CIHEAM
Options Méditerranéennes

Effects of budding time on success and sapling growth in almond on Erzincan conditions

Aslantas R., Güleryüz M.

in

Ak B.E. (ed.).
XI GREMPA Seminar on Pistachios and Almonds

Zaragoza : CIHEAM
Cahiers Options Méditerranéennes; n. 56

2001
pages 343-345

Article available on line / Article disponible en ligne à l'adresse :

http://om.ciheam.org/article.php?IDPDF=1600201

To cite this article / Pour citer cet article

Aslantas R., Güleryüz M. **Effects of budding time on success and sapling growth in almond on Erzincan conditions.** In : Ak B.E. (ed.). *XI GREMPA Seminar on Pistachios and Almonds*. Zaragoza : CIHEAM, 2001. p. 343-345 (Cahiers Options Méditerranéennes; n. 56)

CIHEAM

http://www.ciheam.org/
http://om.ciheam.org/

CIHEAM

Effects of budding time on success and sapling growth in almond on Erzincan conditions

R. Aslanta_ and M. Güleryüz
Department of Horticulture, Faculty of Agriculture, Atatürk University, 25240 Erzurum, Turkey

SUMMARY – This research was conducted in order to determine the best budding time for almond in Erzincan conditions in 1996 and 1997. Saplings were budded on 20 July, 5 August, 20 August and 5 September in 1996. The highest healing ratio of budding union was 100% on 20 August while the lowest was 85.57% on 5 September. Budding done on 20 August and 5 September started shoot growth (1.11%) in the same vegetation period, but it was 4.44% on 5 August and 37.74% on 20 July buddings. Shoot length was between 1 cm and 13 cm. Also, gumming in the budding point was not observed on 20 August budding time but it occurred as 2.22% on 5 August, 7.77% on 5 September and 17.27% on 20 July. Budding time was not significant for sapling development. While sapling diameter ranged between 14.68 mm (20 July) and 15.28 mm (5 August), their lengths between 152.25 cm (5 September) and 156.51 cm (5 August). As a result, it can be said that the best time for T-budding in Erzincan conditions was, therefore, between 15-25 August.

Key words: Almond, *Prunus amygdalus*, budding time, T-budding, sapling growth.

RESUME – *"Effets de la période de greffage sur le succès et la croissance du plant d'amandier dans les conditions d'Erzincan". Cette recherche a été conduite pour déterminer la meilleure période de greffage pour l'amandier dans les conditions d'Erzincan en 1996 et 1997. Les plants ont été greffés le 20 juillet, 5 août, 20 août et 5 septembre en 1996. La plus haute proportion de bonne cicatrisation du point de greffage était de 100% pour le 20 août tandis que la plus faible était de 85,57% pour le 5 septembre. Le greffage réalisé le 20 août et le 5 septembre a vu commencer la croissance de la pousse (1,11%) dans la même période de végétation, mais ceci était de 4,44% pour le greffage du 5 août et de 37,74% pour le greffage du 20 juillet. La longueur de la pousse était entre 1 cm et 13 cm. On n'a pas non plus observé de points gommeux sur le point de greffage à la période de greffage du 20 août mais ceci est survenu à 2,22% pour le 5 août, 7,77% pour le 5 septembre et 17,27% pour le 20 juillet. La période de greffage n'était pas significative pour le développement du plant. Tandis que le diamètre des plants était entre 14,68 mm (20 juillet) et 15,28 mm (5 août), leur longueur était entre 152,25 cm (5 septembre) et 156,51 cm (5 août). Comme résultat, on peut dire que la meilleure période pour le greffage en T dans les conditions d'Erzincan était donc entre 15-25 août.*

Mots-clés : *Amande,* Prunus amygdalus*, période de greffage, greffage en T, croissance du plant.*

Introduction

The cultivated almond (*Prunus amygdalus* Batsch) apparently originated from one or more of the many wild species that evolved in the deserts and lower mountain slopes of central and southwest Asia (Kester and Ross, 1996). Nowadays cultivated either intensively or semi-intensively on many areas of the world.

Budding of almond came into general use about the middle of the nineteenth century. Nursery propagation on to selected rootstocks became the dominant practice in almond producing countries where its production technically developed (Kester and Grasselly, 1987).

The almond is propagated by T-budding on seedling rootstocks by fall, spring, or June budding (Hartman *et al.*, 1990; Riel and Sutter, 1996).

Late summer and early fall is the most important time for budding in the propagation of fruit tree nursery stocks. The rootstock plants are usually large enough by late summer to accommodate the bud, and the plants are still actively growing, with the bark slipping easily. Usually, one year's growth in the nursery row before the budding is sufficient to produce a rootstock plant large enough to be budded (Hartman *et al.*, 1990).

T-budding is a common practice for almond in Turkey usually done in July and August (Dokuzo_uz and Gülcan, 1979).

Güleryüz and Aslanta_ (1998) reported that almond rootstocks sapling grown in Erzincan conditions research enough stem diameter in a year.

Erzincan has wide microclimate areas and moderate continental climate in the northeast Anatolia. Deciduous fruit saplings of come from Erzincan.

This research aims to find the areas of the best budding time and sapling growth for almonds in Erzincan conditions.

Material and methods

The study was carried out in the northeast Anatolian region of Turkey in Erzincan (Latitude N: 39° 04' 00"-40° 06' 00" and Longitude E: 38° 18' 00"-40° 42' 00"). The soil and climatic characteristics of the farm are as follows: altitude was 1200 m; soil composition was 41.80% sand, 26.40% silt and 31.80% clay; soil pH was 8.3; average temperature was 11.6°C; average maximum temperature was 32.2°C (August); average minimum temperature was –4.4°C (January); and average annual rainfall was 411.6 mm.

Stratified wild almond seeds were directly planted on budding plot in late March in 1996. Almond seedling rootstocks were budded with Texas (Mission) cultivar.

T-budding was done in four periods in 1996: 20 July, 5 August, 20 August and 5 September.

In the spring (1997), just before new growth began, the rootstock was cut of immediately above the bud.

In 1997 the shoot growth (cm) and trunk diameter (mm) determined when shoot growth stopped or at the end of the season (October 15, 1997).

The experiment was of Completely Randomized Design with three replicates in the field conditions. Data with percentages were subjected to Arc. sin transformation before statistical analysis and means were separated by Duncan's Multiple Range test (Düzgüne_ *et al.*, 1993).

Results and discussion

Results of the research done in Erzincan conditions were given in Table 1. According to Table 1, significant differences were recorded on budding time. The highest healing of budding union was 100% on 20 August, but it was the lowest (85.57%) on 5 September budding.

The reason for poor healing on 5 September was probably because of low temperature ambient in that time and after budding. Temperature has a pronounced effect on the production of callus tissue.

The shoots occurred on the fall budding were not preferable. But, some of the buds may start growth in the fall. If such fall-forced buds do not start early enough for the shoots to mature before cold weather start, they were likely to be autumn and winter killed (Hartman *et al.*, 1990). Budding done on 20 August and 5 September start shoot growth by 1.11% in the same vegetation period, but it was 4.44% on 5 August and 37.74% on 20 July buddings. However, shoot length was between 1 and 13 cm in this period. Shoot tips were damage by frost due to in sufficient hardness.

Significant differences were not observed in trunk diameter and sapling length. However, the highest trunk diameter and sapling length were 15.28 mm and 156.51 cm at 5 August buddings respectively. The lowest trunk diameter and sapling length were 14.68 mm at 20 July and 152.25 cm at 5 September buddings respectively.

In conclusion, it can be said that the best T-budding time for almond in Erzincan conditions is between 15 and 20 August.

Table 1. Budding time, healing of the budding union, shoots grow in the same vegetation period, gumming of budding union, mean trunk diameter and sapling length of almond in Erzincan conditions

Budding time	Healing of the budding union (%)	Shoots grow in the same vegetation period (%)	Gumming of budding union (%)	Mean trunk diameter (mm)	Mean sapling length (cm)
20 July	96.67 b (79.37)†	37.74 a (37.89)	17.27 a (24.55)	14.68	155.69
5 August	98.89 ab (86.46)	4.44 b (11.98)	2.22 b (7.00)	15.28	156.51
20 August	100.00 a (90.00)	1.11 b (3.50)	0.00 b (0.00)	14.77	154.82
5 September	85.57 c (67.70)	1.11 b (3.50)	7.77 a (16.11)	14.91	152.25
LSD 0.01	*8.668*	*12.36*	*8.818*	*NS*††	*NS*

†Transformed figures are in the brackets.
[a,b,c]Means fallowed by different letters are significantly different by Duncan's Multiple Range test at 0.01 level.
††NS: Non significant.

References

Dokuzo_uz, M. and Gülcan, R. (1979). *Almond Growing and the Problems*. TUBITAK Publication No. 432, TOAG No. 90, Ankara (in Turkish).

Düzgüne_, O., Kesici, T. and Gürbüz, F. (1993). *Statistics Methods II*. Pres. University of Ankara, Faculty of Agriculture Publication No. 1291, Ankara (in Turkish).

Güleryüz, M. and Aslanta_, R. (1998). An Investigation on growth of almond seedlings. In: *East Anatolia Agriculture Congress*, Ataturk University, Agriculture Faculty, Erzurum (Turkey), 14-18 September, pp. 574-582 (in Turkish).

Hartmann, H.T., Kester, D.E. and Davies, F.T., Jr. (1990). *Plant Propagation Principles and Practices.* Prentice-Hall International, Inc., Englewood Cliffs (NJ),

Kester, D.E. and Grasselly, C. (1987). Almond rootstocks. In: *Rootstocks for Fruit Crops*, Rom, R.C. and Carlson, R.F. (eds). John Wiley & Sons, New York, pp. 265-293.

Kester, D.E. and Ross, N.W. (1996). History. In: *Almond Production Manual*, Micke, W.C. (ed.). Division of Agriculture and Natural Resources, University of California, pp. 1-2.

Riel, W. and Sutter, E. (1996). Propagation. In: *Almond Production Manual*, Micke, W.C. (ed.). Division of Agriculture and Natural Resources, University of California, pp. 64-69.