Pakistan
Journal of Biological Sciences

Standardization of Rootstock for Almond Propagation in Pothohar Area

Muhammad Akram Nasir[1], M.Z. Nawaz, A. Baksh and M.A. Summrah[2]
[1]Hill Fruit Research Station, Sunny Bank Murree, Pakistan
[2]Horticultural Research Station, Nowshera (SV), Khushab, Pakistan

Abstract: This experiment was conducted at the Horticulture Research Station, Nowshera, Soany Valley, Khushab during 1997-98. Various rootstocks viz. Wild apricot (Hari), peach and almond were tested for almond scion on the basis of their effect on grafting success, scion thickness, stock thickness and height of grafted plants, Maximum grafting success (69.33) stock and scion girths (4.35 and 4.07), plant height (45.0 cm) when almond scion was grafted on almond stock during 1997. Almost similar trend was noted during 1998, However, peach rootstock performed better than Hari rootstock during both years. Conclusively almond rootstock is recommended for almond propagation in the Pothohar tract.

Key words: Prunus dulcis, propagation, vegetatively, grafting success, scion stock, girths, Pakistan

Introduction

The almond (Prunus dulcis, formerly known as *P. amygdalus*) belongs to family Rosaceae is a stone fruit important for its nutritious and highly valued seeds. It is a new introduction in Pothohar tract which is being successfully grown under Soan Valley climatic conditions as well. Demand of nursery plants of almond is increasing tremendously by the local growers. Keeping in view the local demand of orchardists, various research traits on nursery performance of almond on different rootstocks viz. Hari, Peach and Almond were tried. Almond is propagated vegetatively. The best rootstocks seedling of either bitter or sweet almond. Peach is also commonly used and sometimes apricot seedling as reported by Chaudhary (1994). Hartman and Kester (1959) reported that bitter type of almond rootstock were widely used for almond and are quite satisfactory, in poorly drained soils, almond roots are oftenly unsatisfactory but its deep rooting tendency is good on irrigated soils or where drought conditions occur. Almond seedling can be used of high lime contents where iron deficiency chlorosis may be expected. Almond rootstock is least affected by excess alkali and boron salts of any of the rootstock available for almond varieties. Almond varieties on Peach roots in deep irrigated soils will grow faster for the first several years and bear heavy crop during this period than those on almond roots but trees on almond roots will tend to like longer than those on Peach roots.

Thus the present project was initiated to understand the influence of three rootstocks (Hari, Peach and Almond) on almond scion under Soan Valley climatic conditions.

Materials and Methods

These investigations were carried out in the nursery area of the Horticultural Research Station, Nowshera, Soan Valley, Khushab. Almond scion as grafted on one year old plants of Hari, Peach and Almond stocks during 1997-98, adopting tongue grafting technique in the month of January. Grafting success percentage, girths of scion and stock was noted during November 1997 while plant height was recorded in the last week of December each year. Some study was repeated for the year 1998 as well. Analysis of variance techniques at 5% probability (Steel and Torrie, 1990) was used for data analysis.

Results and Discussion

Grafting success: Table 1 indicated that maximum grafting success was recorded in almond plants grafted on almond stock followed by grafted on Peach stock with means of 60.0% during 1997. Poor grafting success was noted in plants grafted on Hari stock. Almost similar results were noted during 1998. Hence the results agree to the general conclusion that almond stock is better for almond scion. These results are also corroborated with the findings by Chaudhary (1994) that the best rootstock for almond scion is either bitter almond or sweet almond.

Table 1: Effect of different rootstocks on nursery performance of almond

Character	Year	Treatments means			
		Hari	Peach	Almond	FR
Grafting success (%)	1997	52.33b	60.00ab	69.33a	15.97*
	1998	44.50c	60.00b	71.33a	15.25*
Scion thickness (cms)	1997	3.50b	4.04a	4.32a	0.55*
	1998	3.62b	4.10a	4.35a	0.44*
Stock thickness (cms)	1997	3.62b	3.40b	4.07a	0.53*
	1998	2.50b	3.57b	3.87a	0.50*
Plant height (cms)	1997	35.00b	42.00a	45.00a	12.00*
	1998	36.00b	37.00b	44.00a	14.00*

* = Significant at 5% level of probability

Scion and stock girths: Scion/stock girths indicated that both the girths were maximum when almond scion were grafted on almond stocks with means of 4.35 and 4.07 cms of scion and stocks girths respectively. Minimum girths of parameters were on Hari stock followed by Peach stock in ascending order. Similar results were found during second year.

Plant height: Almond grafted plant heights are significant during 1997 and 1998. Maximum height was seen in the plants grafted on almond stock followed by Peach stock. Minimum plant height was noted in almond plants grafted on Hari stock. Almost similar trend was noted during the second year. These finding are fully supported by Hartman and Kester (1959) that bitter type almonds are widely used rootstocks for almond and are quite satisfactory. It is concluded from the trial that to have maximum grafting success and better performance of nursery, almond stock is the best for almond scion.

References

Chaudhary, M.I., 1994. Fruit Crops. In: Horticulture, Malik, M.N. (Ed.). Chapter 13, National Book Foundation, Islamabad, Pakistan, pp: 436-537.

Hartman, H.T. and D.E. Kester, 1959. Propagation Methods and Rootstock for the Important Fruit and Nut Species. In: Plant Propagation Principles and Practices, Hartmann, H.T. and D.E. Kester (Eds.)., Chapter 16, Prentice-Hall, Germany, pp: 455-501.

Steel, R.G.D. and J.H. Torrie, 1980. Principles and Procedures of Statistics: A Biometrical Approach. 2nd Edn., McGraw Hill Book Co., New York, USA., ISBN-13: 9780070609266, Pages: 633.