

# PRODUCTION AND BREEDING IN IRAN

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## Abstract

There are six oilseed crops , sunflower , soybean , sesame , rapeseed , safflower and Groundnut , that are cultivated on total area of 190 thousand hectares in Iran .This is less than 1.4 percent of arable land (18 million hectares ) .

Sesame and Safflower are native and has been cultivated since ancient times as oil – producing crops in climatically hot and dry region of Iran. Major safflower breeding objectives in Iran include high seed yield and oil content , earliness, spineless types with red flower and high oil content .High seed and oil yield , earliness , tolerance to shattering and diseases are the main breeding objectives in sesame . The varieties Oltan and Yekta with desirable traits have been released by using different breeding methods . The most important objectives in sunflower breeding are improving of new hybrid varieties with high seed and oil yield potential and tolerant to biotic and abiotic stresses .At present three hybrid varieties are released .Hybridization , selection and mutation are the main methods of soybean breeding .

The result of experiment showed that rapessed can be cultivated in rotation with wheat ,rice and other crops .The government has began an extended five year program for increasing of rapeseed cultivation . A total area of 100000 hectares and 116000 tones of seed are indicated by the government for cropping season of 2002/03 . Extensive breeding and agronomy researched have already begun . Introduction of exotic germplasm , hybridization and subsequently selection in segregating generations and breeding of hybrid varieties using different CMS systems and producing of double haploid lines are the main methods of rapeseed breeding .Recently , there is one high yielding selected from cross of “ Regent . Cobra “ for cultivation in moderate regions of the country nominated for release .We are optimistic that rapeseed will become an accepted commercial crop in Iran , when some agronomic and technical problems and hindrances are solved and removed .

**Keywords:** oilseeds , breeding, production Iran

## Introduction

Iran has recently made impressive progress in agriculture development .However the chronic shortage of edible oil has persisted unabatedly for the last few decades .Edible oil continuous to be a major national import .This crises requires a planned expansion of oil crop research and development to increase domestic production .This increase must not disturb the major staple crops or drastically change the existing crop production system of the country.

Iran has about 18.5 million hectares of arable land. From this 1.52 m. are under permanent crops. The remaining area is mostly planted with all types of annual summer and winter crops. The oil crops share of the cultivated area is about 0.95% .It is low compared to wheat (36.3%) and rice (3.8%), even though oilseeds are important food item ,second after staples in human diet.

The northern part of the country , in three provinces; Gilan ,Mazandaran and Golestan ,at Caspian see ,receive high rainfall around 1000 mm .In other parts of the country the rainfall is much lower and in large areas of south east part is lower than 100 mm .The Iranian environment includes snow covered mountains ,fertile flatlands and barren deserts. Those need to be assessed for expanding oilseed cultivation and applied research ,using on-farm multi location and demonstration plots.( Ahmadi1991 )

## Rapeseed

Rapeseed production was expanded in year 2001-2 on an area of 43000 hectares( Table1).Out of these area about 37000 hectares are located in rainfed areas of Caspian See with moderate winters and humid climate .The dominant crop of this region is rice . The most

of rice growing area remains fallow in winter . Rapeseed can be introduced as a winter crop in these area , for which a set of trials will be needed.

Research on rapeseed is being carried out for the last two decades .Research program has developed intensively in four climatic zones as dry-warm ,humid with moderate winter , cold and moderate cold areas .Efforts are made for improved new varieties through Introduction and using modified pedigree and dihaploidy methods .The improved varieties except adaptability should include desirable characteristics such as high seed- and oil yield, early maturity for different zones of the country. Efforts are made also for improving of CMS-based hybrid varieties .Line –varieties “Zarghol “ and “Talaje” are released, suitable for planting in cold and moderate cold regions and two varieties “Esteghlal” and “ Sarighol “ are mainly grown on areas with Mediterranean climates. The recently bred variety “Regent.Cobra” ,improved by using modified pedigree method is suitable for growing in moderate cold regions (Ahmadi and Hekmat 2000 ; Ahmadi,and Raissi 2000 )

### **Sunflower**

Although sunflower is a widely adapted crop ,its growing area is continuously reduced in last years .The area coverage of oil sunflower was about 26000 hectares in the year 2002 (Table1 ).The open pollinated varieties “ Zaria “ and “Record “are two main commercial oilseed varieties. The Iranian hybrid varieties “Azargol “ and “ Golshid “ are released recently .The main area of sunflower cultivation is located in coastal zone of Caspian Sea ,namely province Golestan. The average yield per ha. is low Yield increases up to 2000 kg/ha is an incentive for expanding its cultivation .Sunflower is tolerant to drought stress .High humidity and rainfalls in the coastal regions results in intensive leaf ,stem and head –rot diseases . Tolerance to plasmopara and puccinia disease are monitored as a screening criteria for selecting .Other desirable characteristics of sunflower hybrids are high seed and oil yield ,early- and uniform maturity and improved oil quality .

### **Soybean**

In Iran around 90000 hectares (Table 1 ) soybean is grown, under Mediterranean climate of the coastal zones of Caspian Sea . Yields from 2000/3000kg/ha and more are reported. Williams , Hill, Sahar and Gorgan –3 are the most common cultivars .SPII breeding project comprises crossing for creating genetic variability , evaluation of irradiated and segregating materials, varietal evaluation trials and seed increase . Producing drought tolerant lines and nonphotoperiod sensitive soybean cultivars are the main physiological research programs .Expanding of the soybean growing area in southern warm regions is considered (Mulalic etal 1995) .

### **Sesame**

An elaborate breeding program is under way at SPII experimental stations. The Sesame area is scattered around the country ,but is mostly concentrated in southern warm provinces .The total area is around 40000 ha and it is always cultivated as second crop after harvesting of cereals .High seed and oil yield , earliness , tolerance to shattering and diseases are the main breeding objectives in sesame .The varieties “ Oltan “ and “ Yekta “ with desirable traits ,have been released by using different breeding methods .( Ahmadi and Farrokhi 2000 ) .

### **Safflower**

Although Safflower is a native crop in Iran, its growing area is not notable (Table 1 ) Safflower is tolerant to drought , heat and salinity .The long vegetation growing period is an expansion hindrance of this crop .breeding program consist of high seed and oil yield improvement of early maturity ,winter and spring type varieties (Ahmadi and Omidi 1997).

### **Groundnut**

The growing area of groundnut is estimated 2000 hectares, mainly grown in Gilan province. The Banch variety “NC2 “ and one domestic runner variety are widely used .Since the crop has value ,a rapid expansion of crop area is desirable ; to asisst this ,adaptive and development research should be conducted ( Mulalic et al 1995).

Table 1 Area and production of oilseed crops in Iran during 2001-2002

Crop	Area ("000 " ha)		Total	Production("000"tons)		
	Irrigated	Rainfed		Irrigated	Rainfed	total
Rapeseed	6314	36716	43030	10631	52787	63418
Sunflower	18593	7659	26252	20987	9209	30196
Soybean	6334	68118	74452	11322	129026	140348
Sesame	40000	-	40000	32800	-	32800
Groundnut	-	2	2	-	4	4
Safflower	4899	-	4899	4113	-	4113
Total	76140	112495	188635	79853	191026	270879

Source : Monthly Report of Oilcrops area and production, Oil seed Developing Company ,Sep. and Dec.2002

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