

WALNUT PRODUCTION STATUS IN PAKISTAN

Muhammad SAMEEULLAH¹

Turan KARADENİZ¹

SUMMARY

In Pakistan almost 226 indigenous walnut (*Juglans regia* L.) growing in Northern region KPK province including Malakand division (districts of Swat, Dir, Bunir, Chitral, Shangla and Malakand Agency), Kaghan (district Mansehra), in Gilgit–Baltistan province have a number of walnut clusters, and Leepa in Neelum valley and Muffazarabad in Azad Jammu & Kashmir. According to country report of FAO for Pakistan, walnut is native fruit tree. The introduced exotic cultivars are Chandler, Hartley, Lam, Germisara, lupanesti, Valerie, Odum, Sere and Sulemani. There are also local selections viz. MS–1, MS–2, MS–18 from Malakand, SW–1, SW–3' from Swat, Dir–2 and Chitral–I, Chitral–2, Chitral–3, Kurram–1, Kurram–2, Kurram–3, Kurram–4. The production of walnut is continually reducing over the period of time. Therefore, training of scientific manpower, breeding of high yielding cultivars, and dissemination of cultural practices to farmer community is important in order to enhance production area and yield.

Keywords: Walnut, Pakistan, production, breeding, cultivar, status

INTRODUCTION

In Pakistan almost 226 indigenous [9] walnut (*Juglans regia* L.) growing in Northern region. Two exotic varieties Serr and Payne available from Agricultural Research Institute Mingora, Swat, KPK. Walnut is on an area of 1.497 ha [3]. In two Fruit Research Stations, the practice of grafting has begun recently and introduced cultivars from California are being propagated. In Chitral, a local selection which appears promising is being propagated by the staff of the Fruit and Vegetable Development Board [1]. According to country report of Food and agriculture organization [2] for Pakistan walnut is native fruit tree. The Hindu–Kush Himalayan region of Pakistan is very rich in fruit and nut biodiversity as a result of the wide range in climate. However, proper walnut orchards are missing in the northern region of Pakistan since farmers practice walnut growing on marginal lands [9]. Although great genetic

diversity exist in the local germplasm however, proper documentation by molecular markers of the genetic material is limited and few studies has been reported [6].

Walnut Growing Region in Pakistan

The walnut growing areas in Pakistan are mostly located in Khyber Pakhtunkhwa (KPK) province, Gilgit–Baltistan and also in Azad Kashmir region (Figure 1). In KPK province main growing region is Malakand which account 82% of total walnut production of the country (Anonymus, 1999–2000). The walnut cultivated at an altitude of 925–3000 m. A population of wild type walnut trees can be found on an altitude 1550 m to 3000 m especially in Kaghan valley [8]. The introduced exotic cultivars are Chandler, Hartley, Lam, Germisara, lupanesti, Valerie, Odum, Sere and Sulemani. There are also local selections viz. MS–1, MS–2, MS–18 from Malakand, SW–1,

¹ Abant İzzet Baysal Üniversitesi, Ziraat ve Doğa Bilimleri Fakültesi, Bahçe Bitkileri Bölümü, BOLU

SW-3' from Swat, Dir-2 and Chitral-I, Chitral-2, Chitral-3, Kurram-1, Kurram-2, Kurram-3, Kurram-4.



Figure 1. Walnut growing areas in Pakistan. Red color line encircling areas represent the walnut growing regions of Pakistan

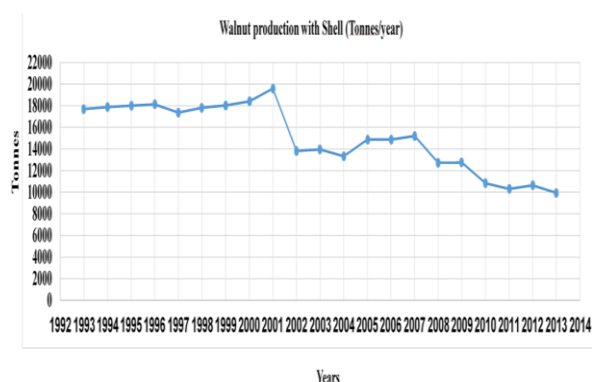


Figure 2. Walnut production with shell in Pakistan over the two decades. Source: FAO STAT

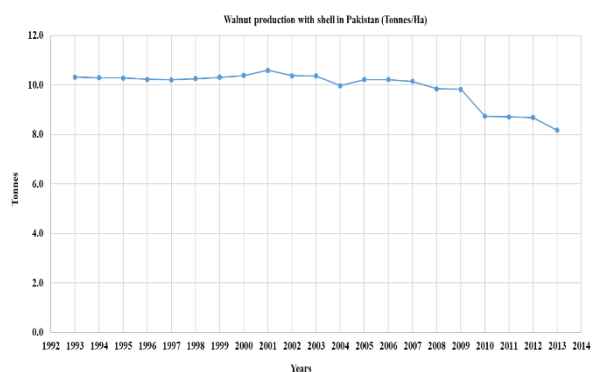


Figure 3. The yield of walnut production with shell in Pakistan. Source: FAO STAT

Growth and Yield of Walnut

The growth of walnut tree varies from region to region. The biggest tree located in Chitral area has a circumference of 6.8 m while on the other

hand height of the trees in the limits of 40–50 m [10]. Since the walnut (*Juglans regia*) is a long lasting species up to 100–200 years even more around 1000 years old trees can be found [7]. The nuts produced from wild type trees are smaller in size and rounder having a thicker sheller. Due to growing seedlings from seeds there is huge variability in nut size, shape, shell thickness, color and taste of kernels [10]. In worldwide walnut production is 1,000,000 metric tons annually [2]. While in Pakistan walnut production with shell was recorded from 18000–20000 tonnes/year during the 1993–2001. However, this production suddenly declined to 14000 tonnes/year in 2002 and almost stable at 10000 tonnes/year during 2011 to 2013 as shown in Figure 2 [2]. The yield of walnut production was around 10 tonnes/Ha since 1993–2009 however yield declined to 8 tonnes/Ha in 2013 (Figure 3).

Possible Solutions to Improve Production of Walnut in Pakistan

These statistics shows that walnut production in Pakistan continuously under deterioration. These downfalls in production could be due to several factors including deforestation, lack and disease pest management, inappropriate agronomic practices and the use of unimproved genotypes. There is a big potential of introducing the improved walnut cultivars through introduction, selection or hybridization breeding methods. One solution can be the replacing of wild type walnut trees into cultivated by practice of grafting superior cultivars on wild type walnut population. This method has been successfully employed in Turkey [5, 11].

CONCLUSION

The integrated approaches should be followed to improve the production and yield of walnut in Pakistan. Training of researchers involved in walnut improvement program and subsequently introduction, selection, hybridization and grafting methods should be employed. Rich experience of Turkish scientists working in walnut production can be greatly helpful to improve the walnut production in Pakistan.

REFERENCES

1. FAO, 2007. Country Report on the State of Plant Genetic Resources for Food and Agriculture. (<http://www.fao.org/docrep/013/i1500e/pakistan.pdf>). (Accessed on October 4, 2017).
2. FAO, 2014. Food and Agricultural Organization of the United Nations. (<http://www.fao.org/faostat/en/#data/qc>) (Accessed on October 4, 2017)
3. GOP, 2012. Land use Atlas of Pakistan. (<http://mocc.gov.pk>) (Accessed on 4.10.2017)
4. Karadeniz, T., 2014. Cevizde Çevirme Aşısı ve Önemi. *Tarım Gündem* 3(18):42–44.
5. Karadeniz T. ve T. Şişman, 2015. Giresun Şebin Karahisar Cevizleri. *ÜÇM Yayın s:151*.
6. Khalil Ur Rahman, Abdur Rab, Nawab Ali, Muhammad Sajid, Ghulam Nabi, Amjad Khan, Muhammad Abdul Rauf and Riaz Alam, 2015. Rapd Based Estimation of Genetic Diversity in Walnut Genotypes Growing in Malakund Division, Pakistan. *Pak. J. Agri. Sci.* 52(4):997–1003.
7. Leslie, C. A. and G. H. Mcgranahan, 1998. The Origin of the Walnut. *Division of Agriculture and Natural Resources, University of California. Walnut Production Manual. Publ. 3373:3–7*.
8. Muhammad Waqar Khan, I. A. Khan, Habib Ahmad, Haidar Ali, Sajidul Ghafoor, M. Afzal, F. A. Khan, M. Shah and S. G. Afridi, 2010. Estimation of Genetic Diversity in Walnut. *Pak. J. Bot.* 42(3):1791–1796.
9. Rahman, K. U., N. Ali, A. Khan, A. Rab, R. Alam, M. A. Rafi, B. Haleema and N. L. Badshah, 2012. Biochemical Composition of 18 Indigenous Walnut Genotypes Grown in Malakand Division of Pakistan. *Sarhad J. Agric.* 28:545–550.
10. Rashid, A., 1998. Temperate Fruit Genetic Diversity in Pakistan. *World Conference on Horticulture Research Italy*.
11. Şen, S. M., T. Karadeniz ve Ö. Beyhan, 2012. Sorularla Ceviz Yetiştiriciliği. *ÜÇM Yayınları*, 208 s.