

## NEW DIMENSIONS OF CITRICULTURE

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The entire scenario of Pakistan fruit culture is dominated by citrus, both in area and production. Punjab alone constitutes 95% of the entire citrus production where kinnow shares 60 to 70% in citriculture followed by oranges, limes /lemons and grapefruits. Rapid strides in the field of citriculture made in different countries of the world, have brought a great revolution in this sector. In Pakistan, till a very recent past, range of citrus cultivars was restricted to a few varieties with the overwhelming dominance of Kinnow among mandarins and musambi among sweet oranges. Early Grapefruit cultivars were highly seedy (40-50 seeds per fruit), illtasting and inferior in other quality characters such as thick rinds, low in juice contents, etc. Lemon and lime (acid lime) group consisted of qualitatively inferior and seedy cultivars, characterized by thorny trees with less tolerance to frost condition. Among acid limes, there was only Kaghzi Lime with its high susceptibility to a serious bacterial disease of Canker (*Xanthomonas campestris*) and its low degree of adaptability in cooler regions.

Realizing the changing perceptions of consumers in back ground of the domestic and offshore citrus trade, the major emphasis was placed in introducing seedless and qualitatively superior varieties through importation and their subsequent acclimatization under our local agro-climatology, as this

approach entail significantly shorter period of time than that of conventional breeding.

Now the country is capable of offering seedless varieties of grapefruit namely "Shamber", "Ruby Red" and "Red Blush". Red Blush cultivar has also been reported with better yield and fruit quality in many areas of Sindh characterized by high heat index. Moreover, a new grapefruit variety, Star Ruby, has been tested and recommendations have been made for its commercial cultivation in the areas of low heat index.

In addition to that, a seedless variety of sweet orange namely Salustiana, which has exhibited excellent adaptability, is expected to replace Musambi sweet orange in future in the back ground of the bulk production of nursery plants and their wide spread distribution to the citrus growers. This variety is gaining ground at a rapid pace and in the future the country will be in a position to offer this seedless, early maturing cultivar for export purpose, thereby broadening the base of exportable citrus fruits. Marr's early sweet orange is another variety containing acceptable number of seeds to satisfy the foreign consumers. This variety has shown excellent results in the areas of N.W.F.P and northern Punjab.

Sahiwal grafted plants of this variety can be made available for the production of large scale true-to-type nursery plants of this variety. Successful introduction

Name of varieties	Year of release	Year of import at H.R. S. Sahiwal
<b>Mandarins/Tangerines</b>		
1. <i>Robinson</i>	1959	1991
2. <i>Sun Burst</i>	1989	1991
<b>Sweet Oranges</b>		
1. <i>Amber Sweet</i>	1989	1994
<b>Grape Fruits</b>		
1. <i>Star Ruby</i>	1989	1991
2. <i>Flame</i>	1987	1994

of this variety under our local conditions is a special blessing in view of the fact that Marr's early is the version (bud sport) of Washington Navel, orange which could only be acclimatized in a small isolated pocket of Soon Valley area, namely Khatwai. Nursery plants of Marr's Early, which has exhibited a good performance under other areas also, are being produced at Horticultural Research Station Sahiwal for its wide spread plantation.

As regards the early maturing mandarins, Feutrell's Early is the only choice for lack of alternatives. Feutrell's Early is the earliest (November), whereas maturity period of kinnow is late (February), thereby creating a yawning gap in the continuous mandarin supply in the market. Moreover, Feutrell's Early is a mandarin of poor quality due to small size, low juice contents, excessive seediness and poor stability in transitory conditions. This mandarin is only accepted for lack of any other early mandarin cultivar. Now a hybrid of Clementine x Orlando namely Fair Child has exhibited a great success in Barani areas and also at Horticultural Research Station, Sahiwal. More over, this mandarin (Tangerine) variety is highly attractive in appearance, rich in flavor, easy to peel and possesses high juice contents. It reaches to acceptable maturity during November and retains on the tree well past maturity.

Lemons and limes are valued for their refreshing qualities in the form of soft drinks. Squashes and other thirst quenching juices find a sizeable place in our citrus sector. Previously domestic inventory of acid limes was comprised of Kaghazi Nimboo only, but now the domestic pocket of acid limes enjoys the addition of a unique lime cultivar called Thahitti. This is virtually seedless and is produced on a thornless tree. This cultivar produces highly juicy fruits with pleasant flavor, aroma and can tolerate a good degree of low temperature, to which existing cultivar of Kaghzi Lime falls a ready victim. Nursery plants of this unique lime are being prepared for its wide-spread plantation even in to cooler areas.

### **Impact of Citrus Varietal Diversification**

Impact of diversification of citrus varieties for domestic and off-shore citrus trade will prove highly beneficial on account of following considerations.

- Economic conditions of our citrus growers will be highly ameliorated, as some of the aforementioned fruits, due to their longer tree intact ability period and wide spread adaptability, will promise better returns than that of traditional cultivars.
- Due to the introduction of hardy and cold tolerant varieties, citrus belt of the country can be expanded to the

cooler areas which are still coming deprived of the production of these valuable fruits.

- Introduction of seedless varieties of grapefruits and oranges will capture the markets of Europe and neighbour Muslim countries, both in the form of fresh fruits and juice concentrates. South Africa is the major producer of oranges for export and Italy is known for export of lemon juices. Now with the introduction of the aforesaid seedless and early maturing cultivars, we can broaden the base of our exportable citrus fruits.
- Expanded citrus export, due to the diversification in the vital sector of citriculture, will stand instrumental in bringing more foreign exchange earnings.
- Central Asian Republics import citrus fruits from Cuba. These states can prove lucrative markets of our citrus fruits in the back ground of shorter distance and our emerging friendly trade relations with these States.

### **Enrichment of Genepool through Latest Introduction**

Performance of aforesaid varieties is being studied at Horticultural Research Station, Sahiwal. Preliminary results, gathered so far, are very encouraging. Varieties of outstanding performance shall be placed on recommended list to bring further diversification in the field of citriculture. Brief characters of some of this exotic material and their future prospects are being given for the growers, processors and other stake holders of citrus sector:

#### ***Robinson***

It is a very early maturing variety and is a hybrid of Clementine x Orlando;

flesh color is deep orange, very juicy and sweet. Tree is up right, almost thornless. Preliminary results of this variety are encouraging.

#### ***Sun Burst***

It is a cross of Robinson x Orlando. It is an early season mandarin and at its place of origin it has earned a lot of commercial significance.

#### ***Amber Sweet***

It is a hybrid of mandarin x grapefruit x tangerine. It is a midseason cultivar. The fruit is easily peelable and possess excellent qualities for processing, particularly for juicing. The fruit ripens early in the season. At Horticultural Research Station, Sahiwal, the preliminary results are encouraging, as this variety has shown good degree of acclimatization. It is juicy and less seedy cultivar. This variety of trigeneric parentage is considered suitable for juicing.

#### ***Star Ruby***

This variety was developed as a result of irradiation of another grapefruit, namely 'Hudson'. Outstanding feature of this variety is its attractive rind color which is very thin and adherent to its flesh. It is also seedless and densely pigmented. It is reported to be cold tolerant.

At appropriate maturity, "Star Ruby" is highly juicy, well flavored and delicious in taste due to high total soluble solids than other grapefruit varieties. Apart from direct consumption, Star Ruby offers a great promise for processing due to dark red juice coloration, which can be used as second ingredient in light colored juices of other citrus fruits.