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KINNOW: PUNJAB'S KING OF FRUIT- A REVIEW

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INTRODUCTION

Kinnow is a high yield mandarin hybrid (Citrus nobilis × Citrus deliciosa), scientifically known as Citrus reticulata blanco. Botanically kinnow belongs to family Rutaceae. Kinnow is renowned citrus fruit favored for its pleasant flavor, appearance, color, taste, good yield, high processing value, therapeutic applications, delicious juice, smoothing character, vitamin C source, wider adaptability to various agro-climatic condition and high nutritive value **[1]**.

Kinnow is a hybrid of two citrus cultivars 'king' (*Citrus nobilis*) and 'willow leaf' (*Citrus deliciosa*). It was developed by H.B Frost in 1915 at University of California Citrus Experimentation Station, USA **[2]**. The hybrid was released for commercial cultivation in 1935 **[2]**. Kinnow was introduced in India by Dr. J.C Bakshi in 1954 at Punjab Agriculture University Regional Research Station, Abohar **[3]**. Since its introduction, Kinnow has gained popularity among farmers and common people making it one of the most desirable citrus fruit in Punjab. Farmer's love for kinnow in Punjab region has made it King of Fruits in punjab.

DESCRIPTION OF KINNOW PLANT

Kinnow is a hot climate plant with very high productivity. Tree exhibits vigorous growth and can reach height of 35 feet. Kinnow plant has broad shallow roots reaching up to depth of 7 to 12 feet depending upon soil condition. Shoot system has columnar trunk bearing numerous long, slender, ascending, and virtually thorn less branches. Branchlets bear dense foliage consisting of medium to large and broadly lanceolate leaves .

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Leaves are alternate, petiolate, simple, with entire margin, and unicostate reticulate venation. Leaves have smooth essentials oils glands in the lamina giving aromatic smell. Kinnow bears off-white hermaphrodite solitaire pentaerous flower. The anthers are yellow color.

Fruit is hesperidium containing 0 to 9 seeds. Kinnow fruit is globular to oblate in shape. Base of fruit is flattened. Fruit peel also known as rind has smooth surface and are easily peeled. Fleshy interior of fruits contains 9 to12 sections called Carpels. Each carpels have greenish to yellow color seed. Unripe fruits are green in color with off white inner flesh. Ripened fruits are orange in color with orange color flesh and juicy. Each mature plant can produces up to 1000 or more fruits in a season.

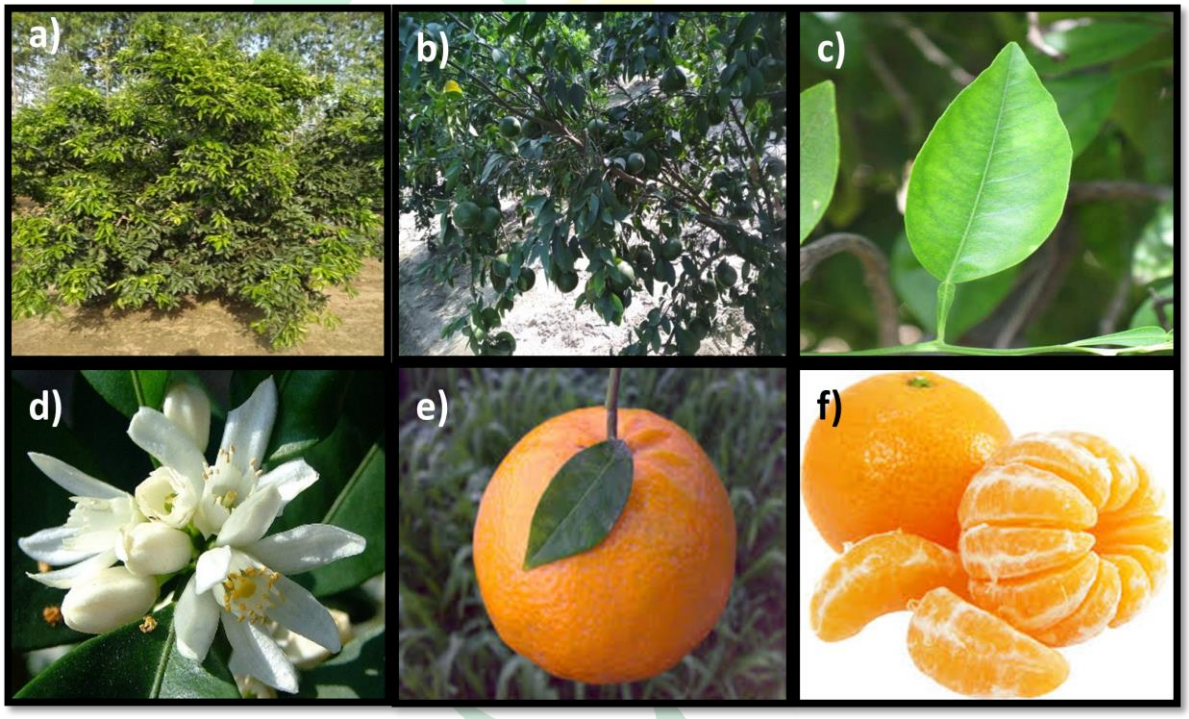

Figure 1.1 Description of kinnow plant **(a)** Kinnow plant **(b)** Kinnow branch **(c)** Kinnow leaf **(d)** Kinnow flower **(e)** Kinnow fruit **(f)** Kinnow without peel.

KINNOW ECONOMIC PRODUCTION

Citrus fruits have a major role in the economy of world. These fruits are among top three fruits of world with respect to area and production. Brazil is the leading citrus fruit producer

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followed by USA, China and Mexico. Commercially, kinnow is one of the most successful citrus fruit. In India kinnow contributes good percentage to citrus fruit income. The major kinnow producing states are Punjab, Maharashtra, West Bengal, Maharashtra, Haryana, Madhya Pradesh, Himachal Pradesh and Karnataka. Table 1.1 show kinnow production and area under cultivation for three consecutive years. Government initiative to transfer traditional farming into modern and scientific farming practices has helped increased area under kinnow cultivation and total production.

Table 1.1: State wise kinnow production and area under cultivation

States/UTs	2014-15		2015-16		2016-17	
	Area (ha)	Prod. (MT)	Area (ha)	Prod. (MT)	Area (ha)	Prod. (MT)
Madhya Pradesh	60150	1030000	94490	1126270	115830	1437970
Punjab	48180	1108620	49360	1140310	51060	1182100
Maharashtra	105470	716070	106900	768990	107500	985190
Rajasthan	8680	300670	12480	267340	15150	297000
Assam	15760	202380	15650	210140	17550	236010
Arunachal Pradesh	-	-	42640	217040	43500	221410
Karnataka	2860	64250	3960	92050	4090	98810
Nagaland	6100	54800	6120	51690	6480	54430
Meghalaya	8780	42230	8750	42840	9150	45320
Manipur	5350	43060	4910	43340	4890	43180
Mizoram	14200	41200	14370	41340	15970	41340
West Bengal	4010	39100	4020	39210	4070	39550
Tripura	6700	36520	7680	31400	7600	31090
Sikkim	10	20	12380	16800	12820	18480
Himachal Pradesh	8710	10960	8720	13030	8640	14660
Tamil Nadu	1830	4930	2030	6260	2040	4770

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J&K	2310	4010	2350	4210	2370	4250
Telangana			30	440	160	2270
Kerala	10	60	0	30		
Others	90	110	90	60	90	70
TOTAL	**299200**	**3698990**	**396930**	**4112800**	**429290**	**4753870**

National Horticulture Database (2016-17)

National Horticulture Board database (2016-17) shows that in India 4,29,290 hectare area was under kinnow plantation with total yield of 47,53,830 MT. According to horticulture statistics (2016-17) Madhya Pradesh was highest producer of kinnow followed by Punjab (Table 1.1). In Madhya Pradesh kinnow plantation covered 1,15,835 hactare area and produced 14,37,976 MT of fruit. Punjab produced 11,82,109 MT of Kinnow annually and nearly 51,063 hactare of land was under kinnow plantation. As evident from table 1.2 Hoshiarpur, Muktsar and Fazilka are main citrus growing belt of Punjab.

Table 1.2: District wise kinnow production and area under cultivation in punjab

District	**2014-15**		**2015-16**	
	Area (ha)	**Prod. (MT)**	**Area (ha)**	**Production (MT)**
Fazilka	28490	648910	29500	613160
Hoshiarpur	6510	153230	6250	140200
Muktsar	5910	187880	5930	130180

National horticulture database (2016-17).

CONCLUSION

As evident from table 1.1 and 1.3, in previous decade there has been tremendous increase in kinnow production in north-west region of India owing to high production and increase in area under cultivation. Progressive farmers prefer to grow kinnow because of its high yielding characteristics and its attractive quality that possesses them potential to give the lucrative return in form of profit .

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References

Ahmed W, Ziaf K, Nawaz M.A, Saleem B.A. and Ayyub C.M. 2007. "studies on combining ability of citrus hybrids with commercial indigenous cultivars". Pak. J. Bot. **39**(1): pp 47-55.

Hui Y.H, Cano M.P, and Barta J. 2006. "handbook of fruits and fruit processing". Wiley, John & Sons. pp 312.

Horticulture at a glance 2017. http://nhb.gov.in.

Usman M, Fatima B. 2018. "mandarin (*citrus reliculata* blanco) breeding". In: Al-Khayri J., Jain S., Johnson D. Advances in Plant Breeding Strategies: Fruit. pp 13.

Altaf N. 2006. "embryogenesis in undeveloped ovules of citrus cultivars in response to gamma radiation". Pak. J. Bot. **38**(3): pp 589-595.

Kaur M and Singla N. 2016. "an economic analysis of kinnow cultivation and marketing in fazilka district of punjab". Indian Journal of Economics and Development. **12**. pp 711.

Davinder, Mirza A, Singh R, Kumar A and Partap S. 2017 . "Impact Of Zinc And Boron On Growth Parameters Of Kinnow". Journel of pure and applied microbiology: 1-4.

Ahmed W, Pervez M.A, Amjad M, Khalid M, Ayyub C.M and Nawaz M.A. 2006. "effect of stionic combinations on the growth and yield of kinnow mandarin (*citrus reticulate* blanco)". Pakistan Journal of Botany. **38**(3): pp 603-612