Asian Science
Volume 7 | Issue 1 | June, 2012 | 28-30

RESEARCH PAPER

Success of shield budding in Nagpur mandarin in shade net and open field condition

R.B. BHUSARI*, N.D. JOGDANDE, S.G. BHARAD AND P.K. NAGARE
Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA

ABSTRACT

Studies were carried out at experimental orchard of AICRP (Tropical Fruits) Dr. PDKV, Akola Maharashtra on shield budding in Nagpur mandarin in shade net and open field conditions at 15 days interval from 15th November to 30 January. Height of bud graft, length of scion and number of leaves on scion were best under open field conditions similarly maximum bud take per cent, bud survival per cent, leaf area and chlorophyll content were better under open field condition than shade net condition. Budding done at 15th December under open field condition gave the maximum height of bud graft, length of scion, number of leaves on scion, bud take per cent, bud survival per cent, leaf area and chlorophyll content than all other treatments.

Key Words : Shield budding, Shade net, Open field condition, Nagpur mandarin

View point paper : Bhusari, R.B., Jogdande, N.D., Bharad, S.G. and Nagare, P.K. (2012). Success of shield budding in Nagpur mandarin in shade net and open field condition. *Asian Sci.*, **7**(1): 28-30.

Citrus is the third largest fruit production industry of the country after banana and mango and occupies 13 per cent of total area under fruit cultivation with about 11.9 per cent of annual fruit production of the country (Anonymous, 2008). Among the various types of citrus fruit grown, mandarin (*Citrus reticulate* Blanco) occupies about 3.9 per cent of the total area and 2.4 per cent of the total fruit production throughout the country (Anonymous, 2008). In Maharashtra Vidarbha alone covers more than 86 per cent area under mandarin. In Vidarbha it is grown on an area of 65,000 ha with annual production of 4.25 lac tones. It is grown mostly in Amravati, Nagpur and Wardha districts where more than 80 lac of Nagpur mandarin nursery plants are raised and sold through 325 to 350 governments and private nursery (Anonymous, 2000). So by providing genuine planting material which is disease and pest free, productivity level of mandarin in this area can be increased to a considerable extent. This is only possible in greenhouse nursery but at present there is no standardized time for budding in Nagpur mandarin under greenhouse

RESEARCH METHODOLOGY

The present investigation was carried out using Nagpur mandarin scion at experimental orchard of AICRP (Tropical Fruits) Dr. P.D.K.V., Akola during 2009-2010. The experiment was laid down in Completely Randomized Design comprising twelve treatments, three replications with 50 bud grafts under each treatment. The rootstocks selected for experimental purpose were of pencil thickness, straight in growth and in good sap flow condition having longitudinal white streak on the bark. Bud wood for budding operation was selected from fairly well mature non bearing current year shoot having longitudinal white streak on the bark and swollen buds which were ready to grow after budding. Shield budding operation was done at 15 days interval from 15th November to 30th January under open field and shade net condition. The experimental area was provided with uniform cultural practices. Data on

*** Author for correspondence**
N.D. Jogdande, AICRP (T.F.), Dr. Panjabrao Deshmukh Krishi Vidhyapeeth, AKOLA (M.S.) INDIA
S.G. Bharad and P.K. Nagare, Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidhyapeeth, AKOLA (M.S.) INDIA

height of bud graft, length of scion, number of leaves on scion, bud survival per cent, leaf area and chlorophyll content were recorded 90 days after budding operation. Whereas data on bud take per cent was recorded 30 days after budding. The data were analyzed as per the method suggested by Gomez and Gomez (1984).

RESEARCH AND REMONSTRATION FINDINGS

Different dates of budding and environment had significant influence on height of bud graft, length of scion, number of leaves on scion, bud take per cent, bud survival per cent, leaf area and chlorophyll content in Nagpur mandarin (Table 1 and 2). Shield budding performed at 15th December under open field condition gave maximum height of bud graft (25.27 cm), length of scion (12.32 cm), number of leaves on scion (20.26), leaf area (16.01 cm^2) and chlorophyll content in leaves (0.61 mg/g) followed by 30th December under open field condition. This might be due budding done during this period received fairly long period of favourable temperature, relative humidity, light intensity for vegetative growth. The minimum

Table 1: Effect of environment and different budding time on height of bud graft, length of scion, number of leaves on scion and leaf area

Date of budding	Environmental condition	Height of bud graft (cm)	Length of scion(cm)	Number of leaves on scion	Leaf area (cm^2)
15th November	Open field	20.75	7.36	12.74	11.22
30th November	Open field	23.1	8.61	16.43	12.41
15th December	Open field	25.27	12.32	20.26	16.01
30th December	Open field	24.18	11.93	16.69	15.62
15th January	Open field	22.9	7.49	12.82	9.84
30th January	Open field	19.78	6.54	11.68	7.10
15th November	Shade net	17.18	4.82	6.67	9.88
30th November	Shade net	18.92	5.57	10.74	11.55
15th December	Shade net	19.12	9.18	12.03	15.12
30th December	Shade net	18.47	5.97	10.94	10.44
15th January	Shade net	17.36	3.23	10.36	7.43
30th January	Shade net	17.11	2.9	6.52	6.99
F test		Sig	Sig	Sig	Sig
S.E. (m)±		0.82	1.96	2.59	0.78
C.D. (P=0.05)		2.39	5.71	7.57	2.27

Sig. = Significant

Table 2: Effect of environment and different budding time on chlorophyll content, bud take per cent and bud survival per cent

Date of budding	Environmental condition	Chlorophyll content(mg/g)	Bud- take per cent	Bud survival per cent
15th November	Open field	0.53	57.67	48.00
30th November	Open field	0.54	62.67	57.33
15th December	Open field	0.61	83.67	77.33
30th December	Open field	0.56	73.67	63.00
15th January	Open field	0.52	65.00	52.00
30th January	Open field	0.47	52.00	32.00
15th November	Shade net	0.5	41.33	25.33
30th November	Shade net	0.53	54.67	25.33
15th December	Shade net	0.56	66.33	34.33
30th December	Shade net	0.54	46.67	30.67
15th January	Shade net	0.47	34.67	24.00
30th January	Shade net	0.46	32.67	21.33
F test		Sig	Sig	Sig
S.E.(m)±		0.04	2.69	4.66
C.D. (P=0.05)		0.13	7.66	13.62

Sig. = Significant

height of bud graft (17.11 cm), length of scion (2.9 cm), number of leaves on scion (6.52), leaf area (6.99 cm^2) and chlorophyll content in leaves (0.46 mg/g) was observed in 30th January in shade net condition which might be due to increase in temperature and decrease in relative humidity in shade net. Similar results were also observed for bud take per cent and bud survival per cent. Maximum bud survival per cent (77.33 %) and bud take per cent (83.67 %) was observed by budding under open field condition on 15th December followed by budding 30th December under open field condition. These might be due to the fact that congenial climatic condition, suitable temperature, relative humidity and light intensity that caused high cell activity and suitable humidity level of atmosphere showed favourable effect on bud take per cent and bud survival per cent. Whereas the minimum bud take (32.67%) and bud survival per cent (21.33 %) was observed by budding on 30th January under shade net condition. Which might be due to fact that unfavourable weather condition with high temperature and lower relative humidity which may interfered with the bud union healing process, unavailability of scion with active buds.

REFERENCES

Anonymous (2008). Indian Horticulture Data Base.

Anonymous (2000). Propagation of disease free planting material on citurs. National Research centre for citrus. Extension Bulletin No-23, Nagpur, M.S. (INDIA).

Desai, J.B. and Patil, V.K. (1981). Success of stone grafting in Mango in glasshouse and open field condition. *Punjab Hort. J.*, **23**(1-2):7-9.

Gomez, K.A. and Gomez, A.A. (1984). Statistical procedure for agricultural research. John Wiley and Sons, New York. 680 pp.

Joolka, N.K. (1986). A note on the effect of method and time of budding on bud take in kinnow mandarin. *Haryana J. Hort. Sci.,* **15**(1-2): 54-56.

Mukherjee, S.K. and Singh, Y.M. (1966). Effect of season of budding of sweet orange. *Sci. & Culture*, **32**(4):267-268.

Patel, R.K., Babuik, D., Singh Akath, Yadav, D.S. and Del, C. (2007). Sooftwood grafting in mandarin(*c reticulate* Blanco): A novel vegetative propagation technique. *Internat. J. Fruit Sci.*, **7**(2):31-41

Seletsu, S., Singh, D.B., Roshan, R.K. and Pebam, Nongalle (2009). Effect of time and species on bud union in citrus under Allahabad condition. International Conference on Horticulture(ICH) : 296.

Singh, H.P., Singh, Gorakh, Samuel, Jose C. and Pathak, R. K. (2003). Precision farming in Horticulture, (ISH, Lucknow): 226-238.

William S. Castle (1982). Current status of greenhouse and container prodiction of citrus nursery tree in Florida Fla. *State Hort. Soc*., **95**: 42-46.

WEBLIOGRAPHY

www.nhb.gov.in

Received : *21.01.2012;* **Revised :** *01.03.2012;* **Accepted :** *02.04.2012*