Although, time of planting can not totally eradicate pest infestation but farmers may consider shifting their planting time to avoid peak pest seasons, which can result in fewer tubers being impacted and reduced total harm to yield. Previous research supports our findings, demonstrating that altering planting schedules can reduce pest damage (Musa & Nwoye, 2022; Exilien et al., 2024).

## Conclusions

The study has shown that yam planted in Mid-April has the best performance. Therefore, farmers should plant between ending of March and Mid-April so as to have a good yield. For lower pest infestation, water yam sett planted between Mid-February and ending of March is recommended for yam production. White yam sett is better planted in Mid-March and Mid-April while white seed yam is better planted in March ending. Soil temperature and moisture affect soil-dwelling insects, particularly eggs and larvae. Shifting planting date can reduce larval survival and pest populations in yam tuber planted in humid rainforests of Southwestern, Nigeria.

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