

rate									
No.of leaves	1.43	38.90	21.19	11.64	11.70	6.28	67.03	27.24	-
No. of branches	1.17	0.02	54.67	47.09	15.62	12.02	16.06	13.34	-
Leaf area	1.17	7.63	1.83	5.22	0.00	0.00	39.80	6.27	rg
No. of tubers	2.69	0.13	93.97	14.22	48.54	6.24	10.15	1.93	-
Fresh tuber yield	74.44	2.79	26.67	26.64	14.92	14.94	1.97	2.02	-

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EVALUATION OF YIELD PARAMETERS OF SOME PEPPER (*CAPSICUM SPP*) LAND RACES IN NIGER STATE

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ABSTRACT

Ten accessions of Pepper (*Capsicum spp*) landraces collected from the growing local Governments of Niger state (Tafa, Zungeru, Bida, Munya, Paiko, Mokwa, Chanchaga, Kontagora, Gwada,) were characterized and evaluated for yield parameters during the growing season of 2012 at the Department of Biological sciences experimental field using a Randomized Complete Block Design (RCBD). The aim of this study was to evaluate the performance of the accession entries on yield parameters. The results showed that the pepper landraces were significantly different ($p < 0.05$) for No of Flowers/plant, No of Fruits/plant, No of seeds/fruit, weight of Fruit/plant and Fruit length respectively. The landraces were found interesting for their yield parameters and could serve as potential candidates for future breeding programmes.

Keywords: *Capsicum spp*, Yield parameters, Landraces, Breeding

INTRODUCTION

Pepper is a member of the family *Solanaceae* and the genus *capsicum*. The primary centre of diversity was Mexico, but secondarily Guatemala (Ado, 1990). Distribution of pepper is wide spread especially in tropical and subtropical ecologies including America, either as wild or cultivated forms (Ado, 1990). Nigeria happens to be the largest producer of pepper in Africa covering about 50% of total African production. A total of about 100-200,000 ha is being assigned to pepper production annually in Nigeria (Ado, 1988). In 1983, FAO estimate of pepper production in Nigeria stood at 695,000 metric tons from a total area of about 77,000 ha. Consumption of pepper in Nigeria accounts for about 40% of average daily in-take either in soup, or as condiments for flavouring and colouring of meats, fish and other food materials. In

addition, *Capsicum* is a rich source of vitamins A and C (Ascorbic acid) (Gill, 1992; Ado, 1999). The genus consists of over one hundred (100) species and even more botanical varieties (Ado, 1999; Falusi, 2007); including five domesticated species namely: *Capsicum annum*, *C. frutescens*, *C. baccatum*, *C. chinense* and *C. pubescens*; all believed to have originated from the New World (McLeod *et al.*, 1982; Bosland, 1994). Pepper is generally called ata (Yoruba), ose (Igbo), borkonu (Hausa), yaka (Nupe), etc.

Yield improvement programmes of pepper have indicated that some genotypes performed better than the other under certain environmental conditions (Mattei *et al.*, 1971). In another evaluation, trials conducted earlier revealed that a considerable variation exists in the Pepper Germplasm. This variability will be useful in pepper improvement programmes especially for yield and fruit quality. Niger state has been known to be one of the producing states of pepper in Nigeria. Despite being one of the leading producing states, the yield obtained by the farmers is far from their inputs (Anonymous, 1980), thus this research is designed to study, collect and characterize the land races of pepper in Niger state.

MATERIALS AND METHODS

This study was carried out at the experimental garden; Centre for Preliminary and Extra-mural Studies, Federal University of Technology, Minna, Niger State, Nigeria.

The fruits were collected fresh directly from local farmers during harvest from some of the local governments growing Pepper in Niger state (Tafa, Zungeru, Bida, Munya, Paiko, Mokwa, Chanchaga, Kontagora, Gwada). After collection, their seeds were removed, dried and enveloped then labeled with their accession numbers accordingly and kept in a cool and dry place before planting. The experiment was arranged in a Randomized Complete Block Design (RCBD)

The following data were taken during the period of study: fruit length in (cm) using meter rule, fruit weight in (g), Number of fruit per plant, Number of seeds per fruit and Number of flowers per plant. Analysis of Variance (ANOVA) was used to analyze the data and Least Significant Difference (LSD) was used to separate the means. The results are represented in Table 1 below.

RESULTS AND DISCUSSION

The yield parameters were investigated during the period of study to estimate the variations in all the ten (10) pepper accessions collected, (Table 1). Pepper accessions differed significantly from one another ($p < 0.05$) with respect to No of flowers/plant, No of fruits/plant, No of seeds/fruit, weight of fruit/plant and fruit length. With respect to the Number of flowers/plant, the accession MK2 had the highest with the mean (95.90) while the lowest was from Gwada with the mean (27.80) but there were no statistical differences among the remaining accessions statistically at (0.05). The number of fruit/plant was also recorded, where the accession TA had the highest mean with (30.40) and the lowest was observed from PA, MK1 and CH. With the means 9.70, 10.50, and 10.00 and they were not significant statistically (0.05). The Number of seed/fruit was found to be the highest from CH (116.50) which was statistically different from all other Accessions and the lowest from MK2, KT, MU, and BD and are statistically the same but are different from all other accessions. The highest weight of fruit was observed from BD (63.41) followed by (51.93) but there were significant differences among the remaining Accessions at ($P < 0.05$) level of significant. The fruit length was also recorded and the Accessions ZU, PA, KT

and MK2 were statistically different the same although they are different from all other accessions, however the highest fruit length was from BD. The statistical differences observed in fruit length is in agreement with the findings of Adetula and Olakojo (2006) who studied Genetic characterization and evaluation of some pepper (*Capsicum frutescens*) and observed significant differences among fruit positions, calyx margin, fruit length and fruit width respectively. Eshbaugh *et al.* (1983) also recognized 20-30 species in the genus out of which four were domesticated species. And observed that Fruit weight, though not statistically different, varied markedly among the pepper accessions with a range of 14.6 to 58.5.

TABLE 1:

SAMPLE	NO OF FLOWER PER PLANT	NO OF FRUITS PER PLANT	NO OF SEEDS PER FRUIT	WEIGHT OF FRUIT	FRUIT LENGTH
TA	56.10 ± 13.63 ^{ab}	30.40 ± 4.24 ^c	76.80 ± 4.11 ^{ab}	32.25 ± 1.39 ^e	1.03 ± 0.08 ^a
ZU	67.80 ± 12.9 ^{bc}	20.40 ± 3.65 ^{bcd}	106.60 ± 11.45 ^{bcd}	40.66 ± 2.22 ^e	5.47 ± 0.22 ^b
BD	38.90 ± 6.29 ^{ab}	14.90 ± 1.71 ^{ab}	90.60 ± 58 ^{abcd}	63.41 ± 2.15 ^e	6.57 ± 0.21 ^c
MU	54.40 ± 13.50 ^{ab}	24.90 ± 4.81 ^{cde}	89.30 ± 4.01 ^{abcd}	17.50 ± .72 ^a	0.92 ± .12 ^a
PA	43.60 ± 7.08 ^{ab}	9.70 ± 1.61 ^a	108.00 ± 12.31 ^{cd}	38.35 ± 2.61 ^{de}	5.89 ± .23 ^b
MK1	44.10 ± 8.22 ^{ab}	10.50 ± 1.42 ^a	74.20 ± 5.46 ^a	24.29 ± 1.30 ^b	1.33 ± 0.16 ^a
CH	39.20 ± 5.96 ^{ab}	10.00 ± 1.47 ^a	116.50 ± 18.56 ^d	16.98 ± 1.17 ^a	0.90 ± 0.11 ^a
KT	47.50 ± 8.85 ^{ab}	15.90 ± 3.09 ^{bhc}	102.40 ± 7.60 ^{abcd}	51.93 ± 2.84 ^f	5.98 ± 0.19 ^b
GW	27.80 ± 4.69 ^a	13.10 ± 2.04 ^{de}	78.30 ± 6.34 ^{abc}	34.37 ± 1.84 ^{cd}	1.02 ± 0.08 ^a
MK2	95.90 ± 17.72 ^c	28.20 ± 4.33 ^{de}	101.00 ± 7.67 ^{abcd}	42.86 ± 1.43 ^e	5.76 ± 0.24 ^b

Values are means of ten replicate ± standard error of mean.

Values with the same superscript alphabets in a column are not significantly different at PL 0.05

CONCLUSION

From the study, accessions Mk2, Zu and Bd were identified as good sources for pepper improvement programme, for higher yield and fruit quality improvement.

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