

Datepalm: An Introduction to Value, Cultivation and Challenges of its Propagation

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SUMMARY

Datepalm is woody plant of arid and semi-arid region which is important due to medicinal and nutritional values of its fruit. It is source of vitamin A, B1, B2, B3, B5, B6, B9 and C. Fruits have antiulcer, anticancer and antidiabetic properties. India is a good consumer and has a large market for datepalm fruits. India is among leading importer of date fruits but in recent years this import was in decline phase due to increase in domestic production. Increase in fruit production is a booster to economy which increased demand of planting material. It is not an easy task to complete such demand because of limitation in traditional methods of propagation in datepalm. Seedling development is not fruitful in datepalm due to its dioecious nature and vegetative propagation through using offshoot have their limitation in Form of generation of offshoots per mother plant. So advanced method of propagation like tissue culture will be an alternative to overcome these limitations.

INTRODUCTION

Datepalm is a woody plant of Arecaceae family which suitable for arid zone ecology if availability of water resources is not a limitation factor. This plant requires water supply of 8500m³/ha /year. At global level, it is cultivated in the desert of Arab, Sonoran,Arizona Sahara and Thar. Egypt, Saudi Arabia, Iran, Algeria, Iraq and Pakistan are contributing in 75% of the global production share of date fruits. In India, Jodhpur, Bikaner, Jaisalmer and Barmer of Rajasthan and Kutch, southern part of Gujarat including sourashtra and central part of Tamilnadu, some part of Punjab and Haryana which have desert ecology are also the areas where currently cultivation is carried out in organized form.

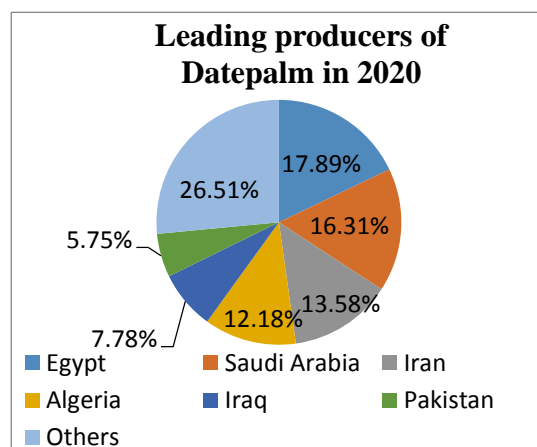
Medicinal properties:

It is used for the treatment of dengue and influenza. Dates fruits are also used as expectorant, cough relievers and for the treatment of asthma. Roasted date seeds powder is used as main ingredient in “date coffee”. This has anti ulser, anti diabetic, anti cancer properties. It is also useful for Alzheimer’s disease and labour relaxation during delivery and improvement in fertility.

Chemical composition:

The main chemical constituents of *P. dactylifera* are Myristic acid, linolenic acids, lauric acids, myristoleic acid, palmitic acid, palmitoleic acid and capric acids, α -carotene and Lutein, Peroxidase, phytase, Invertase, Vitamin A, B1, B2, B3, B5, B6, B9 and C.

Global cultivation of datepalm: The large scale plantation of Datepalm is in sub Saharan countries like Tunisia, Algeria, Egypt, Morocco and Arabian countries like Saudi Arabia, Iran, Iraq, United Arab Emirates. Leading producers of date fruits on global level are Egypt, Saudi Arabia, Iran , Algeria, Iraq, Pakistan and these six countries covering app.75% of total global production.



Datepalm fruit import and its Impact:

Indian import of date fruits was of amount 171,523 - 298,423 MT/year in first decade of this century which contributed to transfer of huge money on an average of 72,722 million USD/year from 2002-2011 to outside. India importing date fruits from 22 countries but 10 of these contributing to 90% of India’s import; most importantly largest exporter was Pakistan. But due to increase in cultivation area and fruit production this fiscal

deficit may reduce in few years but requirement of processed fruits at large scale and unavailability of planting material and climatic condition for processable varieties providing little space for Indian farmers.

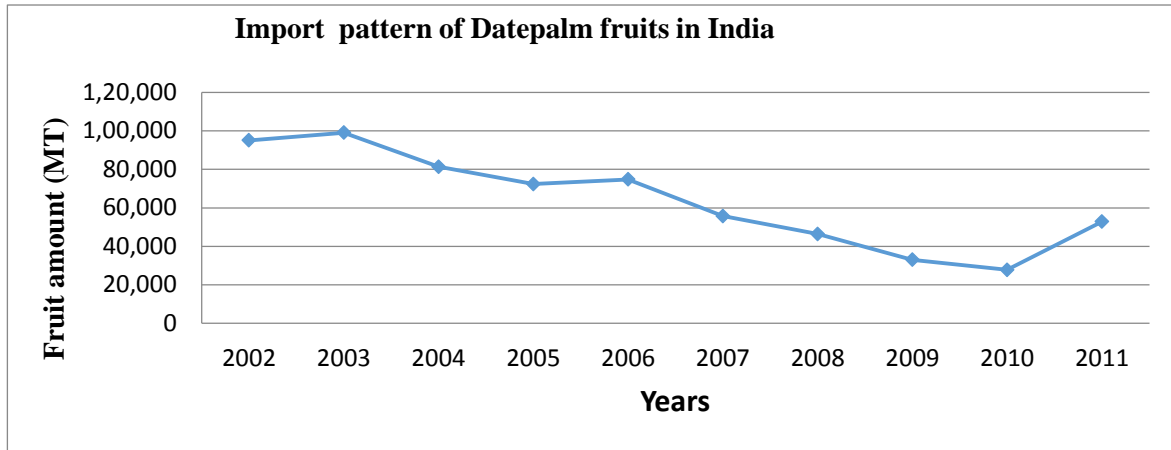


Fig.1: Import pattern of datepalm fruits in India from 2002 to 2011.

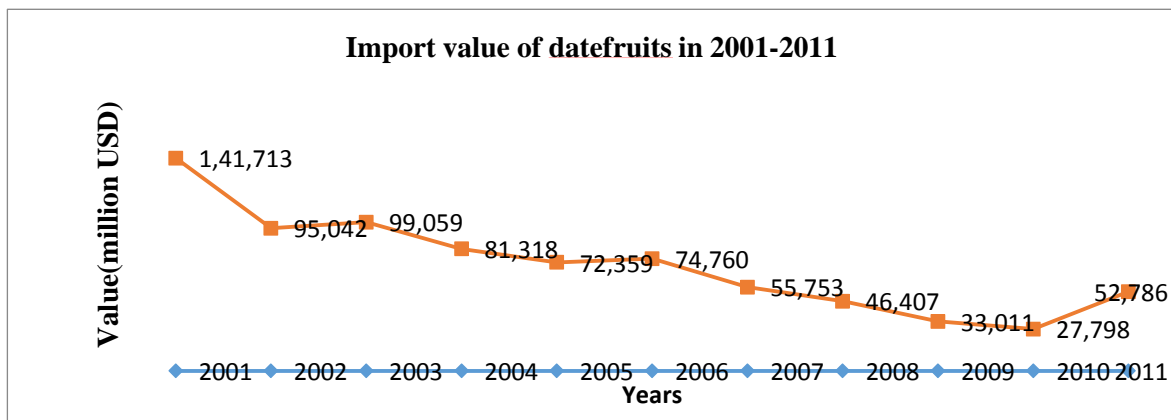


Fig.2: Decline in Indian import value of datepalm fruit from 2001 to 2011.

Areas for Datepalm cultivation in India

Traditionally in India cultivation of Datepalm was started in kutch area of Gujarat with seedling and offshoot materials. Kutch area produced 120,000 MT date fruits with the cultivation area of 16000 ha in 2010-11. In India, production of date fruits rised from 1,37,476 MT in 2012-13 to 1,66,635MT in 2016-17. In India, Gujarat is the leader in cultivation area and production of date fruits which followed by Rajasthan, Tamilnadu, Punjab, Haryana. Still cultivation areas including Jaisalmer, Bikaner, Jodhpur, some parts of Barmer, Churu and Sikar, Nagaur and Ganganagar of Rajasthan; Sirsa, Mahendragarh, Hisar and Bhiwani districts of Haryana State; Abohar and Firozpur areas of Punjab State are considered suitable for Datepalm cultivation. There are also some possibilities in the areas of Western Madhya Pradesh, Marathwada region of Maharashtra, Rayalseema of Andhra Pradesh and Telangana, highlands of Karnataka and central parts of Tamil Nadu.

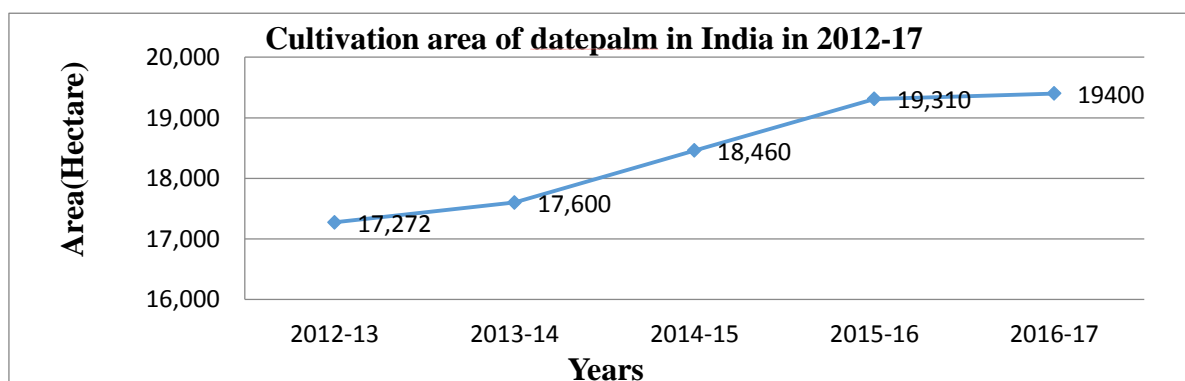


Fig.3. Increase in cultivation area of datepalm in India during period of 2012-2017.

Rajasthan:

Rajasthan produced nearly 2,800 tonnes of datepalm in 2018, a rise of 75% as compare to 2017 as and more than triple of the first harvest of the fruit in 2015-16. In the state of Rajasthan 4.1 million ha is suitable for this crop. Because ecological conditions and soil characteristics of 60% of total area of Rajasthan are most suitable for datepalm cultivation but scanty rainfall and requirement of comparatively high amount of water in Datepalm cultivation created difficulties in these regions of Rajasthan. In the last three decades expansion of irrigation facility in the northern and western part of Rajasthan through Indira Gandhi canal project created a hope for area expansion of Datepalm cultivation.

Propagation methods and challenges:

Because traditional method of propagation like seed germination is not fruitful due to its dioecious nature which can give rise to male plant equally in the place of female plants which is identified on appearance of first flower after five years of their plantation, at the same time this is become a risky practice after investing efforts, money, value able natural resources as only 10% male plants needed in field. Other means where this problems of dioecious character can be solved is propagation through using offshoot but this also has limitation because a mother plant can hardly produce app.10-15 offshoots in whole life and utilization of these, affects the production of mother plant. Low success ratio in establishment of these offshoots is also a problem with the use of this vegetative means of propagation. So tissue culture is an advanced and a better approach due to its nature of clonal propagation through which desired planting material of datepalm can be provided with proper quality. There are several efforts had been carried out at national and international level for tissue culture mediated propagation of datepalm.

CONCLUSION

Datepalm cultivation area increasing in India due to availability of appropriate environmental conditions, with increase in irrigation facility and availability of planting material. As India is a among leading consumer of datefruits and wants to reduce its import burden and boost its economy so due to all these circumstances demand of healthy and desired planting material is increasing with increasing cultivation area. Due to diverse climatic pattern specific varietal material required in large quantity which is not easy to supply with traditional methods of propagations due to their limitations. So advanced method of propagation like plant tissue culture is required to complete demand of desired planting material due to its of clone forming nature of propagation.

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