SUMMARY

In Ethiopia sweet potato (*Ipomoea batatas* (L.) Lam.) is grown mainly in the densely populated southern part and in the eastern part of the country where the crop is considered as an insurance crop. This crop has recently attracted interest as a potential cash crop and producers are faced with production problems. The aim of this study was to better understand factors affecting production and productivity. This was achieved through the following:

1. Investigation of the origin and structure of adventitious roots
2. Effect of temperature and soil moisture content on establishment of cuttings
3. Influence of cutting characteristics on storage root formation at individual nodes
4. Effect of cutting characteristics on yield and yield components
5. Growth analyses studies and
6. Study the effect of plant population.

The experiment on origin and structure of adventitious roots in sweet potato provided a good opportunity for better understanding of the origin of the preformed root primordia on sweet potato vine cuttings. The main objectives of this study were to investigate the origin of adventitious roots and provide additional information on the structure of sweet potato roots and find possible relationships between origin, structure and function of the roots.

The conclusions from this study can be summarized as follows:

1. Most adventitious roots in sweet potato are derived from preformed root primordia, situated at both sides of the node at the leaf base and ranging from four to ten in number.
2. Wound roots develop from cut ends of stems, leaf petioles, and other wounds on stem in response to the wounding effect in preparing the cuttings.

3. Both nodal and wound adventitious roots have the potential to develop into storage or pencil roots.
4. Lateral roots from adventitious roots and from damaged preformed root primordia are normally non-pigmented, tetrarch or infrequently pentarch, with no potential to develop into storage roots.

The experiment on the effect of temperature and soil moisture content on establishment of sweet potato cuttings provided information on early root development. The main objective was to determine the effect of temperature and soil moisture content on root and shoot growth during establishment of cuttings. The conclusions from this study can be summarized as follows:

1. Temperatures ranging from 24 to 28 ^{o}C were found to be the most suitable for early root and shoot growth.
2. Better root growth was achieved at 80% of field capacity. Lower or higher moisture regimes resulted in less root growth, but even at an initial moisture content of 40% of field capacity, substantial root development occurred.

The experiment on influence of cutting characteristics on storage root formation at individual nodes of cuttings quantified the contribution of individual subterranean nodes to total storage root number and mass. The main objectives of this study were to determine the contribution made by individual subterranean nodes of terminal, middle and basal cuttings to storage root formation, and to determine the influence of cutting orientation and presence or absence of leaves on cuttings, on storage root formation on individual nodes. The results can be summarized as follows:

1. Similar numbers of storage roots were formed at each of the subterranean nodes.
2. Almost half of the storage root fresh mass accumulated at node 1. This distribution pattern may reflect the relative proximity of the node to the source of the assimilates from the leaves.
3. Considering the result of this experiment there may be little benefit in planting more than three nodes below the soil surface.

The field experiments were conducted in Ethiopia at Awasa and Melkassa Research Centers. The cutting characteristics experiment evaluated three Ethiopian sweet potato genotypes for their ability to produce storage root yield, using two positions of planting (horizontal and vertical), two types of planting material (terminal vine cuttings with and without leaves) and three cutting length (20, 25 and 30 cm). Conclusions from this study can be summarized as follows:

1. The cutting treatments did not have a major effect on storage root yield, whether cuttings were 20, 25 and 30 cm long planted with or without leaves.
2. Large differences occurred in yield between locations, the cultivars responded similarly to the treatments at both locations.

Regarding the dry matter production and partitioning I evaluated three Ethiopian sweet potato cultivars for their ability to produce and partition assimilates to different plant parts. The highest yielding cultivar at both locations had a larger canopy size (LAI) and duration (LAD), crop growth rate (CGR) and tuber-bulking rate (TBR). The variability among cultivars in dry mass production and partitioning suggested that the development of cultivars of high dry matter production and partitioning to the storage root is possible in the future.

The effect of planting density on the performance of three Ethiopian sweet potato genotypes was studied. Similar and consistent increases in total storage root yield of all three cultivars were observed as the plant population increased from 50,000 to 100, 000 cuttings. This consistent increase in yield with increasing planting density up to 100, 000 cuttings per hectare clearly indicates the potential to increase storage root yield. However, this recommendation diverge from the lower plant populations often recommended for sweet potato production in other countries and should be substantiated in on-farm trials.

APPENDIX

Appendix Table A6.1 Summary of weather data at Melkassa.

2001	Rainfall mm	Air temperature (°C) Min	Air temperature (°C) Max	Evapo-ration mm	Relative H %	Sunshine Hrs/day
March	96.7	15.5	28.9	210.2	58	6.8
April	27.0	14.9	31.2	247.8	44	9.8
May	137.6	16.7	30.5	192.2	54	9.0
June	103.0	16.4	28.5	165.5	53	8.2
July	221.4	16.2	26.4	152.4	64	7.8
August	159.4	15.8	25.8	131.3	71	6.8
Sept	50.8	13.5	28.2	229.4	59	8.9
October	1.4	12.3	30.1	227.2	46	8.6
1977-2001						
March	43.8	15.6	30.2	8.8	58	8.8
April	47.3	15.2	29.8	8.2	62	8.2
May	52.2	15.4	30.9	8.5	59	8.2
June	72.1	16.2	30.0	7.1	69	8.7
July	188.9	15.4	26.6	5.8	80	8.3
August	176.9	15.2	26.2	5.4	83	6.9
Sept	83.7	14.2	27.4	5.2	75	7.2
October	47.6	11.8	28.0	7.0	63	7.4
Total	811					
Mean		13.8	28.6			

Appendix Table A6.2 Summary of weather data at Awasa.

2001	Rainfall mm	Mean daily temperature (°C)		Evapo-ration mm	Relative H %
May	225.9	20.8		66.6	70
June	151.7	19.7		75.6	72
July	115.0	16.8		80.7	71
August	126.2	19.8		68.5	73
Sept	112.9	19.9		105.2	75
October	71.2	20.4		121.3	69
1972-2001		Min	Max		
May	178.1	18.2	26.5	8.5	59
June	97.4	18.3	21.4	7.1	69
July	110.2	16.8	20.0	5.8	80
August	149.3	18.2	20.4	5.4	83
Sept	129.9	18.2	20.2	5.2	75
October	89.8	18.3	20.0	7.0	63
Total	1055				
Mean		12.5	26.6		

Appendix Table A6.3 Total storage root number of the three sweet potato cultivars in all possible combinations of the 36 treatments at Melkassa Significant at the P≤0.05 level

Cultivar	Cutting length (cm)	Type of planting material cutting	Orientation of cutting	Total number of roots /m^2
Awasa-83	20	Without leaves	Vertical	11.5
	20	Without leaves	Horizontal	17.3
	20	With leaves	Vertical	13.3
	20	With leaves	Horizontal	17.6
	25	Without leaves	Vertical	12.9
	25	Without leaves	Horizontal	15.0
	25	With leaves	Vertical	11.5
	25	With leaves	Horizontal	17.6
	30	Without leaves	Vertical	16.4
	30	Without leaves	Horizontal	15.0
	30	With leaves	Vertical	16.3
	30	With leaves	Horizontal	12.9
Mean				14.8c
Bareda	20	Without leaves	Vertical	19.4
	20	Without leaves	Horizontal	34.7
	20	With leaves	Vertical	22.2
	20	With leaves	Horizontal	21.8
	25	Without leaves	Vertical	18.5
	25	Without leaves	Horizontal	19.8
	25	With leaves	Vertical	26.9
	25	With leaves	Horizontal	29.5
	30	Without leaves	Vertical	19.5
	30	Without leaves	Horizontal	39.5
	30	With leaves	Vertical	20.6
	30	With leaves	Horizontal	18.6
Mean				24.3b
Kudadie	20	Without leaves	Vertical	58.5
	20	Without leaves	Horizontal	25.1
	20	With leaves	Vertical	57.4
	20	With leaves	Horizontal	58.1
	25	Without leaves	Vertical	52.7
	25	Without leaves	Horizontal	51.2
	25	With leaves	Vertical	46.8
	25	With leaves	Horizontal	85.6
	30	Without leaves	Vertical	62.2
	30	Without leaves	Horizontal	41.9
	30	With leaves	Vertical	50.7
	30	With leaves	Horizontal	82.0
Mean				56.0a
C.V%				35.4

Appendix Table A6.4 Total storage root yield of the three sweet potato cultivars in all possible combinations of the 36 treatments at Melkassa (Significant at the P≤0.05 level)

Cultivar	Cutting length (cm)	Type of planting material Cutting	Orientation of cutting	Total yield t ha $^{-1}$
Awasa-83	20	Without leaves	Vertical	29.6
	20	Without leaves	Horizontal	57.9
	20	With leaves	Vertical	47.7
	20	With leaves	Horizontal	59.5
	25	Without leaves	Vertical	38.0
	25	Without leaves	Horizontal	67.4
	25	With leaves	Vertical	38.6
	25	With leaves	Horizontal	61.2
	30	Without leaves	Vertical	42.2
	30	Without leaves	Horizontal	55.3
	30	With leaves	Vertical	50.7
	30	With leaves	Horizontal	45.5
Mean				49.5c
Bareda	20	Without leaves	Vertical	82.8
	20	Without leaves	Horizontal	189.0
	20	With leaves	Vertical	68.2
	20	With leaves	Horizontal	93.6
	25	Without leaves	Vertical	71.5
	25	Without leaves	Horizontal	90.9
	25	With leaves	Vertical	53.0
	25	With leaves	Horizontal	103.6
	30	Without leaves	Vertical	86.3
	30	Without leaves	Horizontal	157.5
	30	With leaves	Vertical	63.0
	30	With leaves	Horizontal	79.3
Mean				94.9b
Kudadie	20	Without leaves	Vertical	119.6
	20	Without leaves	Horizontal	109.0
	20	With leaves	Vertical	130.7
	20	With leaves	Horizontal	185.8
	25	Without leaves	Vertical	112.7
	25	Without leaves	Horizontal	142.9
	25	With leaves	Vertical	122.7
	25	With leaves	Horizontal	131.6
	30	Without leaves	Vertical	113.9
	30	Without leaves	Horizontal	149.7
	30	With leaves	Vertical	122.4
	30	With leaves	Horizontal	223.4
Mean				138.7a
C.V%				48.5

Appendix Table A6.5 Total storage root number of the three sweet potato cultivars in all possible combinations of the 36 treatments at Awasa (significant at the P≤0.05 level)

Cultivar	Cutting length (cm)	Type of planting material cutting	Orientation of cutting	Total number of roots /m^2

Awasa-83	20	Without leaves	Vertical	16.8
	20	Without leaves	Horizontal	20.8
	20	With leaves	Vertical	14.6
	20	With leaves	Horizontal	15.9
	25	Without leaves	Vertical	18.3
	25	Without leaves	Horizontal	22.1
	25	With leaves	Vertical	16.6
	25	With leaves	Horizontal	16.4
	30	Without leaves	Vertical	19.6
	30	Without leaves	Horizontal	26.1
	30	With leaves	Vertical	15.3
	30	With leaves	Horizontal	16.2
Mean				18.2b
Bareda	20	Without leaves	Vertical	22.2
	20	Without leaves	Horizontal	20.7
	20	With leaves	Vertical	17.6
	20	With leaves	Horizontal	15.5
	25	Without leaves	Vertical	22.4
	25	Without leaves	Horizontal	19.2
	25	With leaves	Vertical	12.0
	25	With leaves	Horizontal	17.6
	30	Without leaves	Vertical	21.8
	30	Without leaves	Horizontal	30.7
	30	With leaves	Vertical	18.3
	30	With leaves	Horizontal	17.3
Mean				19.6b
Kudadie	20	Without leaves	Vertical	16.7
	20	Without leaves	Horizontal	29.7
	20	With leaves	Vertical	36.0
	20	With leaves	Horizontal	28.5
	25	Without leaves	Vertical	27.0
	25	Without leaves	Horizontal	28.0
	25	With leaves	Vertical	31.2
	25	With leaves	Horizontal	24.6
	30	Without leaves	Vertical	30.3
	30	Without leaves	Horizontal	32.6
	30	With leaves	Vertical	29.1
	30	With leaves	Horizontal	23.2
Mean				28.1a
C.V%				24.3

Appendix Table A6.6 Total storage root yield of the three sweet potato cultivars in all possible combinations of the 36 treatments at Awasa (Significant at the P≤0.05 level)

Cultivar	Cutting length (cm)	Type of planting material cutting	Orientation of cutting	Total number of roots /m^2
Awasa-83	20	Without leaves	Vertical	35.6
	20	Without leaves	Horizontal	56.4
	20	With leaves	Vertical	37.5
	20	With leaves	Horizontal	46.5
	25	Without leaves	Vertical	41.3

	25	Without leaves	Horizontal	54.2
	25	With leaves	Vertical	42.9
	25	With leaves	Horizontal	45.0
	30	Without leaves	Vertical	43.6
	30	Without leaves	Horizontal	63.8
	30	With leaves	Vertical	42.8
	30	With leaves	Horizontal	43.6
Mean				46.1c
Bareda	20	Without leaves	Vertical	61.9
	20	Without leaves	Horizontal	89.4
	20	With leaves	Vertical	49.2
	20	With leaves	Horizontal	69.5
	25	Without leaves	Vertical	75.9
	25	Without leaves	Horizontal	79.7
	25	With leaves	Vertical	50.3
	25	With leaves	Horizontal	60.5
	30	Without leaves	Vertical	56.7
	30	Without leaves	Horizontal	103.3
	30	With leaves	Vertical	44.6
	30	With leaves	Horizontal	63.8
Mean				67.0b
Kudadie	20	Without leaves	Vertical	48.9
	20	Without leaves	Horizontal	81.4
	20	With leaves	Vertical	82.8
	20	With leaves	Horizontal	96.1
	25	Without leaves	Vertical	70.9
	25	Without leaves	Horizontal	82.0
	25	With leaves	Vertical	79.3
	25	With leaves	Horizontal	93.5
	30	Without leaves	Vertical	77.3
	30	Without leaves	Horizontal	80.1
	30	With leaves	Vertical	62.6
	30	With leaves	Horizontal	65.5
Mean				76.7a
C.V%				27.2

Appendix Table A7.1 Root dry mass (g/plant) at Melkassa

Treatment	AW-83	Bareda	Falaha
45 DAP	0.7c	1.3c	6.1d
60 DAP	6.0c	8.3c	6.7d
75 DAP	21.0c	14.8c	56.2cd
90 DAP	43.9.0 bc	51.9c	64.6cd
105 DAP	114.9bc	300.1bc	187.6bc
120 DAP	173.2ab	423.4abc	282.6ab
135 DAP	183.6ab	603.8ab	324.5ab
150 DAP	274.3a	849.8a	418.9a
LSD_T	152.66	152.66	152.66
MEAN	102.2	281.7	168.4
CV %	87.5	90.1	61.8

Appendix Table A7.2 Stem dry mass (g/plant) at Melkassa

Treatment	AW-83	Bareda	Falaha
45 DAP	7.0c	6.0c	5.0d
60 DAP	16.2c	11.6c	5.9d
75 DAP	16.8c	11.2c	18.5cd
90 DAP	48.2bc	84.2bc	27.9cd
105 DAP	84.9bc	139.3bc	47.5bcd
120 DAP	62.4bc	204.2ab	54.1bc
135 DAP	225.4a	178.0ab	110.0a
150 DAP	146.6ab	276.5a	86.6ab
LSD_T	59.96	59.96	59.96
MEAN	75.9	113.9	43.2
CV %	81.4	68.2	56.8

Appendix Table A7.3 Leaf dry mass (g/plant) at Melkassa

Treatment	AW-83	Bareda	Falaha
45 DAP	11.7b	8.5b	7.8d
60 DAP	20.8b	16.1b	10.4d
75 DAP	17.7b	14.0b	25.4cd
90 DAP	50.9ab	78.9ab	33.1bcd
105 DAP	68.4ab	98.5a	57.1abc
120 DAP	64.7ab	142.8a	54.2abc
135 DAP	166.0a	121.8a	90.6a
150 DAP	93.1ab	141.0a	67.2ab
LSD_T	38.3	38.3	38.3
MEAN	61.7	77.7	43.2
CV %	66.5	66.5	66.5

Appendix Table A7.4 Mean percent dry matter partitioned to different organs for the three cultivars at different stage of growth at Melkassa.

Treat	Roots			Stems			Leaves		
DAP	**Aw-83**	**Bared**	**Falaha**	**Aw-83**	**Bared**	**Falaha**	**Aw-83**	**Bared**	**Falaha**
45 DAP	3.6	8.2	32.2	36.1	38.0	26.5	60.3	53.8	41.3
60 DAP	13.9	23.1	29.1	37.6	32.2	25.7	48.3	44.7	45.2
75 DAP	37.8	37.0	56.2	30.3	28.0	18.5	31.9	35.0	25.4
90 DAP	30.8	24.2	51.4	33.7	39.2	22.2	35.6	36.7	26.4
105 DAP	42.9	55.5	64.2	31.7	25.8	16.3	25.5	18.2	19.5
120 DAP	59.1	63.5	72.3	20.1	21.5	13.8	20.8	15.0	13.9
135 DAP	30.7	58.5	61.8	39.9	24.6	21.4	29.4	20.9	17.3
150 DAP	53.3	67.1	73.1	28.5	21.8	15.1	18.1	11.1	11.7
Mean	34.0	42.1	55.0	32.2	28.9	19.9	33.7	29.4	25.1

Data not statistically analyzed

Appendix Table A7.5 Root dry mass (g/ plant) at Awasa

Treatment	AW-83	Bareda	Falaha
45 DAP	8.2c	4.2b	2.1c
60 DAP	5.1c	3.5b	3.6c
75 DAP	24.2c	16.0b	11.2bc
90 DAP	20.2c	27.4b	34.1bc
105 DAP	59.4bc	34.7b	41.6bc
120 DAP	29.5c	112.4a	52.3bc
135 DAP	109.8b	125.8a	82.3ab
150 DAP	204.4a	143.9a	147.3a
LSD_T	35.5	35.5	35.5
Mean	57.6	58.5	46.8
CV %	68.9	68.9	68.9

Appendix Table A7.6 Stem dry mass (g/ plant) at Awasa

Treatment	AW-83	Bareda	Falaha
45 DAP	14.1c	14.8b	5.4b
60 DAP	19.2c	19.0b	8.2b
75 DAP	47.3bc	45.9ab	32.0ab
90 DAP	103.0ab	47.0ab	46.3ab
105 DAP	61.1bc	71.5a	65.8a
120 DAP	73.2bc	59.7ab	32.1ab
135 DAP	110.5ab	84.5a	42.9ab
150 DAP	157.3a	68.1a	80.1a
LSD_T	33.8	33.8	33.8
Mean	73.1	51.3	39.1
CV %	65.3	65.3	65.3

Appendix Table A7.7 Leaf dry mass (g/ plant) at Awasa

Treatment	AW-83	Bareda	Falaha
45 DAP	14.6c	25.7a	7.2c
60 DAP	23.4c	26.1a	14.1bc
75 DAP	39.7abc	37.3a	27.6abc
90 DAP	50.4ab	14.6a	33.1abc
105 DAP	43.2abc	44.7a	64.6a
120 DAP	38.4abc	40.3a	29.1abc
135 DAP	67.5a	38.7a	46.1ab
150 DAP	68.1a	26.6a	55.3a
LSD_T	18.4	18.4	18.4
Mean	43.2	31.7	34.6
CV %	53.1	53.1	53.1

Appendix Table A7.8 Mean percent dry matter partitioned to different organs for the three cultivars at different stage of growth at Awasa

Treat	Roots			Stems			Leaves		
DAP	**Aw-83**	**Bared**	**Falaha**	**Aw-83**	**Bared**	**Falaha**	**Aw-83**	**Bared**	**Falaha**
45 DAP	22.2	9.4	14.3	38.1	32.2	36.7	39.5	57.6	49.0
60 DAP	10.7	7.2	14.0	40.3	39.1	31.8	49.2	53.7	54.7
75 DAP	21.8	16.1	15.8	42.5	46.3	45.1	35.7	37.6	38.9
90 DAP	11.6	30.8	30.0	59.3	52.7	40.8	29.1	16.4	29.2
105 DAP	36.3	23.0	24.2	37.3	47.4	38.2	26.4	29.6	37.5
120 DAP	20.9	52.9	46.0	51.8	28.1	28.3	27.2	19.0	25.6
135 DAP	38.2	50.5	48.1	38.4	33.9	25.1	23.5	15.5	26.9
150 DAP	47.6	60.3	52.1	36.6	28.5	28.3	15.8	11.1	19.6
Mean	26.2	31.3	30.6	43.0	38.5	34.3	30.8	30.1	35.2

Data not statistically analyzed

Appendix Table A7.9 Mean dry mass production of roots, stems and leaves of the three cultivars (g/plant) at different stage of growth at both sites

	Roots		Stems		Leaves		Total	
DAP	**Melk**	**Awasa**	**Melk**	**Awasa**	**Melk**	**Awasa**	**Melk**	**Awasa**
45	2.71e	4.04e	6.00c	11.43d	9.34e	15.83c	18.10d	32.11d
60	6.98e	4.86e	11.25c	15.48d	15.78e	21.15bc	34.00d	40.68d
75	30.63e	17.17de	15.47bc	41.71cd	19.04de	34.87ab	65.10d	93.75cd
90	53.44de	27.22de	54.40bc	65.33bc	54.30cd	32.68abc	161.10cd	127.23c
105	200.85cd	45.25cd	90.55b	66.14bc	74.67abc	50.87a	388.60bc	162.26c
120	356.64b	64.74c	106.92b	55.02bc	87.24bc	35.92ab	550.80b	155.70c
135	307.03cd	105.87b	167.81a	79.31ab	126.14a	50.76a	601.00ab	235.94b
150	514.33a	165.21a	169.90a	101.84a	100.46ab	49.98a	784.70a	317.03a
Mean	184.08	54.30	77.66	54.53	60.87	36.51	322.94	145.59
LSD_T	152.7	35.5	59.9	33.8	38.4	18.4	230.1	73.3
C.V %	87.5	68	81.45	65.33	66.48	53.16	75.17	53.11

Appendix Table A7.10 Percent dry matter partitioned to different parts of sweet potato crop during different growth stages.

	Roots		Stems		Leaves	
DAP	**Awasa**	**Melkassa**	**Awasa**	**Melkassa**	**Awasa**	**Melkassa**
45	12.58	14.97	35.60	33.15	49.30	51.60
60	11.95	20.52	38.05	33.09	52.00	46.41
75	18.31	47.05	44.49	23.75	37.19	29.25
90	21.39	33.17	51.35	33.77	25.69	33.71
105	27.89	51.69	40.76	23.30	31.35	19.22
120	41.58	64.75	35.34	19.41	23.07	15.84
135	44.87	51.09	33.61	27.92	21.51	21.00
150	52.11	65.55	32.12	21.65	15.77	12.80
Mean	28.81	43.60	38.9	27.0	32.0	28.7

Not statistically analyzed

Appendix Table A8. 1 Effect of planting density on total storage root yield of three sweet potato cultivars in Ethiopia

	Density (plants ha $^{-1}$)				
	50,000	**55,555**	**75,000**	**100.000**	
Cultivar	**Total storage root yield (t ha $^{-1}$)**				**Means**
Falaha	45.1	57.9	64.1	76.7	61.0
Bareda	52.1	74.5	64.9	89.7	70.3
Awasa-83	52.7	52.4	61.6	78.3	61.3
Density means	50.0	61.6	63.5	81.6	
Overall mean					64.2

LSD cultivar = 12.4
LSD density = 14.3
LSD C x D = NS
CV = 27%

Appendix Table A8. 2 Effect of planting density on marketable storage root yield per hectare of three sweet potato cultivars in Ethiopia

	Density (plants ha $^{-1}$)				
	50,000	**55,555**	**75,000**	**100.000**	
Cultivar	**Marketable storage root yield t ha $^{-1}$**				**Means**
Falaha	36.9	48.4	54.7	63.7	50.9
Bareda	33.0	38.3	46.5	72.2	47.5
Awasa-83	44.8	41.3	53.6	61.0	50.2
Density means	38.2	42.6	51.6	65.6	
Overall mean					49.5

LSD cultivar = 7.8
LSD density = 9.0
LSD C x D = NS
CV = 21.9%

Appendix Table A8. 3 Effect of planting density on total root dry mass yield t ha $^{-1}$ of three sweet potato cultivars in Ethiopia

	Density (plants ha $^{-1}$)				
	50,000	**55,555**	**75,000**	**100.000**	
Cultivar	**Total root dry mass yield (t ha $^{-1}$)**				**Means**
Falaha	12.1	14.7	15.9	19.8	15.6
Bareda	12.9	20.4	17.6	25.4	19.1
Awasa-83	15.6	15.4	20.9	25.7	19.4
Density means	13.6	16.8	18.1	23.6	
Overall mean					18.0

LSD cultivar = 3.6
LSD density = 4.0
LSD C x D = NS
CV = 27.5%

Appendix Table A8. 4 Effect of planting density on marketable root dry mass yield per hectare of the three sweet potato cultivars in Ethiopia

	Density (plants ha $^{-1}$)				
	50,000	**55,555**	**75,000**	**100.000**	
Cultivar	**Marketable root dry mass yield t ha $^{-1}$**				**Means**
Falaha	9.9	12.3	13.6	16.4	13.0
Bareda	8.2	10.8	12.6	20.5	13.0
Awasa-83	13.3	12.4	18.1	19.8	15.9
Density means	10.4	11.8	14.8	18.9	
Overall mean					14.0

LSD cultivar = 2.5
LSD density = 2.9
LSD C x D = NS
CV = 25.1%

Appendix Table A8.5 Effect of planting density on total and marketable storage root numbers plant $^{-1}$ and ha $^{-1}$ of three sweet potato cultivars in Ethiopia

		Root number plant $^{-1}$	
Planting density	**Cultivar**	**Total**	**Marketable**
50.000	**Falaha**	7.6	3.5
50.000	**Bareda**	3.1	2.0
50.000	**Awasa-83**	4.6	3.0
55,555	**Falaha**	8.4	3.9
55,555	**Bareda**	3.1	2.0
55,555	**Awasa-83**	3.8	2.6
75,000	**Falaha**	6.8	3.6
75,000	**Bareda**	3.4	2.1
75,000	**Awasa-83**	3.4	2.5
100,000	**Falaha**	5.6	2.9
100,000	**Bareda**	2.9	2.2
100,000	**Awasa-83**	3.1	2.2
LSD_T population		1.1	0.4
LSD_T cultivar		1.0	0.4
Mean		4.7	2.7
C.V%		29.3	19.9