

ANNUAL PROGRAMME OF
RESEARCH WORK
2015-16

HORTICULTURAL
RESEARCH STATION,
SAHIWAL.

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Tittle 1 **COMPARITIVE STUDIES ON THE FOUR PIGMENTED
GRAPEFRUIT VARIETIES UNDER LOCAL SOIL AND
CLIMATIC CONDITIONS.**

OBJECTIVE: To study and compare the performance of three imported grapefruit varieties with Shamber Grapefruit in terms of yield and fruit quality under local soil and climatic conditions.

RESEARCH Muzaffar Hafeez
WORKERS M. Shahazad Zafar

PROJECT DURATION 2005-2015.

LOCATION	Horticultural Research Station, Sahiwal
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Treatments.	T-1	Shamber
	T-2	Flame
	T-3	Star Ruby
	T-4	Rio-Red.

PLAN OF WORK	Lay out desing.	:RBDC
	Replications.	:5
	Treatments.	:4
	No. of plants per unit:	2
	Total No. of Plants.	:40

General Performance of the plants in terms of growth characters such as height, spread, canopy volume and stock/scion girth of individual plants will be studied. Yield and physiochemical characteristics of fruit such as fruit weight, fruit size, peel thickness, juice percentage, TSS%, acidity and TSS acid ratio will be studied.

PREVIOUS YEAR'S
RESULT

Treatments	Fruit Size	Juice wt.(gm)	Juice %	Rag %	TSS (%)	Acidity	TSS acid ratio
Shamber	8.2/9.12	196.1	48.77	29.49	21.73	6.64	0.77
Flame	8.26/8.94	194.1	51.78	25.87	22.35	8.66	0.83
Star Ruby	8.2/9.1	216.06	56.132	23.77	20.092	7.3	0.97
Rio Red	7.96/9.14	203.00	52.44	28.18	19.37	7.32	0.88

Treatments	Plant Ht. (M)	Plant spread (M)	Stock girth (cm)	Scion Girth (cm)	Ston. Compt.	No. of fruits/plant	Fruit Wt. (gm)
Shamber	3.18	3.58	4.0	39.6	2	264	403.16
Flame	3.18	3.6	42.2	42.5	0.6	117.3	374.94
Star Ruby	3.1	3.8	47.0	46.1	1.8	152.5	384.6
Rio Red	3.02	3.44	43.4	44.1	1.5	184.8	386.72

Title 2

PERFORMANCE OF FOUR DIFFERENT GRAPEFRUIT VARIETIES ON CITRUMELO-4475 ROOTSTOCK.

OBJECTIVE: To increase the productivity and fruit quality of commercial Grapefruit varieties.

RESEARCH WORKERS Imran Muhammad Siddique

PROJECT DURATION 2009-2016.

LOCATION Horticultural Research Station, Sahiwal

Treatments.	T-1	Flame
	T-2	Shamber
	T-3	Star Ruby
	T-4	Rio-Red.

PLAN OF WORK Lay out desing. :RBDC
Replications. :2
Treatments. :4
No. of plants per unit:4
Total No. of Plants. :32

Plants heigh, spread, canopy volume, stoinic compatibility, yield and fruit quality characters like fruit weight, size, peel/ rind thickness, rind percentage, Total Soluble Solids, Acidity, Acid Ratio, Seediness will be the part of study.

PREVIOUS Plants have been shifted into the field during September, 2012.

YEAR'S RESULTS.

Treatments	Height (cm)	Girth (cm)	Spread (cm)
T1	97.5	11.9/9.1	77.1
T2	97.1	11.5/8.46	124.8
T3	85.7	11.02/7.8	39.8
T4	71.2	7.6/6.9	49.8

Tittle 3 **DEVELOPMENT OF NEW VARIETIES THROUGH
BREEDING.**

OBJECTIVE: To enhance the fruit quality of some existing citrus varieties.

RESEARCH Muzaffar Hafeez
WORKERS Imran Muhammad Siddique
Mudassar Naseer.

PROJECT
DURATION

2004-2015.

LOCATION

Horticultural Research Station, Sahiwal

Treatments.	Percentage	Specific Objectives	Varieties to be Improved
Cross-1	Honey mandarineX Fair child	To enhance the exterior quality of Honey mandarine	Honey Mandarin
Cross-2	Honey mandarineX Fremont Fremont X Honey Mandrin	-do-	Honey Mandarin

PLAN OF WORK

Crosses of the aforesaid combinations will be made involving 300 flowers in each of the individual crosses. After fruit set, number of seeds will also be counted of individual hybrid fruits. Seeds of hybrid fruits will be grown to study the desire characters.

PREVIOUS YEARS' RESULTS.

Year	Cross No.	Total No. of Fruits	Total No. of Seeds
2014	Cross-2	18, 12	21, 160

One hybrid of Cross-2 (Honey Madarin X Fremont) produced during 2008 have been planted into field.

Only hybrid plant beared 18 fruit first time.

Seeds will be collected from these 18 fruits after fruit harvest.

Tittle 4

PERFORMANCE OF LESS SEEDED KINNOW UNDER SAHIWAL CONDITIONS.

OBJECTIVE:

To evaluate & explore the performance of less seeded Kinnow regarding market value & consumer demand.

RESEARCH
WORKERS

Muzaffar Hafeez
M. Shahazad Zafar

PROJECT 2010-2020.
DURATION

LOCATION Horticultural Research Station, Sahiwal

Treatments. T₁ Seeded Kinnow
T₂ Less Seeded Kinnow

PLAN OF WORK Lay out desing. :RBDC
Replications. :2
Treatments. :5
No. of plants per unit:1
Total No. of Plants. :10

New less seeded & seeded plants will be raised at the distance 20X20 feet according to layout design. General Performance in terms of growth characters such as plant height, plant spread, No. of fruits per plant, fruit size, fruit weight will be studied.

Physicochemical characteristics of fruit such as peel thickness, No. of seeds per fruit, number of healthy seed, number of aborted seeds, Juice percentage, TSS%, acidity and TSS acid rartio will also be studied.

PREVIOUS YEAR'S RESULT

Treatments	Plant Height (m)	Plant Spread (m)
T1	2.03	1.25
T2	2.10	1.37

The plants are on fruiting stage. Yield and physic-chemical data will be taken after fruit harvesting.

Title 5 EFFECT OF DIFFERENT ROOTSTOCKS ON THE GROWTH, YIELD AND FRUIT QUALITY OF MAR'S EARLY SWEET ORANGE.

OBJECTIVE: To improve the productivity and fruit quality of promising sweet orange variety.

RESEARCH WORKERS Muzaffar Hafeez
Imran Muhammad Siddique.

PROJECT DURATION 2010-2020.

LOCATION Horticultural Research Station, Sahiwal

Treatments. T-1 Rangpur lime
T-2 Gada Dehi.
T-3 Volkameriana.
T-4 Rough Lemon.

PLAN OF WORK Lay out desing. :RBDC
Replications. :2
Treatments. :4
No. of plants per unit:4
Total No. of Plants. :32

General Performance of the plants in terms of growth characters such as height, spread, stock/scion girth will be observed. Physic-chemical characteristics of fruit such as peel thickness, fruit size, juice percentage, TSS, acidity and TSS acid ratio will be studied at the time of fruit maturity.

Furthermore, contribution of different rootstocks to the yield potential will also be studied.

PREVIOUS

YEAR'S RESULT Plants have been shifted into the field during September, 2012.

Treatments	Height (cm)	Spread (cm)	Girth (cm)
T ₁	95.6	66.0	7.4/7.95
T ₂	129.9	59.8	10.4/109
T ₃	129.1	94.4	13.3/11.2
T ₄	171.1	113.1	16/15.3

Title 6

EVALUATION OF FOUR HYBRID ROOTSTOCKS DEVELOPED AT SAHIWAL.

OBJECTIVE: To evaluated and compare the performance of hybrid rootstocks (Rough lemon X Poncirus trifoliata).

Note: three crosses have been made, 1. (Cleopatra Mandarin X Poncirus trifoliata) 2. (Rough lemon X Poncirus trifoliata) 3. (Volkameriana X Rangpur lime). From these three crosses only cross No. 2 (Rough lemonX Poncirus trifoliata) succeeded and finally these four hybrids were developed.

RESEARCH WORKERS Muhammad Shahzad Zafar
Mudassar Naseer.

PROJECT DURATION 2010-2020.

LOCATION Horticultural Research Station, Sahiwal

Treatments. T-1 HRS1
T-2 HRS2
T-3 HRS3
T-4 HRS4

PLAN OF WORK Lay out desing.:RBDC
Replications. :1

Treatments. :4
No. of plants per unit:1
Total No. of Plants. :4

General Performance of the plants in terms of growth characters such as height, spread will be observed. No. of fruits, No. of seeds per fruit, seed germination percentage will also be studies.

PREVIOUS YEAR'S RESULT

Characteristics	T1	T2	T3	T4
Height (M)	3.20	3.50	3.60	3.70
Spread (M)	1.3	1.8	2.5	2.4
Girth (cm)	26.0	35.0	38.5	39.0
No. of Fruits per plant	107	63	119	2
No. of seeds per fruit	16	7	15	6

Maximum height was gained by HRS 4 (3.70 M) while maximum spread was found in HRS3 (2.5M) and maximum girth was found in HRS 3 (39.0 cm)

Seeds have been extreated and will be sown in March, 2016.

Tittle 7

EVALUATION OF LIME VARIETY MHR-173 UNDER SAHIWAL CLIMATE.

OBJECTIVE: To evaluated and compare the new less seeded lime variety MHR-173 with Khagzi lime.

RESEARCH
WORKERS Muzaffar Hafeez
Mudassar Naseer.

PROJECT
DURATION 2011-2020.

LOCATION Horticultural Research Station, Sahiwal

Treatments. T-1 MHR-173
T-2 Khagzi Lime

PLAN OF WORK Lay out desing. :RBDC
Replications. :4
Treatments. :2
No. of plants per replications :2
Total No. of Plants. :16

MHR-173 (less seeded lime) and Khagzi lime will be raised at the distance of 20X20 feet according to layout design.

General Performance of less seeded lime MHR-173 and Khagzi lime in terms of growth characters such as plant height, plant spread, No. of fruits per plant, fruit weight and fruit size will be studied. Physic-chemical characteristics of fruit such as peel thickness, No. of seeds per fruit, No. of healthy seeds, No. of aborted seeds, juice percentage, TSS, acidity and TSS acid ratio will be studied when plants will start bearing.

PREVIOUS

YEAR'S RESULT Plants have been shifted into field during September, 2012.

Treatments	Height (cm)	Spread (cm)	Girth(cm)
T ₁	128.9	64.7	10.5/9.32
T ₂	135.2	116.2	13.4/6.15

Note:

Two plants of Khagzi lemon are bearing 12 fruits while two plants of MHR-173 are bearing 47 fruits. The plants are on fruiting stage. The physic-chemical characteristics will be studied on maturity of Khagzi lime and MHR-173.

**Tittle 8 EFFICACY OF VARIOUS FUNGICIDES TO ELIMINATE
THE FRUIT BLEMISH (SCAB) ON KINNOW.**

OBJECTIVE: To find out and explore the most suitable fungicide to control the scab in kinnow for better quality fruit production.

RESEARCH WORKERS Muzaffar Hafeez
 Muhammad Shahzad Zafar
 Mudassar Naseer.

PROJECT DURATION 2015-2020.

LOCATION	Horticultural Research Station, Sahiwal
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Treatments.	T1	Control
	T2	Borduemixture (Copper Sulphate Penta Hydrate CaSo ₄ -5(H ₂ O
	T3	Topsin-M (Copper Oxiclорide) 3 gm per liter of water
	T4	Score (Diephenonconazole) 3 ml per liter of water.

PLAN OF WORK	Lay out desing.	:RBDC
	Replications.	:4
	Treatments.	:3
	No. of plants per replications	:2
	Total No. of Plants.	:24

Healthy and vigorous Grapefruit plant of same age will be selected and tagged according to layout design. The first spray of T3 & T4 will be done fifteen (15) days after fruit seating the next spray will be done of first week of October, five spray of Borduemixture will be done as first spray after fruit harvest, second spray in March, third spray in April forth spray in July and fifth spray in August. After that data for blemished fruits will be

recorded and physic-chemical analysis of fruit such as peel thickness, fruit size, juice percentage, acidity, TSS and TSS acid ratio will be studied at the time of maturity.

New Experiment.

Title 9 EFFECT OF FOLIAR SPRAY OF VARIOUS MICRO AND MACRONUTRIENTS OF FRUIT SET, YIELD AND FRUIT QUALITY OF GRAPREFRUIT CV. SHAMBER.

OBJECTIVE: To study and compare the effect of macro and macronutrients on Grapefruit in terms of yield and fruit quality under local soil and climatic conditions.

RESEARCH WORKERS Muzaffar Hafeez
Imran Muhammad Siddique
Mudassar Naseer.

PROJECT DURATION 2015-2020.

LOCATION Horticultural Research Station, Sahiwal

Treatments.	T-1	Control
	T-2	Zinc Sulphate (1%)
	T-3	Ferrous Sulphate (0.5 %)
	T-4	KNO ₃ (1%)
	T-5	Zinc Sulphate + Ferrous Sulphate
	T-6	Zinc Sulphate + KNO ₃
	T-7	Ferrous Sulphate + KNO ₃
	T-8	Zinc Sulphate + Ferrous Sulphate + KNO ₃

PLAN OF WORK	Lay out desing.	:RBDC
	Replications.	:2

Treatments.	:8
No. of plants per unit	:1
Total No. of Plants.	:16

Treatments will be applied after previous fruit harvest and at fruit formation (button stage).

General Performance of the plants in terms of growth characteristics such as height, spread and canopy volume of individual trees will be studied . Yield and physic- chemicals characteristics of fruit such as No. of fruits per tree, fruit weight, fruit size, peel thickness, juice percentage TSS %, acidity and TSS acid ratio will be studied.

New Experiment.