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Effects of Weeding Regimes on Performance of Okra at Kabba Southern Guinea Savannah of Nigeria

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Abstract

This field study on okra lady finger was conducted at Kabba to know the effect of weeding regimes on growth and pod yield under fed conditions. The objectives of this study were to identify the critical weed control period for the crop outstanding yield performance. Two hoe weeding which were spaced to cover the growth period of the crop were applied as treatment. These weed control periods that were considered for treatments were 3/6, 6/9, 9/12 and 3/12 weeks after sowing. The result obtained from this study indicated that two hoe weeding at 3 and 6 WAS gave the highest pod yield of 1.9t/ha. While the lowest pod yield of 0.68t/ha was given by weeding period of 3 and 12. WAS. At the same time yield losses of 24.9% to weed infestation was obtained for 3/6 WAS. This followed by 6/9, 9/12, 3/12 WAS with 50, 57, 74% yield losses to weed infestation respectively. The weedy check has 93% yield loss.

Keywords: Weeds Infestation, Competition, Yield Losses, Yield Performance and Smothering.

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Introduction

Weeds are without doubt one of major constraints in vegetable crops production. This is due to their competition with the crop optimum yield could not be obtained during their period of growth if they are not controlled in appropriate time. In this field of study, yield losses to weed competition ranges from 20-100% depending on the weed species and other growth conditions prevailing on the farm. Adeosun, (2005). Okra like other vegetables is very sensitive to weed competition especially at early stage of growth. Timely weed control is required for high yield. In this regard there is need to identifying the critical period for control of the weeds in this crop by resources poor farmers. Ibrahim and Hamma, 2012 in their work we regards to Farm Yard Manure and weeding regimes effect on growth and yield of okra, confirmed that three weeding regimes compliment 12ton/ha of farm manure to significantly enhance growth and yield of okra. Also Tijani – Eniola, 2001 in his work on influence of intra row spacing and weeding regime on performance of cowpea indicated that delay in weeding up to 5 (WAS) weeks after sowing WAS caused yield reduction in cowpea grain yield. Equally his result indicated that cow pea crops tolerated weeds up to 3 weeks after sowing than 4 WAS that caused significant reduction in the cowpea yield. Okra like other vegetables is very sensitive to weed competition at early stage of growth. This is as a result of impact of the weeds on the crop yield due to: slow growing characteristic of the crop, weed species, weed density in the crop environment, stage of crops growth, and duration of crop exposure to weed. Never the less the understanding of the growth stage at which this vegetable crops is sensitive to weed competition under prevailing conditions will guide the farmer in utilizing the limited resources at this disposal during these periods liebman, *et al.*, (2000)

The objectives of this study are to compare pod yields at different periods of applying two hoe weeding that are considered affordable these farmers and at the same time estimate yield losses to weed infestation by the crops.

Materials and Methods

This field experiment was conducted at Teaching and Research Farm of Kabba college of Agriculture. The site was located where annual broad leaf weeds infestation in problematic. This was due to high rainfall of 1575mm obtained per annum. The area has between latitude $07^{\circ} 56' N$ & Longitude $06^{\circ} 45' E$. Annual broadleaf weeds in the experimental site were mainly *Euphorbia heterophylla* *Ageratum conizoides* and *Centrosema pubescens* regimes. Two hoe weeding treatment that was applied to this work were spaced to cover twelve weeks growth period of Lady Finger okro crops. The weeding are as follows. 3/6, 6/9, 9/12, 3/12 weeks after sowing (WAS). Controls for this experiment were weed free (regular weeding and weedy check no weeding at all). The treatments (weeding regimes) for this work were fitted into randomized complete block design (RCBD) and treatments were replicated four times. Compound fertilizer NPK 15:15:15 at 200/kg/ha applied to okra crops at 2 weeks after sowing (WAS) on scale 0-10 range. Parameters that were considered in this work were plant vigour score average plant height in centimeter (cm) average leaf number per plant, and plant number per plot at maturity while mean, pod number per plant, pod yield/ha (T) and pod circumference and pod length (cm) were considered for yield and attributes.

Results and Discussion

The effects of weeding regimes on okra growth and pod yield are presented in the tables 1 and 2. The weeding regimes was significant ($p < 0.05$) on the growth traits– plant vigour score and the average plant height Table 1A and C. The crop plants with weeding regime 3 and 6 WAS had the highest average plant vigour score of 9.6 compared with other weeding regimes 6/9, 9/12, 3/12 WAS with 6:2, 4:4, 2:5 average plant vigour scores respectively. The observation of the weeding regimes effect on the average plant height followed the same trend with 3 and 6 WAS that gave highest average plant height pf 46cm while other weeding regimes 6/9, 9/12 and 3/12 WAS has average plant heights of 37.4, 37.6 and 34cm respectively. The controls weed free (regular weeding) and weedy check gave the highest and least average plant heights of 52 and 14.2cm respectively Table C. The applied weeding regimes were observed not have significant ($p < 0.05$) effect on the number of plant per plot and leaf count per plants at maturity Table 1B and D, Observations on the pod yields and yield attributes as well as pod yield losses indicated significant ($p < 0.05$) effect. The crops at 3 and 6 WAS weeding regime gave the highest pod yield of 1.94t/ha which is similar to weed free plot with 2.16t/ha Table 2B. These crops in the plots with delay weed had their pod yield depressed with 1.28, 1.10 and the 0.67t/ha in respect of 6/9, 9/12 and 3/12 WAS weeding regimes Table 2B. The weedy check had the lowest pod yield of 0.18t/ha. However there was no significant ($p < 0.05$) effect of the treatments on the (pod yield per plant and yield attributes). The significant effect of weeding regimes on the plant vigor score and the average plant height might be due to early weeding received at 3 and WAS. This might have disallowed competitive advantages that those groups of weeds could have over the okra plants for growth factors.

Correspondingly the early weed control at 3 and 6 WAS probably favoured the already established okra seedling. This could have coincided with root hairs and photosynthetic apparatus development especially the leaves that are necessary for taping growth factors. Thus these crops had the best performance for vigour score, average plant height, pod yield per hectare, that is similar to the weed free okra plants. This is because they were able to shade the weed from getting light. The subsequent weeding regimes 6/8, 9/12 and 3/ 12 WAS which had the weeding delayed could have favoured the weed to have their competitive apparatus such as roots and dense canopy built up. This could have enhanced the weeds to great extent to deprive the okra plants the required growth factors. This situation could have responsible for their depressed growth and yield performances in comparison to those okra crops that were weeded free crops and at 3 and 6 WAS. Dada Fayinminnu, (2010.)

Conclusion and Recommendations

Based on the result of this study, it is recommended that farmers in southern guinea agro-ecological zone should engage in 3 and 6 WAS hoe-weeding for optimum yield

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Tables

Table 1: Data Collection for Okra growth parameters

Treatment	Mean plant vigour A	Plan No per plot B	Mean plant height (cm)C	Leave count/plant D
Weed free	9.8a	46a	52.0a	10.7a
Weedings at 3 and 6 WAS	9.6a	45a	46.0a	10.7a
6 and 9 WAS	6.2b	43b	37.4b	10.1b
9 and 12 WAS	4.4c	43a	337.6b	10.6b
3 and 12 WAS	2.5d	43a	34.0b	10.b
Weed check	1.4e	34a	14.2d	7.8c
LSD (0.05)	**	NS	**	NS

WAS: - weeks after sowing. **: - significant at p (0.05). NS: - Non-significant p (0.0)

Table 2: Data Collection for pod yield and yield attributes

Treatments	Mean pod No. / plant A	Mean pod ha yield/T ha ⁻¹ B	Mean pod circumference (cm) C	Mean pod length (cm)D	Yield loss% E
Weed free	3.4a	2.16a	9.1a	9.3a	-
Weedings at 3 and 6 WAS	3.0a	1.94b	8.0a	8.5a	-24
6 and 9 WAS	2.3b	1.28c	6.0a	7.0a	-50
9 and 12 WAS	2.6a	1.10d	5.0a	5.6a	-57
3 and 12 WAS	2.7a	0.67e	5.0a	5.7a	-74
Weed check	1.4c	0.18f	3.6a	3.8a	-93
LSD (0.05)	**	**	NS	NS	

WAS: - Weeks After Sowing. **: - significant at p (0.05). NS:- Non-significant p (0.0)

Treatment effect on these parameters and least square difference LSD (p0.05) was applied in assessing growth and yield values.