CASTOR تخم ارنڈی

Written By: Dr. Muhammad Yasin Mirza, PSO

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Castor (Ricinus communis L.) is an important industrial oil crop of the world. Internationally, castor oil is used in more than 300 derivatives for use in soap, cosmetics, pharmaceutical, paints and varnishes /lubricant in high-speed jet engines. Pakistan also spends millions of rupees on the import of castor oil annually for use in automobile industry.

In Pakistan, Castor crop is cultivated in three provinces including Punjab, Sindh and Baluchistan with a total area of 3934 ha in 2003-04. The major area that is very negligible lies in Sindh (Tharparker and Karachi Districts) and Baluchistan (Lasbela District). However, more area suitable for its cultivation under semi arid region can be explored and utilized through organized R&D. Nevertheless, castor is not suited to saline soils. About 300-350 mm rainfall is needed for its good development and growth.

In Pakistan, thousand and millions of acres are lying vacant and un-cultivated due to water scarcity. As castor plant is drought tolerant because of its tap root system, its cultivation in the area of water scarcity shows great potential.

Castor is grown in the country without the support from the government. Its productivity is quite encouraging indicating that it can be increased tremendously provided public and private sector extend incentive and support to the farmers and research institutes. The future of castor growing as a crop is excellent in Pakistan. However, all needed is the will and urge to activate it in actionable manner. Castor is a remunerative crop of dry lands. It is essentially a tropical /sub tropical crop and grows naturally on a wide range of geographical regions and can be grown or cultivated under a variety of physical and climatic regimes.

It is being cultivated in about 43 countries of the world. Whereas, in Asia, it is being cultivated in 12 countries including Pakistan. However, amongst producer countries, there are five major countries which account for bulk of castor production and include: Brazil, India, China, Russia and Thailand. The non producer countries account for 60% of global consumption and these include: USA, France, Germany, Japan and UK.

Castor seeds contain about 50-55% oil know as castor oil which is composed of 81-96% of glycerides of ricinoleic acid (C18 H34 O3). In chemical industries, castor oil is used in production of > 300 deservatives compounds. Ricinoelicia acid is an unsaturated fatty acid and further (1%), oleic acid (7%) and linoleic acid (3%). Its oil doest not solidify at –12 to –18C. It is used as auto lubricant.

In Punjab, castor is being cultivated in various district including Multan, DG Khan and Bahawalpur. Being a remunerative crop, it fetches the attention of farmers. During 1972-73 it was cultivated on an area of 400 ha and that reached upto 15763 ha in 1976-77 with respective production of 500 and 11000 tones. During 1998-99 average per ha yield was 1529 kg in Punjab while in Sindh

and Bahawalpur average yield was 750 kg/ha in the same year. Whereas during 2008-09, area under the crop was 8216 ha with total production of 4023 tons and average yield per hectare was 490 kg.

Province wise area, production and yield of castor

Year	Punjab	Sindh	Khyber Pakhtoonkhwa	Balochistan	Pakistan
			(Area in hectares)		
2000-01	39	2018	-	65	2122
2001-02	95	2489	-	65	2649
2002-03	104	1645	-	200	1949
2003-04	171	3271	-	492	3934
2004-05	90	2308	-	1000	3398
2005-06	49	2485	-	670	3204
2006-07	46	4290	-	730	5066
2007-08	70	2247	-	1250	3567
2008-09	73	2143	-	6030	8216
2009-10	36	493	-	826	1355
			(Production in tonnes)		
2000-01	60	1023	-	50	1133
2001-02	144	1459	-	50	1653
2002-03	159	852	-	80	1091

2003-04	233	2070	-	197	2500
2004-05	111	1574	-	400	2085
2005-06	77	1744	-	268	2089
2006-07	63	2511	-	292	2866
2007-08	98	1621	-	500	2219
2008-09	65	1546	-	2412	4023
2009-10	52	421	-	330	803

(Yield in kgs per hectare)

2000-01	1538	507	-	969	534
2001-02	1516	586	-	769	624
2002-03	1529	518	-	400	560
2003-04	1363	633	-	400	635
2004-05	1233	682	-	400	614
2005-06	1571	702	-	400	652
2006-07	1370	585	-	400	566
2007-08	1400	721	-	400	622
2008-09	1512	721	-	400	490

2009-10	1444	854	-	400	593

Climate Requirements

Castor bean is successfully cultivated in tropical and sub tropical regimes. Pakistan is situated in a predominant/semi arid to hyper arid climatic regions. Pakistan 18 aridity and 9 crops growth zones have been identified in both kharif and rabi seasons. About 27% of the total area of 83.4252 mha is characterized as semi arid to arid either in kahrif and rabi. Arid climate in kharif and hyper arid in rabi stretched over 26.97 mha towards the central south eastern parts of the country.

Castor being drought tolerant crop is cultivated in those areas de3ficit in water in summer and autumn season. Its tap root penertraits upto the depth of 1.5 to 3 meter.

Best Germination

Small to medium sized varieties take 3-4 days for germination while large seed varieties take more than 4 days in this respect. It is well established that low oil seed absorb more water than high oil containing varieties. Minimum temperature required for seed germination is 14-15°C optimum is 30°C and maximum is 35-36°C.

Cultivation

Soil with pH ranging from 5 to 6.5 is suitable for castor germination. Sandy and high clayey soil is preferred for its cultivation. Time of cultivation in un-irrigated areas is March to April and irrigated areas July to August.

Production

Castor crop matures in 120 to 150 days. First picking in November-December, second picking in January-February and third picking in March. In Pakistan, varietal development was conducted at various research institutes resulted in the development of three varieties C-3, US-1 and DS-30. The genetic potential of DS-30 is 15-20 maunds/acres.

Future Scope

Future of castor cultivation is great in Pakistan. Castor cultivation can become a source of foreign exchange earning from Paksitan. Its cultivation can be done on these lands which other wise idle for agriculture prupose. Most of the parts of the country are considered congenial for successful cultivation of this crop. Early varieties of castor can be cultivated in rotation with peanut. Combined cultivation of castor with chili, peanut and pigeon pea is also a pertain in India and ray or hope in Pakistan.

Castor is a remunerative crop of drylands. It is essentially a crop of tropical /sub tropical areas and grows naturally on a wide range of climatic conditions. Castor seed contains 50-55% non-edible oil and 26-30% protein. Due to the nature of chemical composition, its oil is used in more than 300 derivatives /compounds.

Pakistan is situated in a predominant semi arid and hyper arid region. About 27% of the total area is characterized as semi arid to arid. The climatic conditions of Sindh and some parts of Punjab (especially Cholistan) and Balochistan are suitable for the cultivation of this crop. Castor plant is drought tolerant and requires less water for its growth and development. Its tap root system helps in

this mechanism and improves the soil structure. Castor seed having low oil contents absorbs more water as compared to varieties with high oil content.

In Pakistan, various castor varieties (C-3, US-1 and DS-30) have been developed/ selected and are cultivated successfully as annual crop. The yield potentials range from 1000-1500 kgs. Perennial varieties/ local land races are also available for cultivation.

Currently, Castor is cultivated on main boundaries of the field to protect crop from storm etc.

Future scope of castor cultivation in Pakistan in semi arid and arid regions is maximum. If this crop is grown by using new production technology, it will increase the earning of the farmers and reduce the import bill spent on the import of castor oil.

The efforts rendered by ICOA (International Castor Oil Association) for the improvement and development of castor crop in the country will definitely help the poor farmers and enhance the economy of the country.