Int.J.Curr.Res.Aca.Rev.2024; 12(2): 31-38

International Journal of Current Research and Academic Review

ISSN: 2347-3215 (Online) Volume 12 Number 2 (February-2024)

Journal homepage: http://www.ijcrar.com

doi: https://doi.org/10.20546/ijcrar.2024.1202.004

Root Yield and Growth Performance of Orange Fleshed Sweet Potato Varieties at Dera and Libokemkem Districts, North West Ethiopia

Awoke Ali*, Birehanu Habete and Mulat Getaneh

Ethiopian Institute of Agricultural Research (EIAR), Fogera National Rice Research & Training Center (FNRRTC), Woreta, Ethiopia

**Corresponding author*

Abstract

Sweet potato (*Ipomoea batatas* L.) is one of an important root crop produced in Dera and Libokemkem districts with cereal-based diets predominate. White fleshed sweet potato varieties are commonly produced in the districts; however, orange fleshed sweet potato varieties were not yet produced due to non-existence of adapted varieties and lack of vine or planting materials. With this problem, a study was carried out to evaluate and identify the best performing orange fleshed sweet potato varieties for their storage root yield and its attributes. The five orange fleshed sweet potato varieties were planted at two locations from Dera and Libokemkem districts using randomized complete block design in three replications with 40 plants per plot. The data were scored for storage root yield and agronomic traits for each variety across locations. The analysis of variances for each location and across locations showed significant varieties differences for most traits considered in this study. Varieties Kulfo, Kabode and Dilla were found to be in good performances. It is therefore; the current negligible production of orange fleshed sweet potato in these areas can be easily increasing through the use of these superior performed varieties. Thus, it is strongly recommended that seed productions and dissemination program for these varieties have to initiate in the study and similar agro-ecological areas.

Article Info

Received: 15 December 2023
Accepted: 22 January 2024
Available Online: 20 February 2024

Keywords

Adaptation, Evaluation, Orange Fleshed, Storage Root Yield, Improved Varieties, Vine.

Introduction

Sweet potato (*Ipomoea batatas*L.) is a stable food crop (Laban *et al.*, 2015) which is mostly produced (over 95%) in developing countries (FAOSTAT, 2021). Sweet potato is an important root crop that is mainly cultivated in tropical and subtropical region (Iese *et al.*, 2018).

In Ethiopia, it is commonly produced by smallholder farmers who are grown primarily for human consumption. It is mainly produced in the south, southwestern, and eastern regions with a trend of expansion of other parts of the country (CSAE, 2021/22; Hendebo *et al.*, 2022).

With this trend of expansion, sweet potato can be produced in a wide range of agro-ecologies with a high yield potential and adaptability in the country (Wang *et al.*, 2011). Based on Gurumu (2019) description sweet potato is largely produced in mid and low altitude of Ethiopia with warm weather growing condition for high yielding. Thus, Dera and Libokemkem districts in Northwest Ethiopia have suitable environmental conditions for sweet potato production since majority of their areas lies in mid altitudes with warmest temperature. Because of this farmers in these districts have long experiences for sweet potato production with cereal-based diets predominates. For long time, white fleshed sweet potato varieties are commonly produced in Dera and Libokemkem district. However, orange fleshed sweet potato varieties were not yet produced in the districts due to nonexistence of adapted varieties and lack of planting materials. Increasing population growth and food insecurity in Ethiopia is also inciting extensive production of food security crops like sweet potato.

According to World Food Program (2022) report 14 to 15 million Ethiopians (13% - 14% of the country population) are experiencing severe food insecurity. Accordingly, sweet potato is one of the ideal starch staple food security crop due to low level of agricultural input requirement and high productivity per unit area (Laban *et al.,* 2015). Besides, orange fleshed sweet potato is crucial for improving nutrition of vitamin A deficient in community especially for children and infants since it has high content of carotenoids and pleasant sensory characteristics with color (Neela and Fanta, 2019). According to Teow *et al.,* (2007) described that both the tubers and leaves of orange fleshed sweet potato are rich sources of vitamin, mineral and antioxidants, which is needed to combat food insecurity and malnutrition. It is therefore; this study was proposed to evaluate and identify the best performing orange fleshed sweet potato varieties for their storage root yield and its attributes in Dera and Libokemkem districts.

Materials and Methods

Description of the Study Sites

A study was carried out to evaluate different orange fleshed sweet potato varieties in 2020 main rain fed growing season at Dera and Libokemkem districts in Northwest Ethiopia. Dera district is about 602 km and 42 km far from Addis Ababa and Bahir Dar respectively. It is located at 37^{o}25’45’’-37^{o5}4’10’’Elongitude and 11^{o}23’11’’- 11^{o5}3’’30’’N latitude with the average altitude of1788meter above sea level. The annual rainfall and temperature of the area ranges from 1000 mm-1500 mm and 13^{o}c -30^{o}c, respectively (Getachew, 2018).

Libokemkem is 645 km far from Addis Ababa which is located between 11^{o}58’15’’to 12^{o}22’67’’ N latitude and 37^{o}33’25.4’’ to 37^{o}58’16.5’’E longitude. The altitude of Libokemkem ranges from 1560m to 2200m meter above sea level. Libokemkem district received average annual rain fall and temperature of 900-1200mm and 13-28^{o}c, respectively. Hence, the majority part of these districts are characterized as mid-altitude in the Ethiopian agro-ecological classifications (Getachew, 2018).

Planting Materials and Experimental Design

The five orange fleshed sweet potato varieties namely Dilla, Kabode, Alamura, Kulfo and Vita were planted on 28 June 2020using randomized complete block design in three replications with 40 plants per plot. Initial planting materials/vines were brought from Hawassa Agricultural Research Center which is the national sweet potato research program coordinator in Ethiopia. Then, cutting materials or vines were planted and multiplied in Fogera research site in open field from April to June. Main field planting was done in rows with spacing of 60cm between rows and 30cm between plants. Furthermore, field operations like three times hoeing and weeding were applied properly and timely.

Data Collections

Data were collected from the 20 plants in the middle of two rows for all plots. The data were scored on plot based for storage root yield, above ground fresh weight and days to maturity. Whereas, root diameter, root length, root weight, number of roots per plant, vine length, vine inter-nodal length, vine girth, leaf length and leaf diameter were measured from five plants randomly taken from each plots and averaged over the plants.

Dry matter content was calculated as a ratio of sample dry root weight to root fresh weight and was expressed in %.

$$\text{Dry matter content} = \frac{\text{sample dry root weight}}{\text{root fresh weight}} \times 100 \quad \ldots(1)$$

In addition, harvest index (HI) was calculated as a ratio of fresh root weight to total weight (above ground fresh weight +fresh root weight) on fresh weight basis times by 100 %.

$$HI = \frac{\text{fresh root weight}}{\text{total weight}} \times 100 \quad \ldots(2)$$

Results and Discussion

The mean square from the combined analysis of variance over two locations (Table I) showed that differences due to varieties were significant ($P<0.01$) for traits of total and marketable storage root yield and above ground fresh weight. The varieties also exhibited significant ($P<0.05$) variation for number of storage root per plant and non-significant variation for harvest index.

The effect due to location were significant ($P<0.01$) for above ground fresh weight and harvest index, but it was not significant for number of roots per plant and the total and marketable root yield. The variances due to variety x location interaction were not significant for the root yield, number of roots per plant, above ground fresh weight, harvest index, root diameter, days to maturity and dry matter content.

The significant ($P<0.01$) varieties differences were also observed for root length, width and root weight, days to maturity and dry matter content (Table II). Similarly, location effects were observed for root diameter and individual root weight. The variances due to varieties x location interaction were also significant ($P<0.01$) for root length, a single root weight and dry matter content (Table II).

The mean square in Table III showed significant ($P<0.01$) difference in vine length and leaf diameter and significant ($P< 0.05$) difference in vine girth and vine internode length among tested varieties. However, leaf length was not significant difference among varieties. Location and location by varieties interaction was significantly influenced on the growth of vine length and internode length.

In this study, the mean value of marketable root yield over two locations was 13.2 t ha^{-1}. The mean values of storage root yield at individual location ranged from 2.82 to 20.78 t ha^{-1}at Dera and 4.57 to 17.49 t ha^{-1}at Libokemkem (Table 4). The highest total storage root yield were recorded from Kulfo (20.7 t ha^{-1}) followed by Kabode (17.0 t ha^{-1}) and Dilla (16. t ha^{-1}).

The least yielding variety was Alamura (3.7 t ha^{-1}).Considering the locations mean, Dera location was found to be suitable than Libokemkem environment for orange fleshed sweet potato production with average yield of 14.08 t ha^{-1}. In case of storage root number per plant, the mean values were ranged from 2-5 which obtained from variety Alamura and Dilla, respectively.

The highest root length was recorded from variety Dilla (202.7 mm) and Vita (174.7 mm) at both locations while the smallest root length was from variety Kulfo (127.4 mm) at Dera location and from variety Alamura (125.4 mm) at Libokemkem location. Similarly, for over location analysis the highest root length were recorded from variety Dilla (193.1 mm) and Vita (172.4 mm) followed by variety Kabode (154.4 mm). The average root length performance over two locations was 162.1 mm. Similar findings Namo *et al.,* (2017) who reported that the range values of 224 mm to 119 mm for root length. Additionally Kuddus *et al.,* (2020) reported the average root length values of 104.5 mm to 128.2 mm while studied different orange fleshed sweet potato varieties performance. Likewise, the study showed that the highest root diameter was obtained from variety Kulfo (58.8 mm) and Dilla (58.2 mm) followed by variety Kabode (47.8 mm). Whereas the lowest root diameter was scored from variety Alamura (33.5 mm).

This result was in line with the finding of Mekonnen *et al.,* (2015) who reported the mean range values of 33.9mm to 49.0mm storage root length. Regards to root weight variety Dilla (0.34 kg) had the maximum value next to Kulfo (0.27 kg) and Vita (0.22 kg) and variety Alamura (0.07 kg) had the minimum value. The mean storage root weight over two locations was 0.22 kg. The mean location values in vine length, internode vine length and vine girth showed that the tested varieties were better performed at Dera district than Libokemkem district. The maximum vine length was obtained from variety Dilla (112.2 cm) at Dera district while the minimum vine length was obtained from variety Vita (42.9 cm) at Libokemkem district. From the combined analysis the highest vine length was recorded from variety Dilla (86.5 cm) next to variety Alamura (74.9 cm) and Kulfo (71.0 cm). Similarly, variety Dilla and Kulfo were scored the higher internode vine length at individual tested location and over two locations analysis. Variety Kulfo (8.9 mm) was recorded the highest vine girth followed by variety Dilla and Vita with the similar value of 8.5 mm.

The mean value of the above ground fresh weight over two locations was 4.15 kg. The maximum and minimum values were obtained from varieties Alamura (2.13 t ha^{-1}) and Dilla (14.81 t ha^{-1}), respectively. The mean of above ground fresh weight performances at Dera (15.7 t ha^{-1}) was found to be better than at Libokemkem (7.33 t ha^{-1}). The location means of leaf length and width performances were ranged from 8.0 cm to 9.76 cm and 3.98 cm to 7.20 cm, respectively.

Table.1 Mean Squares from the Analyses of Variance for Five Orange Fleshed Sweet Potato Varieties Over Two Locations

Source of variation	DF	Mean Squares				
		Total root Yield t ha^{-1}	Marketable root yield t ha^{-1}	Number of roots per plant	Above ground fresh weight	Harvest Index
Replication	2	225.019	195.584	1.65	0.96	23.988
Location	1	6.532ns	17.709ns	0.71ns	67.8**	568.89**
Variety	4	26.339 **	23.25**	3.72 *	21.6**	67.326ns
Var x Loc	4	21.111 ns	22.366ns	0.48 ns	7.06ns	80.543ns
Residual	16	22.400	20.781	0.80	3.06	38.516

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits

Table.2 Mean Squares from the Analyses of Variance for Five Orange Fleshed Sweet Potato Varieties Over Two Locations

Source of variation	Degree of freedom	Mean Squares				
		Root length (mm)	Root diameter (mm)	Root weight (kg)	Dry matter content (%)	Days to maturity
Replication	2	70.080	28.920	0.002	7.233	26.13
Location	1	201.66ns	368.76*	0.020 **	50.70ns	21.641ns
Variety	4	2523.2**	641.64**	0.060 **	144.95**	62.2897**
Var x Loc	4	1183.9*	74.69ns	0.010**	8.617ns	17.8951ns
Residual	16	311.59	50.19	0.002	19.752	12.890

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits

Table.3 Mean Squares from the Analyses of Variance for Five Orange Fleshed Sweet Potato Varieties Over Two Locations

Source of variation	Degree of freedom	Mean Squares				
		Vine length (cm)	Vine girth (mm)	Internode length (cm)	Leaf length (cm)	Leaf diameter (cm)
Replication	2	472.07	2.58	6.20 **	1.99	1.71
Location	1	1869.1**	0.17ns	43.34**	2.17ns	0.84ns
Variety	4	2366.8**	7.43*	3.74 *	3.19ns	9.68**
Var x Loc	4	663.6 *	9.02**	3.15 *	6.64*	0.77ns
Residual	16	202.8	1.64	0.93	1.98	1.39

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits

Table.4 Mean Values of Storage Roots Yield and Number of Storage Roots Per Plant of Five Varieties Over Two Locations

Variety	Marketable storage root yield (t ha^{-1})			Total storage root yield (t (ha^{-1})			Number of storage roots per plant		
	Dera	Libo	Mean	Dera	Libo	Mean	Dera	Libo	Mean
Alamura	2.820	4.570	3.70	3.800	5.430	4.6	3	2	2
Dilla	13.17	15.11	14.1	16.07	17.54	16.8	4	5	5
Vita	14.91	13.06	14.0	17.57	15.50	16.6	4	4	4
Kabode	18.71	11.35	15.0	20.83	13.27	17.0	3	4	4
Kulfo	20.78	17.49	19.1	22.07	19.30	20.7	4	4	4
Grand mean	14.08	12.32	13.2	16.07	14.21	15.1	3.5	3.8	3.6
CV	29.90	43.80	34.5	27.96	38.60	31.3	23.1	25.6	24.5
$LSD_{0.05}$	7.870	10.10	7.80	8.45	10.30	8.10	1.519	1.83	1.6
	**	Ns	**	**	**	**	Ns	Ns	*

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits, LSD= least significant difference and CV= Coefficient of variation

Table.5 Mean Values of Root Length, Root Diameter and Weight of Five Varieties Over Two Locations

Variety	Root length (mm)			Root diameter (mm)			Root weight (kg)		
	Dera	Libo	Mean	Dera	Libo	Mean	Dera	Libo	Mean
Alamura	163.5	125.4	144.4	34.1	32.9	33.5	0.09	0.06	0.07
Dilla	202.7	183.4	193.1	66.2	50.2	58.2	0.46	0.23	0.34
Vita	174.7	170.1	172.4	47.4	46.1	46.8	0.23	0.21	0.22
Kabode	155.4	153.4	154.4	49.5	46.2	47.8	0.19	0.20	0.20
Kulfo	127.4	165.4	146.4	65.4	52.2	58.8	0.28	0.26	0.27
Grand mean	164.7	159.5	162.1	52.3	45.5	49.0	0.25	0.19	0.22
CV	12.6	8.7	10.9	15.7	12.5	14.5	24.0	10.8	20.2
$LSD_{0.05}$	39.04	26.20	30.55	15.55	10.70	12.26	0.11	0.04	0.77
	*	**	**	**	*	**	**	**	**

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits, LSD= least significant difference and CV= Coefficient of variation

Table.6 Mean Values of Vine Length, Internode Vine Length and Vine Girth of Five Varieties Over Two Locations

Variety	Vine length (cm)			Internode vine length (cm)			Vine Girth (mm)		
	Dera	Libo	Mean	Dera	Libo	Mean	Dera	Libo	Mean
Alamura	86.6	63.3	74.9	34.1	32.9	33.5	5.5	6.7	6.1
Dilla	111.2	61.7	86.5	66.2	50.2	58.2	8.2	8.8	8.5
Vita	43.8	41.2	42.9	47.4	46.1	46.8	10.0	6.9	8.5
Kabode	43.2	42.8	43.0	49.5	46.2	47.8	9.5	7.2	8.3
Kulfo	72.8	69.7	71.0	65.4	52.2	58.8	7.5	10.3	8.9
Grand mean	71.5	55.7	63.6	52.3	45.5	49.0	8.1	8.0	8.1
CV	26.2	11.8	22.3	15.7	12.5	14.5	15.3	16.5	15.8
$LSD_{0.05}$	35.85	12.37	24.65	15.55	10.70	12.26	2.35	1.47	2.20
	*	**	**	**	*	**	*	*	**

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits, LSD= least significant difference and CV= Coefficient of variation

Table.7 Mean Values of Above Ground Fresh Weight, Leaf Length and Leaf Diameter of Five Varieties Over Two Locations

Variety	Above ground fresh weight (t ha^{-1})			Leaf length (cm)			Leaf diameter (cm)		
	Dera	Libo	Mean	Dera	Libo	Mean	Dera	Libo	Mean
Alamura	1.70	2.58	2.130	6.63	9.37	8.00	4.55	4.16	4.35
Dilla	22.5	7.11	14.81	10.20	7.34	8.77	7.73	6.68	7.20
Vita	16.7	8.94	12.81	10.13	9.07	9.60	5.30	6.16	5.73
Kabode	20.0	8.22	14.11	9.75	9.77	9.76	5.66	5.22	5.44
Kulfo	17.8	9.83	13.81	9.39	7.86	8.62	4.31	3.65	3.98
Grand mean	15.7	7.33	11.53	9.22	8.68	8.95	5.51	5.17	5.34
CV	31.5	65.04	42.2	8.28	21.19	15.70	27.89	12.67	22.10
$LSD_{0.05}$	3.30	3.23	3.0	1.44	3.46	2.44	2.89	1.23	2.04
	**	Ns	**	**	Ns	ns	Ns	**	*

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits

Table.8 Mean Values of Dry Matter Content, Harvest Index and Days to Maturity of Five Varieties Over Two Locations

Variety	Dry matter content (%)			Harvest index (%)			Days to maturity		
	Dera	Libo	Mean	Dera	Libo	Mean	Dera	Libo	Mean
Alamura	16.90	14.42	15.66	86.16	85.07	85.62	155	155	155
Dilla	26.09	19.72	22.91	66.91	86.42	76.67	157	158	158
Vita	23.31	24.76	24.04	75.37	84.40	79.89	150	153	151
Kabode	21.98	18.90	20.44	74.22	82.92	78.57	142	148	145
Kulfo	20.02	22.00	21.01	77.12	84.52	80.82	148	151	150
Grand mean	21.66	19.96	20.81	75.96	84.67	80.31	150	153	151.63
CV	7.12	24.43	17.25	6.05	9.430	7.73	2.7	3.0	2.93
$LSD_{0.05}$	2.90	9.18	4.35	8.65	15.04	7.52	8	9	5.39
	**	Ns	**	*	ns	ns	*	ns	**

Where,* indicate Significant at 0.05 and ** significant at 0.01 probability levels among varieties and varieties by location interaction for different traits. NS = non- significant at 0.05 and 0.01 probability level within varieties by location interaction for different traits, LSD= least significant difference and CV= Coefficient of variation

Varieties Vita and Kabode were found be superior in leaf length followed by Dilla whereas varieties Dilla and Vita showed superior performance in leaf width followed by Kabode. The shortest leaf length was recorded from variety Alamura and the thinnest was obtained from variety Kulfo.

Based on the results of this research, varieties Vita (24.04%) and Dilla (22.91%) were showed better performance in dry matter content followed by Kulfo (21.01%). The maximum and the minimum values of dry matter content was recorded from variety Vita (24.76) and Alamura (14.42%) at Libokemkem testing site, respectively. The mean of dry matter content over two locations was 20.81%. The mean value of dry matter content in this study was slightly lower than the result of Mbusa *et al.*, (2018) which was 24.84%, but it is slightly similar to the report of (Carey *et al.*, 2020) that was 22%.

The result of this finding also indicated that the least harvest index was obtained from variety Dilla (76.67%) meanwhile the largest harvest index was obtained from variety Alamura (80.82%). Kabode variety (145 days) was obtained the shortest days to maturity from the five orange fleshed tested varieties. On the other hand, Dilla variety (158 days) was attained the longest days to maturity.

Conclusions and Recommendation

In conclusion, varieties Kulfo, Kabode and Dilla were found to be in good performances at both tested locations; Dera and Libokemkem districts for most measured traits counting storage root yield. To improve nutrition and diversifying food habit of end users, it is strongly recommended that vine or cutting material productions and dissemination program for these varieties have to initiate in the study and similar agro-ecological areas. Besides, the current low production of orange fleshed sweet potato can be easily increasing and expanding with the use of these superior performed varieties in study.

Acknowledgements

The authors have grateful thanks for Ethiopian institute of Agricultural Research to give financial assistances and facilitation of experimental materials for the success of this experiment. The authors would like to express Hawassa Agricultural Research Center for providing the initial sweet potato planting materials that used in this experiment.

Conflict of Interest

The Authors declared that they have no conflict of interest

References

Laban, T.F., Peace, K., Robert, M., Maggiore, K., Hellen, M. and Muhumuza, J., Participatory agronomic performance and sensory evaluation of selected orange-fleshed sweet potato varieties in south western Uganda, Global J. Sci. Frontier Res, 15, pp.25-30, 2015.

FAOSTAT, Countries - Select All; Regions - World + Total. Elements - Production Quantity; Items - Sweet Potatoes, Online data base. http://faostat.org. Accessed on 16 May, 2023; Years – 2021.

Iese, V., Holland, E., Wairiu, M., Havea, R., Patolo, S., Nishi, M., Hoponoa, T., Bourke, R.M., Dean, A. and Waqainabete, L., Facing food security risks: The rise and rise of the sweet potato in the Pacific Islands. Global food security, 18, pp.48-56, 2018.

Cental Stastical Agency of Ethiopia, Agricultural Sample Survey Report on Area and Production (Private Peasant Holdings Meher Season, Central Statistical Agency of Ethiopia, Statistical Bulletin, Addis Ababa, Ethiopia,2021/22.

Hendebo, M., Ibrahim, A.M., Gurmu, F. and Beshir, H.M., Assessment of Assessment of Production and Utilization Practices of Orange-Fleshed Sweet Potatoes (*Ipomoea Batatas* L.) in Sidama Region, Ethiopia, International Journal of Agronomy,2022.

Wang, S.M., Yu, D.J. and Song, K.B., Quality characteristics of purple sweet potato (*Ipomoea batatas*) slices dehydrated by the addition of maltodextrin, Horticulture, Environment, and Biotechnology, 52, pp.435-441, 2011.

Gurmu, F., Sweetpotato research and development in Ethiopia: a comprehensive review, Journal of Agricultural and Crop Research, 7(7), pp.106-118, 2019.

World Food Program, (https://www.wfp.org/countries/ethiopia), 2022.

Neela, S. and Fanta, S.W., Review on nutritional composition of orange-fleshed sweet potato and its role in management of vitamin A deficiency, Food science & nutrition, 7(6), pp.1920-1945, 2019.

Teow, C.C., Truong, V.D., McFeeters, R.F., Thompson, R.L., Pecota, K.V. and Yencho, G.C., Antioxidant activities, phenolic and β-carotene contents of sweet potato genotypes with varying flesh colours, Food chemistry, 103(3), pp.829-838, 2007.

Getachew, B., Trend Analysis of Temperature and Rainfall in South Gondar Zone, Ethiopia, J. Degrade. Min. Land Manage. 5 (2): 1111-1125, 2018.

Namo, O.A.T., O.J. Akinbola and G.O.Utoblo, Evaluation of Some Orange-Fleshed Sweet Potato (OFSP) Accessions for Growth and Yield Potentials in Jos-Plateau Environment, Cytogenetics and Plant Breeding Unit, Department of Plant Science and Technology, University of Jos, P. M. B. 2084, Jos, Plateau State, Nigeria, World Journal of Agricultural Sciences 13 (6): 227-236, 2017 ISSN 1817-3047, DOI: 10.5829/idosi.wjas, 2017.

Kuddus, M.A., Datta, G.C., Miah, M.A., Sarker, A.K., Hamid, S.M.A. and Sunny, A.R., Performance study of selected orange fleshed sweet potato varieties in north eastern Bangladesh, Int. J. Environ. Agric. Biotechnology, 5, pp.673-682, 2020.

Mekonnen, B., Tulu, S. and Nego, J., Evaluation of orange fleshed sweet potato (*Ipomoea batatas*

L.) varieties for yield and yield contributing parameters in the humid tropics of Southwestern Ethiopia, Journal of Plant Sciences, 10(5), pp.191-199, 2015.

Mbusa, H., Ngugi, K., Olubayo, F., Kivuva, B., Muthomi, J. and Nzuve, F., Agronomic performance of Kenyan orange fleshed sweet potato varieties, Journal of Plant Studies, 7(2):11-17, 2018.

Carey, E.E., M.A., Oyunga, L. K., Osambo, N.E.J.M. Smit, C. Ocittip'Obwoya, G. Turyamureeba, J. Low and V. Hagenimana, Using orange-fleshed sweet potato varieties to combat vitamin A deficiency and enhance market opportunities for smallholder farmers in sub-Saharan Africa, 2020.

How to cite this article:

Awoke Ali, Birehanu Habete and Mulat Getaneh. 2024. Root Yield and Growth Performance of Orange Fleshed Sweet Potato Varieties at Dera and Libokemkem Districts, North West Ethiopia. *Int.J.Curr.Res.Aca.Rev.* 12(2), 31-38. doi: https://doi.org/10.20546/ijcrar.2024.1202.004