

SWEET POTATO TRIALS CONDUCTED BY H.MUSK AND S.J.F.DIAS

UNDER THE SUPERVISION OF PROFESSOR J.S.DASH.

OCTOBER 1926 ---- MARCH 1927.

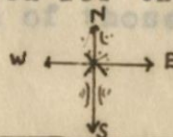
Twelve varieties were selected for trial, each variety being planted in plots each 1/40 of an acre, and being replicated five times.

SOIL:-

The soil conditions of the field were not ideal for a variety trial as it was decidedly "patchy". In one place in the field there was a large patch covering about 3 plots of a dark soil, while the rest was of a heavy "clay loam" type, getting progressively heavier from West to East, and of better tilth from North to South.

CULTIVATION:-

The field was new ground recently brought under cultivation. The preparation for planting was ploughing, and then ridging, the ridges running from East to West. These were 4 feet apart, and 15 inches high. The ridges were made by plough and finished off by hand. Drains were cut through the ridges to separate the plots, the drains running from North to South. The plots along the South side of the field had an extra ploughing owing to some miscalculation in the area required for the experiment.



THE LAYOUT OF THE EXPERIMENT:-

White Jackson	Hen & Chicken	Black Sam	Pumpkin Steward	Sealy
Joe Mendes	Sealy	Prince William	Jackson	Black Sam
Turkey Claw	Pumpkin Steward	White Hen and Chicken	Black Vine	Hen and Chicken
White Hen and Chicken	Jackson	Turkey Claw	Sealy	White Sam
Prince William	Black Vine	Joe Mendes	Hen & Chicken	Pumpkin Steward
Black Sam	White Sam	White Jackson	Prince William	Jackson
White Sam	Joe Mendes	Pumpkin Steward	Black Sam	Turkey Claw
Black Vine	Turkey Claw	Sealy	White Sam	White Jackson
Jackson	White Hen and Chicken	Hen & Chicken	Joe Mendes	Black Vine
Pumpkin Steward	Prince William	White Sam	White Jackson	White Hen & Chicken
Sealy	Black Sam	Black Vine	Turkey Claw	Joe Mendes
Hen & Chicken	White Jackson	Jackson	White Hen and Chicken	Prince William

- In each plot there were 5 banks, and 55 plants were planted along each bank, the plants being a foot apart, thus making a total of 275 plants per plot, and a total of 11,000 plants per acre.

The dark soil that has already been mentioned under "Soil" was situated in the first and second series. The actual plots of it, were occupied by Turkey Claw, and parts of Joe Mendes and Hen and Chicken in the first series of plots, and in the second series by parts of Sealy and Pumpkin Steward. This dark soil did not noticeably reflect on the yield or quality of the potatoes so that it is entirely ignored in the final results.

FOREWORD RE DESCRIPTIONS.

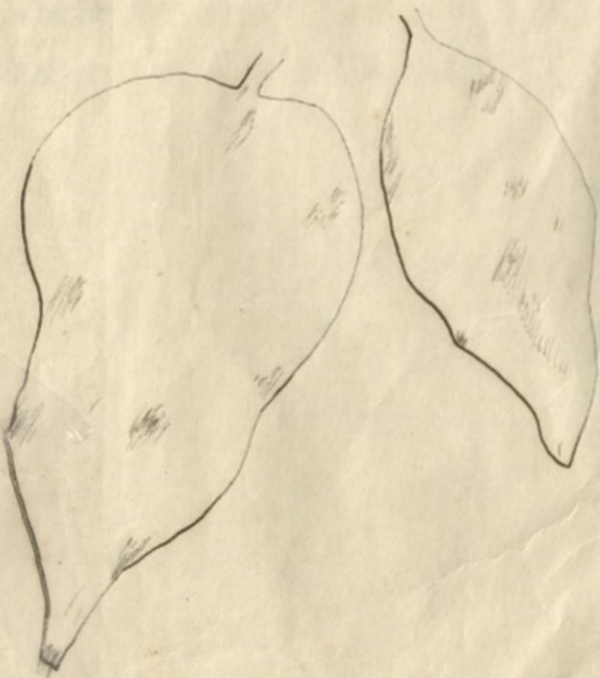
In the descriptions the word upright has been used to denote those varieties which grow upright for a distance and then fall over and become creeping. All varieties with the exception of Hen and Chicken could be termed "creeping".

It was noticeable that the time that the potatoes had been dug was reflected in the waxyness of the potatoes after cooking. And as each variety was eaten almost straight from the field, they were all with the exception of those we have called mealy of a waxy nature.



JOE MENDES

drawings 1/2 natural size



JOE MENDES.

HABIT:-

The habit of the variety is coarse and upright, the vines not reaching more than 6 feet as a maximum.

The stems are very succulent, and are green in colour. The variety affords a good cover to the land.

LEAVES:-

The leaves are large, coarse, and deep green in colour. They are deeply indentated and irregular in shape. The peduncles are green. The veination on the underside is also green or very slightly purple.

FLOWERS:-

The flowers are borne on short stalks, and do not appear above the leaf surface. They are Mauve in colour with a deeper throat. The variety is not a prolific flowerer, and we failed to find any seed capsules that had been fertilised.

TUBERS:-

The tubers are large and roundish, of a good marketable shape, and are found clustered round the stem. In colour they are brownish yellow with an even skin, and on cutting are white.

After cooking they are pale yellow, and have only medium quality but good appearance.

4a

DESCRIPTION OF VARIETIES.

WHITE JACKSON.

HABIT:-

The habit of the variety is rather coarse. The vine grows more or less upright, and is of medium length (3--6 feet). The vines are thick and succulent, and green in colour. It makes a good cover for the ground.

LEAVES:-

The leaves are large, cordate, and entire; they have green peduncles very slightly tinted with purple where they join the lamina of the leaves. The veinations on the underside of the leaves are slightly purplish in colour. New leaves are often of a faint purplish shade.

FLOWERS:-

The flowers are mauve, with a deeper coloured throat. They are borne on fairly short stalks, and do not show conspicuously above the leaves. The variety is not a prolific flowerer. Only an odd fertile seed capsule was found in searching through 55 plants.

TUBERS:-

The tubers are creamish white, with pinkish blotches around the ends and any indentations. The tubers occur on the stems, a little away from the main stem of the plant. The tubers are of a good shape and size, neither too large or too small. They have a smooth skin, and a good appearance. On cutting they are white.

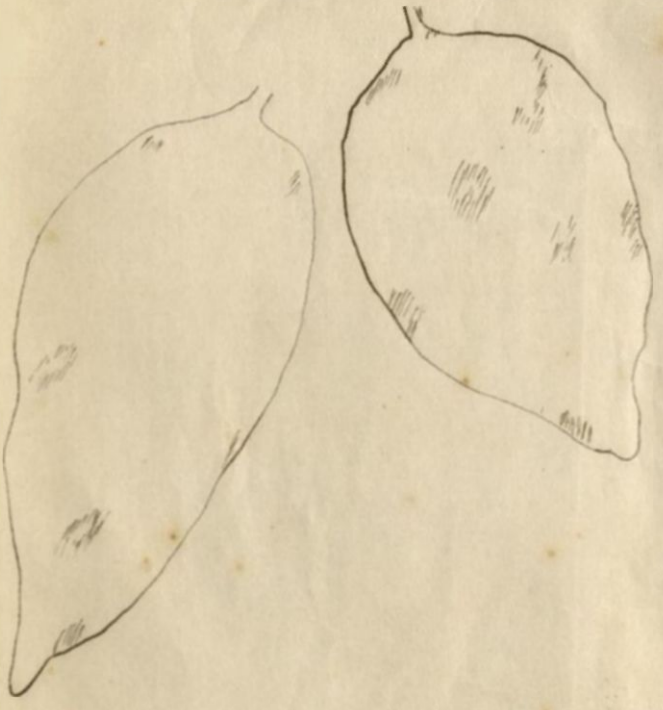
After cooking, they became bluish white, and have a good taste* and quality.

*The tasting was done by 6 people, and their joint opinion is the source of the remark.



WHITE JACKSON

drawings 1/2 natural size





TURKEY CLAW

drawings 1/2 natural size



5

TURKEY CLAW.

HABIT:-

This variety is very coarse in habit, it is a very quick grower of semi-upright nature, the vines often growing 8 feet or more in length.

The stems are green, very succulent, but tough. It makes a very rapid and good cover for the ground.

LEAVES:-

The leaves are large, very deeply indentated, and borne on exceptionally long green peduncles. The veination is slightly purple. The new leaves have a reddish tinge.

FLOWERS:-

The flowers are very few and are borne on short stems, and do not generally appear above the leaves. We were not able to find a single fertile seed capsule of this variety.

TUBERS:-

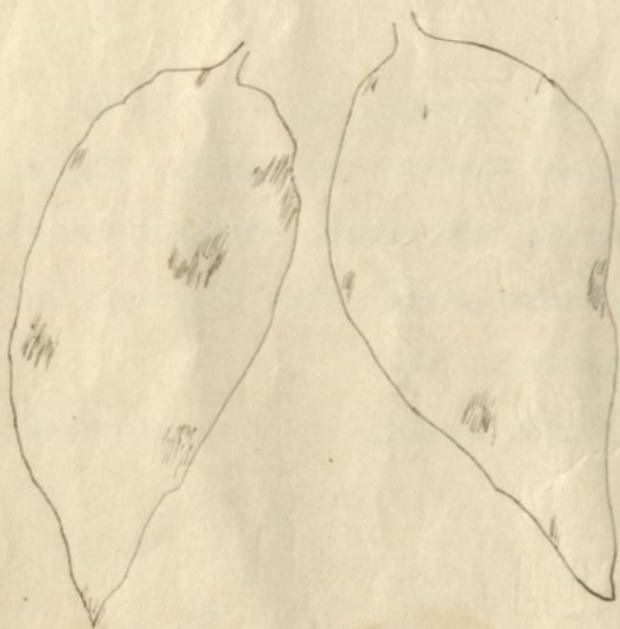
The tubers are reddish purple, smooth, and very long. They occur a long way away from the stem of the plant. There is a tendency for mutations to arise in the tuber, some tubers were found half white and half red. Their shape makes them not very marketable. The tuber on cutting is white.

On cooking the potato is white, mealy, and has an excellent flavour.



WHITE HEN & CHICKEN

drawings 1/2 natural size



WHITE HEN AND CHICKEN.

HABIT:-

In habit, this variety is compact and upright, the vines not reaching much more than a foot in length. It does not provide a good cover. The stems are thin and green.

LEAVES:-

The leaves are deeply lobed, green in colour with a whitish sheen. They have green peduncles. The veins on the reverse side of the leaves are green, with the faintest tinge of purple where the lamina joins the leaf.

FLOWERS:-

The flowers are mauve with deeper throat. They are borne on stems as long as the leaf peduncles, and are moderately conspicuous. The variety is a moderately free flowerer. An old flower sets seed.

TUBERS:-

The tubers are roundish in shape, clustered close to the haulm. They are whitish in colour, and are inclined to have grooves (this may be due to soil conditions in the experiment) running from the base to the apex. The skins are smooth, and the bulk of the potatoes are of a marketable size. In cross section the tubers are white.

On cooking, the tuber is a very pale yellow, and is inferior, being insipid in flavour.



PRINCE WILLIAM

drawings 1/2 natural size.



PRINCE WILLIAM.

HABIT:-

The variety is more or less erect in habit. The stems of the vines are streaked with purple, and may be from 5 to 6 feet long. The variety makes a quick and good cover for the ground. The stems are coarse, but more woody than most varieties.

LEAVES:-

The leaves are entire and cordate, of medium size. The leaf stalks have a purple colouration where the lamina joins the peduncle and where the leaf joins the stem. The venation is slightly purple.

FLOWERS:-

The flowers are mauve with a deeper throat, they are borne on shorter stems than the leaves and are in consequence not very conspicuous. There are few flowers, and we failed to find any that had been effectually fertilised.

TUBERS:-

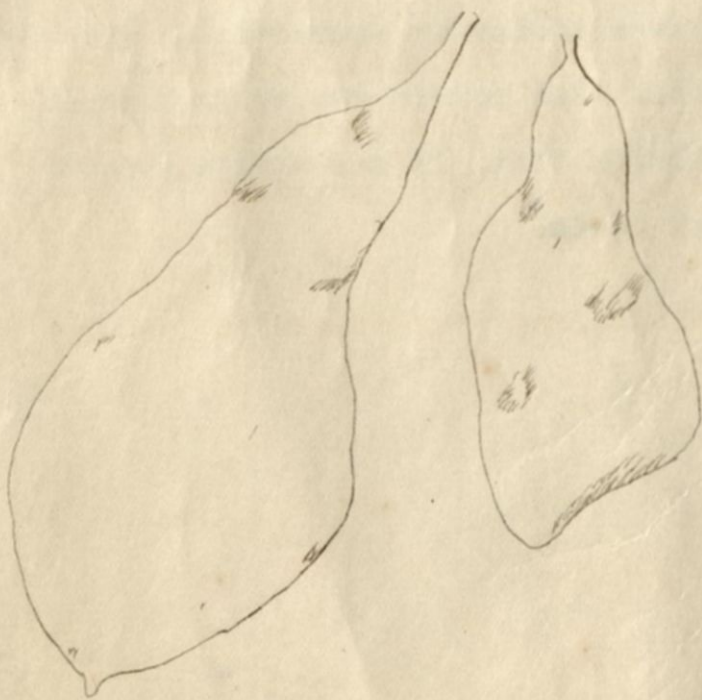
The tubers are reddish purple, of a round shape, and borne away from the stem of the plant. They were smooth in appearance, and were all either large or of a medium size. The potato was white inside.

On cooking, it took on a bluish tint, it was mealy, and of good quality both in appearance and taste.



BLACK SAM

drawings 1/2 natural size



BLACK SAM.

HABIT:-

In habit, the variety is semi-erect, the vines generally not reaching more than 2 feet in length, and being of medium thickness, and deep purple in colour. The variety does not afford a very effectual cover for the ground.

LEAVES:-

The leaves are entire, with 3 definite points (hastate). The stalks are ~~quite~~ purple, and so are the veins on the underside of the leaf. The general colour of the foliage is a dull metallic purplish green.

FLOWERS:-

The flowers are a deep shade of mauve, with a deeper throat. They are borne on stalks of equal length to those of the leaves, and they are conspicuous and quite numerous. Seed capsules were also fairly numerous.

TUBERS:-

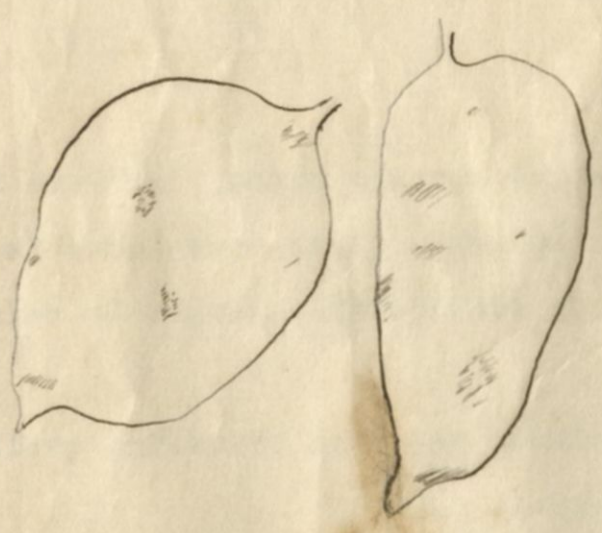
The tubers were of a roundish spindle shape, inclined to be rather large, and not very smooth skinned. They were borne in clusters near the haulm, and were a deep reddish purple in colour. The tubers are yellowish inside.

When cooked, they were yellow, and were of medium quality both in regards texture and flavour.



WHITE SAM

drawings 1/2 natural size



WHITE SAM.

HABIT:-

The variety is prostrate in habit, the vines often measuring more than 12 feet in length. The stems are streaked with purple, and are very strong. The variety makes a good cover crop though not very dense.

LEAVES:-

The leaves are deeply lobed, of medium size, and of a dark green colour. The petioles are streaked with purple. The venation on the under surface of the leaf is also purple. The number of lobes in each leaf is rather irregular.

FLOWERS:-

The flowers are mauve, with a deeper throat. They are borne on short stalks, and are very sparsely produced. They do not show above the leaves. We were unable to find a single capsule with fertile seed.

TUBERS:-

The tubers are long and spindle shaped, with a smooth white skin. They were borne fairly near to the haulm. A large number of "Whip" tubers were formed. The tubers were pale cream inside.

On cooking, the potatoes were bright yellow, and were of inferior quality both in flavour and appearance.



BLACK VINE

drawings 1/2 natural size



BLACK VINE.HABIT:-

This variety has a semi-erect habit, its stems reaching up to a length of about 8 feet, and which are of medium character (neither coarse or fine^{ne}). The stems are purplish in colour, and the plant forms a good cover for the ground.

LEAVES:-

The leaves are very deeply lobed, medium in size, and dark green with a purplish tinge in colour. The venation is deep purple and is very well marked. The peduncles of the leaves are also purplish.

FLOWERS:-

The flowers are mauve with a deeper throat. They are not numerous, and are borne on stalks shorter than those which bear the leaves. We were unable to find a single fertilised seed capsule.

TUBERS:-

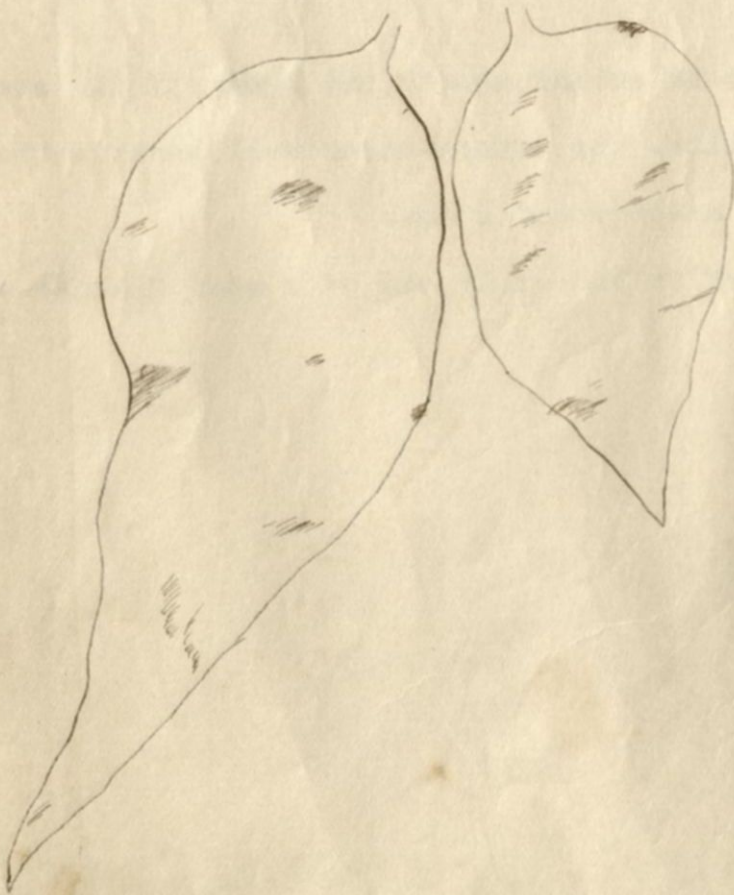
The tubers are deep purple in colour, smooth, and ~~long~~ spindle shaped. The interior of the potato is white. The tubers occur well towards the sides of the bank, on quite long underground stems.

On cooking, the potato is white and mealy, and of a good flavour and appearance.



JACKSON

drawings 1/2 natural size



11.

JACKSON:-

HABIT:-

In habit the variety is more or less upright and coarse, the individual vines reaching a length of from 4--6 feet. The stems are green and succulent. The variety makes a heavy cover for the soil.

* LEAVES:-

The leaves are cordate, large, entire, and bright green in colour. The veination on the undersurface of the leaves is very slightly purple. The peduncles are green with a touch of purple where they join the stem and lamina.

FLOWERS:-

The flowers are mauve with deeper coloured throats. They are scarce, and borne on stalks shorter than those of the leaves. An odd seed capsule was found.

TUBERS:-

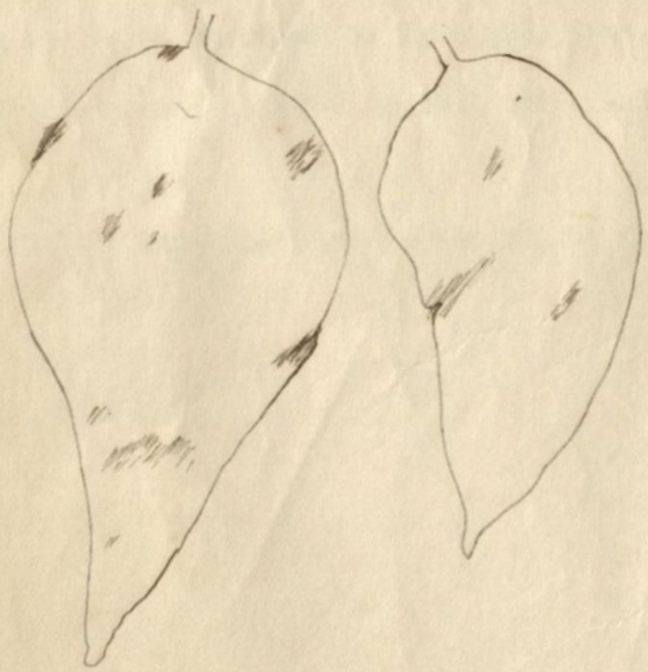
The tubers are reddish purple, and inclined to be unshapely and very large. They are often borne singly near the haulm of the plant. The inside of the tuber was white in colour.

On cooking, the potato is bluish white, and of medium quality both in appearance and taste.



PUMPKIN STEWARD

drawings 1/2 natural size



PUMPKIN STEWARD.

HABIT:-

In habit of growth, the variety is creeping, and has stems 3-4 feet in length, thin and quite green. It makes a light covering for the ground.

LEAVES:-

The leaves are small, entire, and cordate, the younger leaves being markedly reddish green. The venation on the underside of the foliage is very slightly purple.

FLOWERS:-

The flowers are mauve with deeper throats. They are numerous, and very conspicuous being borne on stems as long as those of the leaves. A very small percentage of the flowers set seed.

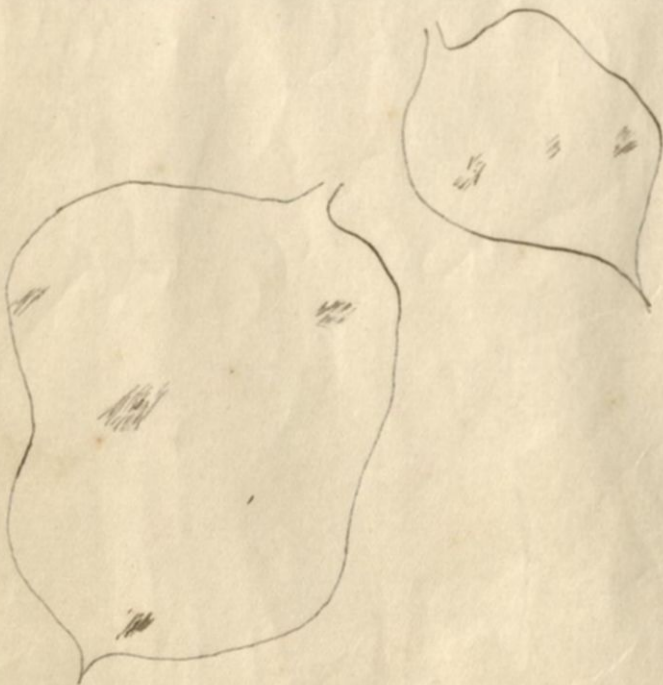
TUBERS:-

The tubers are of a good size and shape, and are of a distinctive orange colour. They are borne close to the stem of the plant. The skin is quite smooth. The inside of the tuber is yellow, which on boiling becomes a very deep shade. The quality is medium both in regard to appearance and flavour.



SEALY

drawings 1/2 natural size



SEALY.

HABIT:-

The variety is more or less upright in habit. It is a coarse grower having thick green vines from 4--6 feet long. It produces heavy cover for the ground.

LEAVES:-

The leaves are large, cordate, and entire, the venation and leaf stalks being entirely green.

FLOWERS:-

The flowers are mauve with deeper throats. They are not numerous, and are borne on shorter stalks than those of the leaves. An odd fertile seed capsule was found.

TUBERS:-

The tuber is a deep reddish purple in colour, it is roundish in shape, and often badly contorted. The tubers are borne near to the stem. On many plants there was one large ill-shaped potato. The interior is white.

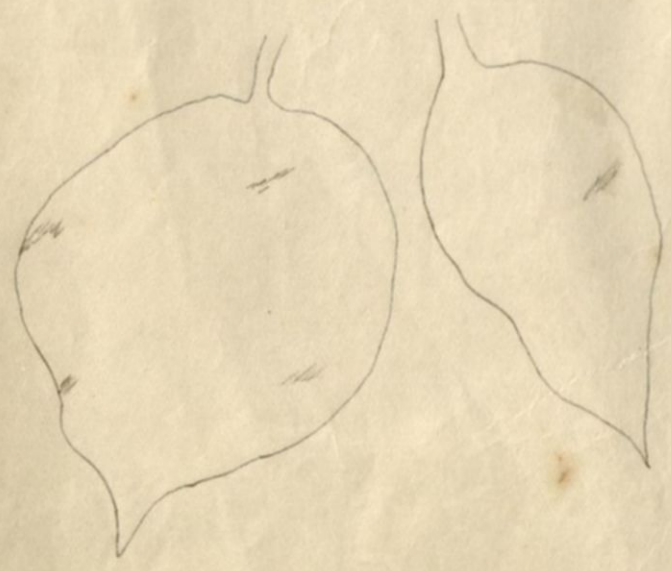
On cooking, the potato is bluish white, and has a good taste and appearance.

UWI LIBRARY ST. AUG.



HEN & CHICKEN

drawings 1/2 natural size



HEN AND CHICKEN.

PLANTING:-

Planting began on October 1st, and occupied 6 days. The sets were

HABIT:-

planted by native labour, holes being made in the banks with a cutlass, and a cutting inserted in each. A criticism might be made on the planting in that the sets were not planted as firmly as ideality would require.

This variety has a more or less upright habit of growth. The vines are generally not more than 3 feet in length. The stems are purplish, and of medium thickness. It makes a good cover to the ground.

CONDITION OF SETS:-

LEAVES:- were in a healthy condition, except for partial defoliation from a caterpillar attack which was no detriment to the experiment. Each set was from the end of a vine, and was about a foot in length.

The leaves are deeply lobed, dark green in colour, with purplish veination on the under surfaces. The leaf stalk is green shading to purple where it joins the lamina and at the pulvinus.

WEATHER CONDITIONS:-

FLOWERS:- The plants of planting a few days of dry weather made the sets look sickly.

The flowers are mauve with deeper throats, and are not numerous. They are borne on short stalks, shorter than those of the leaf stalks. Not a single fertile seed capsule was found.

THE PERCENTAGE OF PLANTS IN EACH VARIETY THAT ACTUALLY GROWN:-

TUBERS:-

The tubers are yellowish, and are found clustered near to the stem. They are of good marketable shape, and very uniform. On cutting, the inside is found to be pale yellow in colour.

After cooking, the potato is yellow, of a good appearance, but slightly watery and insipid to the taste.

Hen and Chicken.....	98.1%
Prince William.....	92.8%
White Star.....	91.9%
Black Vine.....	92.7%
Jackson.....	90.5%
Pumpkin Steward.....	75.0%

The relatively high mortality in Pumpkin Steward can be explained by its thin vines which have not a sufficient reserve of moisture to stand up to the wilting caused by the sun. Its inability to live for 6 days in fairly moist soil is a point against this variety when planting at a time when an early rain is not certain.

PLANTING:-

Planting began on October 1st, and occupied 6 days. The sets were planted by native labour, holes being made in the banks with a cutlass, and a cutting inserted in each. A criticism might be made on the planting in that the sets were not planted as firmly as ideality would require.

CONDITION OF SETS:-

The sets were in a healthy condition, except for partial defoliation from a caterpillar attack which was no detriment to the experiment. Each set was from the end of a vine, and was about a foot in length.

WEATHER CONDITIONS:-

At the time of planting a few days of dry weather made the sets look sickly, but after severe wilting, in the majority of cases, the plants recovered.

THE PERCENTAGE OF PLANTS IN EACH VARIETY THAT ACTUALLY GREW:-

White Jackson.....	97.4%
Joe Mendes.....	97.7%
Turkey Claw.....	99.9%
White Hen and Chicken.....	94.5%
Black Sam.....	96.1%
Sealy.....	96.2%
Hen and Chicken.....	98.1%
Prince William.....	92.8%
White Sam.....	91.9%
Black Vine.....	92.7%
Jackson.....	90.5%
Pumpkin Steward.....	75.0%

The relatively high mortality in Pumpkin Steward can be explained by its thin vines which have not a sufficient reserve of moisture to stand up to the wilting caused by the sun. Its inability to live for 6 days in fairly moist soil is a point against this variety when planting at a time when an early rain is not certain.

From the 22nd to the 24th of October the spaces caused by the drought and bad planting were refilled.

ADDITIONAL CULTURE:-

Early in November the plots were weeded, and the vines thrown towards the centre of the banks. One of the chief weeds was "Nut Grass"

NOTES ON PROGRESS:-

On November the 6th two plants of the Sealy variety were noted as wilting which proved to be an attack of the "Stem Borer" (larvae of the Pyralid Moth of Sweet Potatoes "Megastes Grandalis").

During the next two weeks odd plants throughout the plot wilted and died through Stem Borer attack. There seemed to be no preference for any variety, all varieties showed the mortality to be about 1--2%. Many vines though attacked showed no signs of wilting. (See account of attack at harvesting time on next page).

On November 25th four varieties namely:- Hen and Chicken, Pumpkin Steward, White Jackson, and Prince William opened their first flowers. Other varieties varied from a week to 14 days later. Turkey claw was the last to produce flowers.

During the last fortnight in December the plots in the first two, and the last one, from the West, were weeded of large weeds mainly Browallia, and also a weed belonging to the order Chenopodiaceae.

The flowering was very marked until the middle of January, when the flowering slackened, and the potatoes appeared to be loosing the tops, but heavy rain towards the end of the month stimulated new growth.

About the 8th of February an attack of Flea and other leaf eating beetles attacked the crop, and grew more conspicuous weekly until the crop was harvested.

RIPENING:-

Close observations were made for signs of any variety that showed symptoms of early ripening, but all appeared to get ripe as the conditions of the respective plots became sufficiently dried out.

It was quite a marked feature that those on the East were riper than each successive set towards the West, which would agree entirely with the moisture content of the soil. Apparently as long as there is sufficient.

moisture in the ground, the tops will continue to grow under Trinidad conditions such as have prevailed during October 1926 to February 1927.

The extra cultivation of the 5 Southern plots increased the yield, and gave better shaped tubers. The estimated (from average) gain was 10%. This is not considered in the later figures.

The tubers of the Sweet Potatoes on the East of the field had been attacked by some pest that had made small holes in the skin, but they were not deep, and would not be a factor affecting yield, but might affect the keeping qualities.

STEM BORER ATTACK ON HARVESTING.

All the plots in the field were heavily infected by a Stem Borer (*Magastes Grandalis*). The following figures give some idea of the attack: ---

BORER ATTACK:-

	<u>Numbers not attacked per 300.</u>	<u>Percentage attacked.</u>
Black Sam.....	75	75%
White Jackson.....	27	91%
Jackson.....	27	91%
Hen and Chicken.....	78	74%
Turkey Claw.....	60	80%
Joe Mendes.....	24	92%
White Hen and Chicken.....	102	64%
Prince William.....	27	91%
White Sam.....	99	66%
Black Vine.....	102	64%
Pumpkin Steward.....	79	74%
Sealy.....	21	93%

It apparently did not make any difference to the numbers of tubers per plant whether or not the plant was attacked. It is of interest to note that the plants in the plots at the sides of the field were attacked more heavily than those in the centre. No grub had bored its way down the stem into the tubers, and there were no young grubs; ^a almost all had reached a mature stage, or were cocoons. This either points to the fact that the attacks appear in cycles or that almost mature vines, and those already infected are not attacked. Sweet Potatoes were grown in an adjoining plot, and these were also

badly infected so that the moths might have attacked them in preference to the few remaining immune stems.

The reason why some plants wilted and died may be explained in terms of weather and growth conditions.

In wet and damp weather the vines root readily (as we have already pointed out) so that though some vines were attacked the tops would form a new plant. But if that was so, the yield of tubers would be lowered. It seems more probable that the borer only injures the stem and so checks the flow of nutrient and other streams until it can be made up again by adventitious roots which develop freely.

The percentage attack was so high that perhaps it is unfair to judge the numbers and size of the tubers on attacked and free plants as done at the beginning of this paragraph. But no other crop on the College land was available, that was free from this pest or sufficiently advanced to form a better comparison.

Time of planting might influence the relative amount of the attack. We observed other crops of Sweet Potatoes on College grounds, and found that those planted in December were equally as badly attacked (but these were situated close to the experiment) while those planted in March were (at the time of writing: June) almost free. This question might be further investigated especially if correlated with yields.

If a dry season gives greater immunity cannot be discussed as there is only the one season's results, and so there is nothing to compare, but this might be noticed when other results are forthcoming.

The figures are not significant to infer any immunity, though the thinner vined varieties appear to be slightly preferable.

EFFECT OF POSITION AND INTERFERENCE.

The effect that the outside banks, or the effect one variety might have had on another was noted on harvesting, but the yields from outside and adjoining rows were almost identical with those in the centre of the plot, that it was decided that the total figures from the whole plot (1/40 acre) was as accurate to use as the figures from the three central lines of the plots, and that there had been no stunting or limiting by one variety enjoying more ground or air space than its neighbour.

HARVESTING:-

Tubers (yields in lbs) Vines.

Harvesting was begun on February 16th, with a break between each set of replicates. The dates of digging each set were:-----

Pumpkin Steward.....	336.....	435.
Set 1.....	February 16th.	664.
Set 2.....	February 24th.	585.
Set 3.....	March 3rd.	539.
Set 4.....	March 10th.	717.
Set 5.....	March 29th.	758.

It took more than a day to harvest each set, but it was so arranged that all were dug in two successive days.

TABLES SHOWING THE YIELDS FROM EACH SET. TABLES. LXXXV.

	<u>Tubers (yields in lbs)</u>	<u>Vines.</u>
Set 1. White Jackson.....	142.....	575
Joe Mendes.....	179.....	879
Turkey Claw.....	144.....	951
White Hen and Chicken.....	290.....	426
Prince William.....	94.....	712
Black Sam.....	243.....	687
White Sam.....	117.....	923
Black Vine.....	176.....	1251
Jackson.....	112.....	694
Pumpkin Steward.....	267.....	451
Sealy.....	196.....	513
Hen and Chicken.....	479.....	338
Black Vine.....	332.....	754.
Jackson.....	225.....	443.

Set 2. Tubers. (yields in lbs) Vines.

Hen and Chicken.....	451.....	709.
Sealy.....	219.....	765.
Pumpkin Steward.....	335.....	435.
Jackson.....	194.....	664.
Black Vine.....	219.....	585.
White Sam.....	110.....	539.
Joe Mendes.....	296.....	717.
Turkey Claw.....	325.....	758.
White Hen and Chicken..	428.....	580.
Prince William.....	220.....	765.
Black Sam.....	461.....	515.
White Jackson.....	227.....	438.

Set 3. Tubers. (yields in lbs) Vines.

Black Sam.....	341.....	410.
Prince William.....	165.....	665.
White Hen and Chicken..	314.....	226.
Turkey Claw.....	149.....	600.
Joe Mendes.....	160.....	287.
White Jackson.....	131.....	411.
Pumpkin Steward	220.....	226.
Sealy.....	123.....	534.
Hen and Chicken.....	263.....	355.
White Sam.....	162.....	637.
Black Vine.....	332.....	754.
Jackson.....	225.....	443.

NOTE:- This figure is very low as much had died. In the averages the plot is left out.

Set 4.

Tubers. (yield in lbs) Vines.

Pumpkin Steward.....	279.....	377
Jackson.....	103.....	383
Black Vine.....	203.....	317
Sealy.....	59.....	383
Hen and Chicken.....	131.....	238
Prince William.....	45.....	619
Black Sam.....	145.....	415
White Sam.....	91.....	372
Joe Mendes.....	182.....	461
White Jackson.....	135.....	351
Turkey Claw.....	219.....	448
White Hen and Chicken.....	305.....	156

Next Frequency
 Present of
 Number...
 2(per plant)... 5
 2..... 6
 2..... 7
 1..... 15
 1..... 11
 1..... 9
 1..... 14
 2..... 20
 2..... 23

Set 5.

Tubers (yield in lbs) Vines.

Sealy.....	200.....	328
Black Sam.....	206.....	243
Hen and Chicken.....	159.....	111
White Sam.....	73.....	244
Pumpkin Steward.....	81.....	140
Jackson.....	45.....	255
Turkey Claw.....	45.....	180
White Jackson.....	67.....	190
Black Vine.....	163.....	165
White Hen and Chicken.....	216.....	(62)*
Joe Mendes.....	182.....	117
Prince William.....	110.....	197

yield would have been worked out.

NOTE:- This figure is very low as much had died. In the averages the plot is left out.

TABLE VI

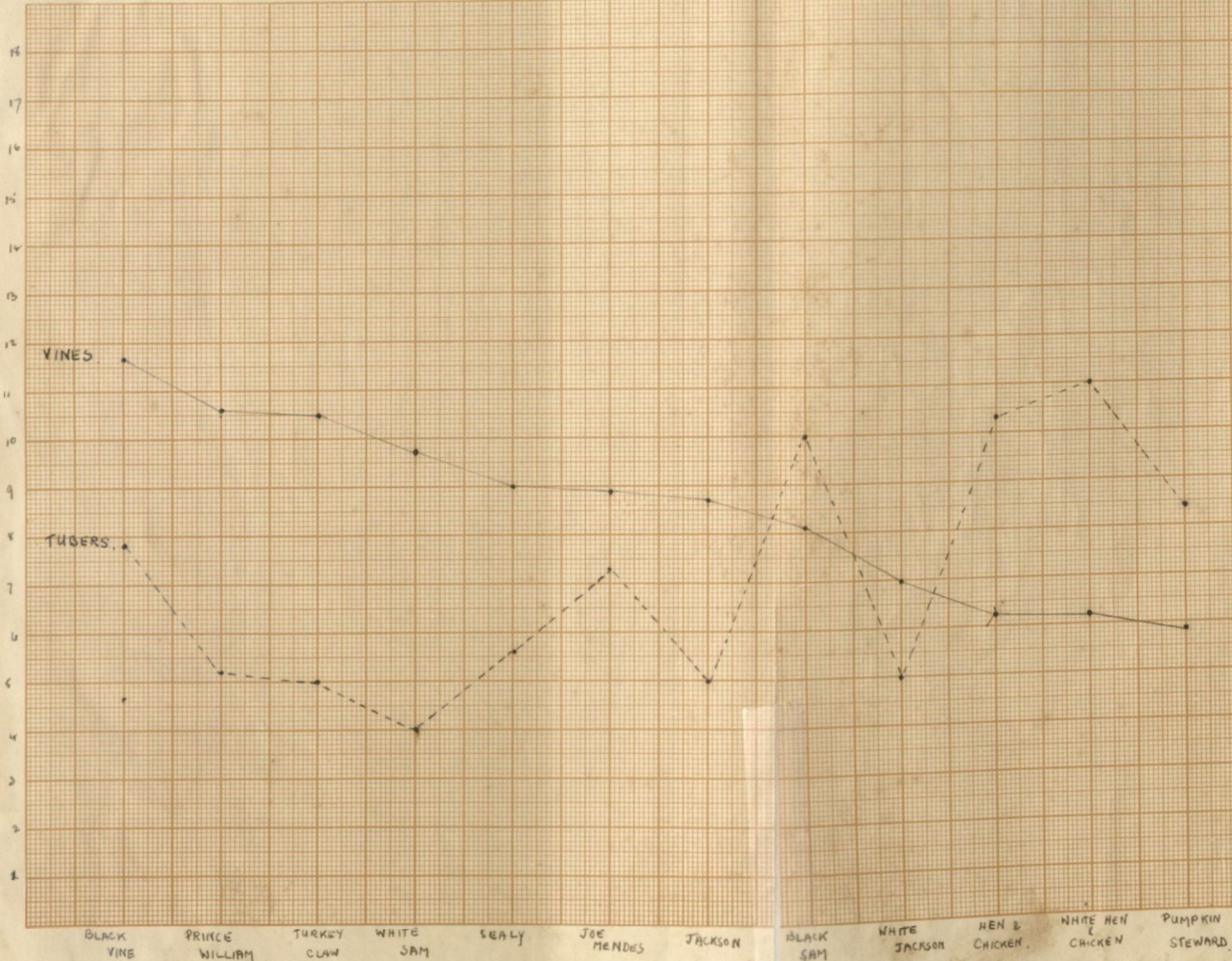
YIELD OF TUBERS PER PLANT.

100 plants counted, two batches of 10 consecutive plants from each plot.

<u>Variety</u>	<u>Average.</u>	<u>Maximum.</u>	<u>Minimum.</u>	<u>Frequency of Maximum.</u>	<u>Most Frequent Number.</u>	<u>Frequency of Minimum.</u>
White Hen and Chicken.....	2.3.....	5.....	0.....	5.....	2(per plant).....	5
Black Sam.....	2.0.....	5.....	0.....	3.....	2.....	6
Hen and Chicken....	1.9.....	5.....	0.....	4.....	2.....	7
White Jackson.....	1.8.....	6.....	0.....	2.....	1.....	15
Pumpkin Steward....	1.8.....	6.....	0.....	1.....	1.....	11
Black Vine.....	1.7.....	4.....	0.....	5.....	1.....	9
Joe Mendes.....	1.6.....	5.....	0.....	1.....	1.....	13
Turkey Claw.....	1.4.....	5.....	0.....	1.....	2.....	19
Sealy.....	1.3.....	4.....	0.....	2.....	1.....	23
White Sam.....	1.2.....	5.....	0.....	1.....	1.....	10
Prince William....	1.2.....	4.....	0.....	1.....	1.....	18
Jackson.....	1.1.....	4.....	0.....	2.....	1.....	20

NOTE:-As 100 plants are considered in this, the Mean Yield would have an infinitesimally small probable error that it has not been worked out.

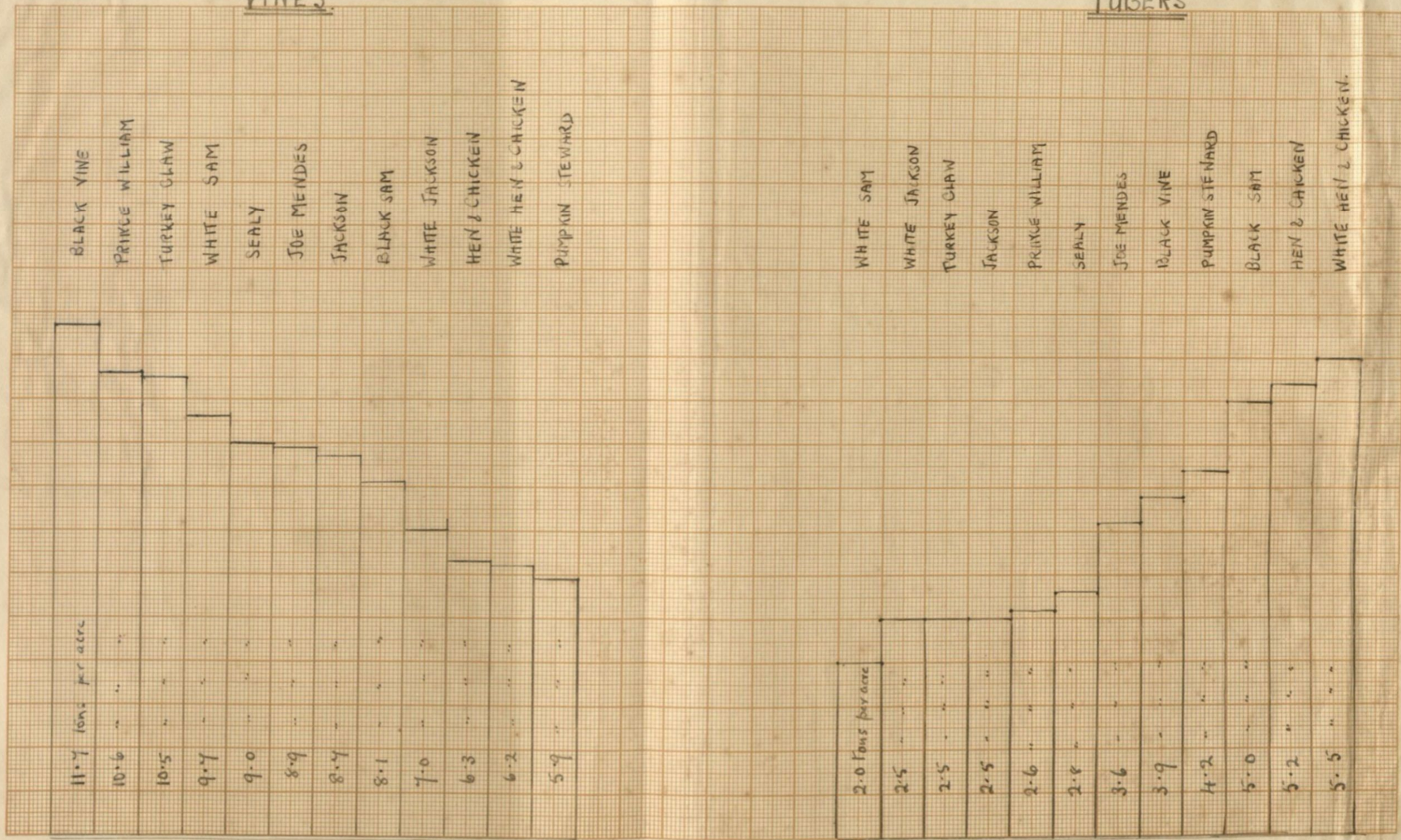
MISSISSIPPI KLAY YIELDS.



HISTOGRAPHS OF MEAN YIELDS.

VINES

TUBERS



Ton = 2240 lbs.

TABLE No. VII

THE AVERAGE YIELD OF VINES.

Variety	Maximum.	Minimum.	Mean.	Probable Error.	Significant Difference.
Black Vine.....	1251	165	654	118	448
Prince William.....	765	197	592	62	235
Turkey Claw.....	951	180	587	89	339
White Sam.....	923	244	543	68	268
Sealy.....	765	328	505	52	198
Joe Mendes.....	897	117	496	84	319
Jackson.....	694	255	488	51 ⁴⁶	166
Black Sam.....	765	197	454	51	194
White Jackson.....	575	190	393	50	190
Hen and Chicken.....	709	111	350	63	239
White Hen and Chicken.....	580	(62) ¹⁵⁶	346	58	221
Pumpkin Steward.....	451	140	327	40	152

TABLE No. VIII

THE AVERAGE YIELD OF TUBERS.

Variety.	Maximum.	Minimum.	Mean.	* Probable Error	Significant Difference
White Hen and Chicken..	428	216	310	25	95
Hen and Chicken.....	459	131	293	46	175
Black Sam.....	461	145	280	31	118
Pumpkin Steward.....	335	81	236	24	91
Black Vine.....	332	163	218	19	72
Joe Mendes.....	296	160	200	16	60
Sealy.....	219	59	159	19	72
Prince William.....	220	45	144	30	114
Jackson.....	225	45	142	31	118
Turkey Claw.....	325	45	142	46	175
White Jackson.....	227	67	140	26	99
White Sam.....	162	73	110	11	42

*Prob error

$$\sqrt{\frac{t d^2}{\sigma(\sigma-1)}}$$

Significant diff

3.8 x probable error.

DISCUSSION

TABLE NO. VI

YIELDS PER PLANT:-

Counts were taken from 10 consecutive plants in two banks of each plot, care being taken that it was representative and that it took into account odd plants not attacked by stem borer.

The variety White Hen and Chicken gave the best results followed closely by Black Sam.. The potatoes were of a marketable size and of a good shape, it is significant that these also head the list with the yields. They would appear decidedly superior for planting for tubers.

The fifth column of the table shows that the plant generally has two tubers per plant, whereas the majority yield only a single tuber.

The highest yield would be equivalent to a yield of 22 1/2 tons per acre, while the lowest would be about 2 tons.

The lowest yield in any plot was recorded in the case of Hen and Chicken, with a yield of slightly less than two tons.

The figure for white Hen and Chicken is 156 lbs. for the lowest the yield of 62 (in brackets) was not considered because when the plots were harvested half the plants had died. The cause of their death was not ascertained as it took place very suddenly after the crop was ripe. It did not appear a normal decay as the vines turned black before drying out.

The vines might be ground for use as very good class:-

1. White Sam, Black Vine, Japanese, Jersey, Seal, Joe, New York, 13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-1437-1438-1439-1440-1441-1442-1443-1444-1445-1446-1447-1448-1449-1450-1451-1452-1453-1454-1455-1456-1457-1458-1459-1460-1461-1462-1463-1464-1465-1466-1467-1468-1469-1470-1471-1472-1473-1474-1475-1476-1477-1478-1479-1480-1481-1482-1483-1484-1485-1486-1487-1488-1489-1490-1491-1492-1493-1494-1495-1496-1497-1498-1499-1500-1501-1502-1503-1504-1505-1506-1507-1508-1509-1510-1511-1512-1513-1514-1515-1516-1517-1518-1519-1520-1521-1522-1523-1524-1525-1526-1527-1528-1529-1530-1531-1532-1533-1534-1535-1536-1537-1538-1539-1540-1541-1542-1543-1544-1545-1546-1547-1548-1549-1550-1551-1552-1553-1554-1555-1556-1557-1558-1559-1560-1561-1562-1563-1564-1565-1566-1567-1568-1569-1570-1571-1572-1573-1574-1575-1576-1577-1578-1579-1580-1581-1582-1583-1584-1585-1586-1587-1588-1589-1590-1591-1592-1593-1594-1595-1596-1597-1598-1599-1600-1601-1602-1603-1604-1605-1606-1607-1608-1609-1610-1611-1612-1613-1614-1615-1616-1617-1618-1619-1620-1621-1622-1623-1624-1625-1626-1627-1628-1629-1630-1631-1632-1633-1634-1635-1636-1637-1638-1639-1640-1641-1642-1643-1644-1645-1646-1647-1648-1649-1650-1651-1652-1653-1654-1655-1656-1657-1658-1659-1660-1661-1662-1663-1664-1665-1666-1667-1668-1669-1670-1671-1672-1673-1674-1675-1676-1677-1678-1679-1680-1681-1682-1683-1684-1685-1686-1687-1688-1689-1690-1691-1692-1693-1694-1695-1696-1697-1698-1699-1700-1701-1702-1703-1704-1705-1706-1707-1708-1709-1710-1711-1712-1713-1714-1715-1716-1717-1718-1719-1720-1721-1722-1723-1724-1725-1726-1727-1728-1729-1730-1731-1732-1733-1734-1735-1736-1737-1738-1739-1740-1741-1742-1743-1744-1745-1746-1747-1748-1749-1750-1751-1752-1753-1754-1755-1756-1757-1758-1759-1760-1761-1762-1763-1764-1765-1766-1767-1768-1769-1770-1771-1772-1773-1774-1775-1776-1777-1778-1779-1780-1781-1782-1783-1784-1785-1786-1787-1788-1789-1790-1791-1792-1793-1794-1795-1796-1797-1798-1799-1800-1801-1802-1803-1804-1805-1806-1807-1808-1809-1810-1811-1812-1813-1814-1815-1816-1817-1818-1819-1820-1821-1822-1823-1824-1825-1826-1827-1828-1829-1830-1831-1832-1833-1834-1835-1836-1837-1838-1839-1840-1841-1842-1843-1844-1845-1846-1847-1848-1849-1850-1851-1852-1853-1854-1855-1856-1857-1858-1859-1860-1861-1862-1863-1864-1865-1866-1867-1868-1869-1870-1871-1872-1873-1874-1875-1876-1877-1878-1879-1880-1881-1882-1883-1884-1885-1886-1887-1888-1889-1890-1891-1892-1893-1894-1895-1896-1897-1898-1899-1900-1901-1902-1903-1904-1905-1906-1907-1908-1909-1910-1911-1912-1913-1914-1915-1916-1917-1918-1919-1920-1921-1922-1923-1924-1925-1926-1927-1928-1929-1930-1931-1932-1933-1934-1935-1936-1937-1938-1939-1940-1941-1942-1943-1944-1945-1946-1947-1948-1949-1950-1951-1952-1953-1954-1955-1956-1957-1958-1959-1960-1961-1962-1963-1964-1965-1966-1967-1968-1969-1970-1971-1972-1973-1974-1975-1976-1977-1978-1979-1980-1981-1982-1983-1984-1985-1986-1987-1988-1989-1990-1991-1992-1993-1994-1995-1996-1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2463-2464-2465-2466-2467-2468-2469-2470-2471-2472-2473-2474-2475-2476-2477-2478-2479-2480-2481-2482-2483-2484-2485-2486-2487-2488-2489-2490-2491-2492-2493-2494-2495-2496-2497-2498-2499-2500-2501-2502-2503-2504-2505-2506-2507-2508-2509-2510-2511-2512-2513-2514-2515-2516-2517-2518-2519-2520-2521-2522-2523-2524-2525-2526-2527-2528-2529-2530-2531-2532-2533-2534-2535-2536-2537-2538-2539-2540-2541-2542-2543-2544-

CORRELATION GRAPH.

The general trend of this graph shows that the high yield of tubers goes hand in hand with a low yield of vines.

It is not definitely correlated as may be shown by the points of the graph.

Those that fall near the index "8" are the ones that would fall in the category of those to be grown for a dual purpose such as Black Vine, Black Sam, and Joe Mendes.

- 1. White Hen and Chicken, Black Sam, Joe Mendes, and Hen and Chicken
- 2. Pumpkin Stewart, and Black Vine.
- 3. White Jackson, Prince William, Turkey Claw,

YIELD OF VINES

TABLE No. VII

The huge difference in the maximum and minimum yields make the probable error very considerable.

The actual variation in Black Vine represents a difference in yield per acre of almost 20 tons.

The maximum yield would be equivalent to a yield of 22½ tons per acre, while the minimum would be about 2 tons.

The lowest yield in any plot was recorded in the case of Hen and Chicken, with a yield of slightly less than two tons.

The figure for White Hen and Chicken is 156 lbs. for the lowest, the yield of 62 (in brackets) was not considered because when the plots were harvested half the plots had died. The cause of their death was not ascertained as it took place very suddenly after the crop was ripe. It did not appear a normal decay as the vines turned black before drying out.

The vines might be grouped into two not very rigid classes:---

- 1. White Sam, Black Vine, Jackson, Turkey Claw, Sealy, Joe Mendes, Prince William, and White Jackson.
- 2 (Inferior):--- Black Sam, White Hen and Chicken, Pumpkin Stewart, and Hen and Chicken.

YIELD OF TUBERS:-

TABLE No. VIII

The table for the yield of tubers is similar to that for vines, it shows great differences between the plots. The maximum was recorded in the case of Black Sam with a yield of 8.2 tons per acre, and a minimum in three varieties: Prince William, Jackson, and Turkey Claw of 0.8 tons per acre. The greatest differences within a variety is shown in Hen and Chicken where a difference of almost 6 tons was recorded.

The yields of tubers may be grouped into three not well defined classes:---

1. White Hen and Chicken, Black Sam, Joe Mendes, and Hen and Chicken
2. Pumpkin Steward, and black Vine.
3. White Sam, Sealey, Prince william, Turkey Claw, Jackson, and White Jackson.

HISTOGRAPH.

PAGE No. 24.

The histograms show graphically the relationship of each variety to the other with the yield in tons per acre worked out on the mean yields.

TABLE Nos. I, II, III, IV, V.

The 5 sets of results are added to show the actual yields for each plot. The figures for each bank could have been added but they would mean nothing as the variation was in no case great.

CONCLUSION:-

The eviience as before stated in this Thesis shows that it is unsound to conclude that there is a constant significant difference in the yields of either Vines or Tubers. The differences in yield from plot to plot makes the probable error so high that they almost all fall within one category.

It follows that no variety ought to be rejected in future trials unless the trial is worked on a double or triple basis i.e, one set of trials per yield of vine and another for yield of tubers, and possible a third division for those that would serve a dual purpose. This would shorten the work considerably as the inferior ones would soon be disregarded.

Before any definite superiority is claimed for any variety it is desirable that the varieties be further tested; if possible over a series of years so that the factor of the weather may also be understood in relation to the various yields.