

# Senegal

## Groundnut

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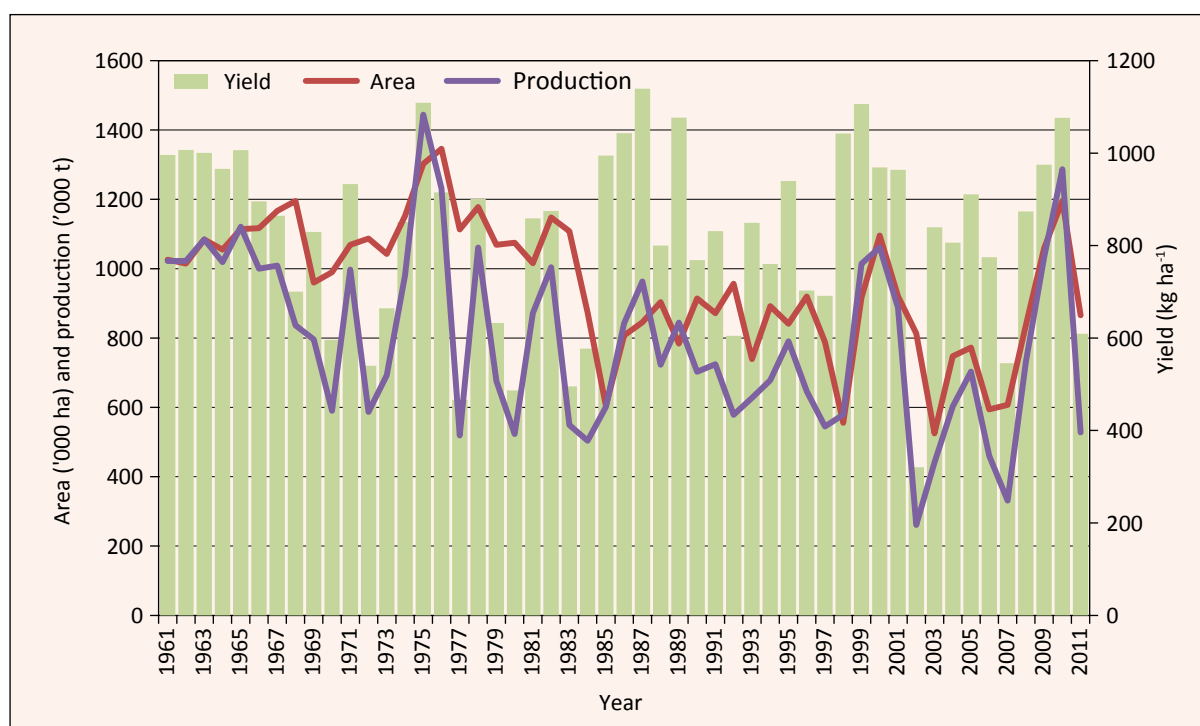
### Introduction

Groundnut is the major cash and food crop in Senegal representing up to 60% of the cultivated area and 70% of rural labor force. The groundnut sector contributes up to 6.5% of GDP. The crop is produced under rainfed conditions mainly in the northern, central and southern groundnut basins. There is potential for irrigation in the Senegal River basin. Average area and production are presented in Table 1. The trends in these parameters are presented in Figure 1.

**Table 1. Average area and production of groundnut in Senegal<sup>1</sup>.**

Parameter	Value
Average area (ha)	912,894
Average production (t)	781,889
Average yield (current) (kg ha <sup>-1</sup> )	816
Average yield (2015) (kg ha <sup>-1</sup> )	1200
Expected growth of production (%)	3
Proportion of production sold (%)	75

1. Source: FAOSTAT 2007–11.



**Figure 1. Trends in groundnut area, production and yield during 1961 to 2011 in Senegal.**

## Dominant varieties

The dominant groundnut varieties include: Fleur 11, 55-437, 28-206, 69-101, GH119-20, Hâtive de Séfa and 73-33.

New releases in 2009 include: Four extra-early maturing varieties (55-33, SRV1-19, 78-936 and 73-9-11); one early leaf spot resistant variety (PC79-79) and one confectionery variety (H75-0) with higher resistance to *Aspergillus flavus* than the old variety GH119-20.

## Agroecologies

Senegal is divided into three major agroecological zones, viz, the Sahaelian, Sudan Savanna and Forest zones. For groundnut, Senegal is divided into three groundnut basins (north, central and south). The bulk of the crop is produced in the central groundnut basin (Fig. 2).

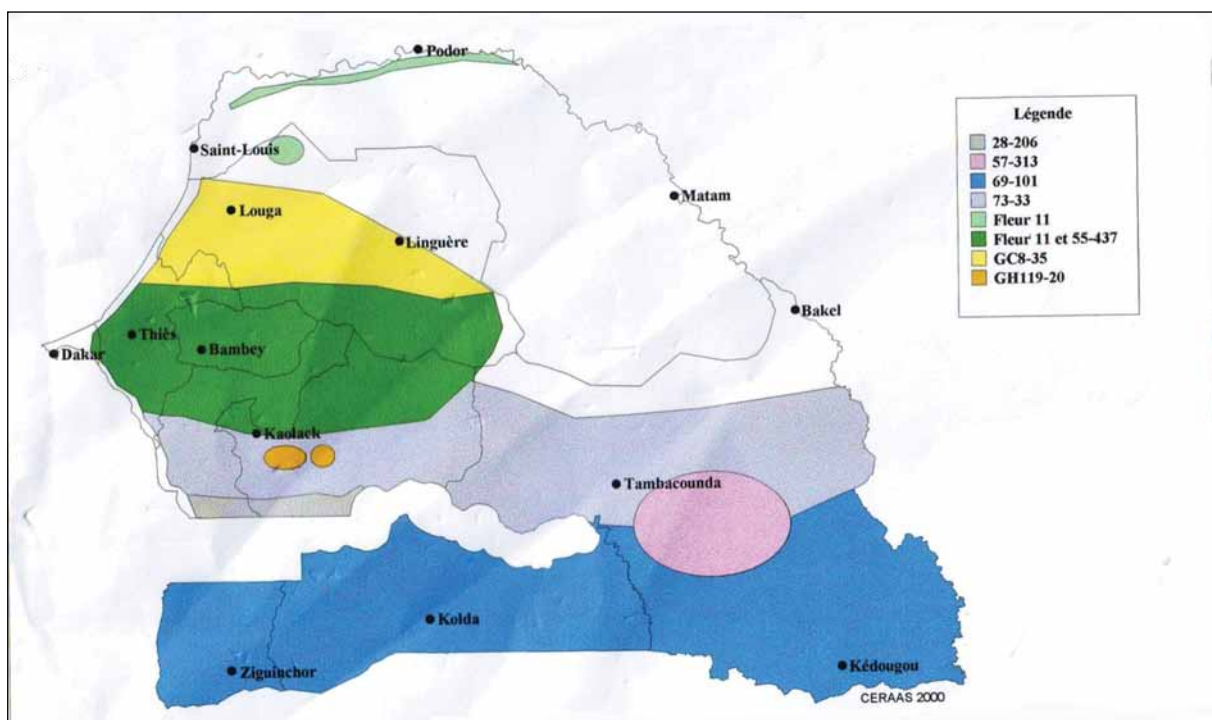


Figure 2. Distribution of groundnut varieties grown in Senegal.

## Seed system

### Biotic and abiotic constraints

- Foliar diseases (cercospora leaf spots)
- *Aspergillus flavus* causing aflatoxin contamination
- Drought
- Low soil fertility

## **Socioeconomic constraints**

- Lack of availability and access to seed of new improved varieties
- Poor access to agricultural equipment to expand production area
- Difficulties in accessing fertilizers and insecticides
- Labor constraints for weeding and harvesting
- Poorly developed market and volatile prices
- Poor access to credit and input delivery system
- Poor road infrastructure to transport produce to markets
- Poorly developed processing industry
- Lack of coordination of actors along the groundnut value chain

## **Organizational constraints**

- Weakness in information and knowledge sharing and policy support through modern communication pathways
- Weakness in institutions and institutional arrangements that will deliver quality seed at affordable prices to the small-scale farmers
- A weak link between research and extension
- Uncertainty in the quality and timely availability of fertilizers, fungicides and pesticides
- Difficulty in accessing credit by farmers
- Poor organization of farmers
- Lack of policies to reduce fluctuations in market price and gaps between the farm-gate price and price paid by the consumers

## **Strategic partners**

The strategic partners and their role in the seed system are presented in Table 2.

## **Capacity building needs (staff, infrastructure)**

- Trained researchers in plant breeding, entomology, pathology and agronomy
- Enhanced capacity in marker-assisted breeding
- A modern glasshouse
- An efficient irrigation system for precision phenotyping

## **Special cultural/gender considerations**

Women are involved in the groundnut sector in both production and processing. Usually they have their own fields and in some parts of the country they are fully in charge of all field operations. Women

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**Table 2. Strategic partners and their role.**

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Strategic partner	Role
ISRA	Develop and promote new groundnut varieties and supply breeder and foundation seed of demanded varieties
ICRISAT	Collaborating in a joint project which aims to increase groundnut yield in marginal environments of sub-Saharan countries by providing different germplasm tolerant to drought and diseases and confectionery types
CIRAD	Assisting in developing locally adapted varieties by using molecular-assisted backcross (MABC) techniques between two amphidiploids and some of the released varieties
Association de Producteur de base (ASPRODEB)	Fosters stronger linkages between public and private sectors and facilitates business between the market players, empowering farmer groups to be better organized with more effective leadership at the local and national levels to achieve more coordinated production and marketing
EMBRAPA (Brazil)	Collaborating with ISRA through a Generation Challenge Program funded project
SONACOS	Responsible for industrial processing and commercialization of groundnut
NGOs (World Vision)	Seed production and technology transfer

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are involved in the processing and commercialization of peanut butter, oil-cake, roasted peanut, etc and sold in the local markets.

The following require attention:

*At production level:* Provide more resources to women such as credit, land, extension services, tools/equipment, knowledge/skills and access to markets

*At the consumption level:* Information on the nutritional value of groundnut as food, provision of resources for processing and finance for investment, improvement in quality products.

## Processing and storage requirements and market opportunities

Storing groundnut requires some caution because of storage pests (bruchids) and aflatoxin contamination. Thus installing appropriate storage facilities and local processing centers in some key villages is essential. Value addition by developing marketable groundnut-based products will promote their consumption at the household level. Market development for these products will enhance rural incomes. There are processing opportunities for groundnut for oil extraction and production of oil-cake for animal feed. Considering the adverse effects of aflatoxin contamination on human health, policy makers need to be sensitized to impose food safety regulations.

## Key policies (recently implemented/needed)

- The groundnut sector has been liberalized and the main parastatal (SONACOS) responsible for the commercialization of groundnut privatized.
- The Agricultural Orientation Act is aimed at improving institutional framework of the farm sector to increase exports and improve product quality.
- The Institute for Food Research is facilitating development of recipes to include legumes in making bread which will be fed to school children to improve their nutritional status.
- Support for input (fertilizers, chemicals) is needed.

## **Key issues for competitiveness (ie, reducing production costs, increase market value)**

- Distribution of small oil crushing machines in selected villages to allow farmers to add value to their harvest thus improving income. The products could be sold to the industries which will process them into final products (refined oil, packaging, etc).
- Subsidize inputs (seeds, fertilizers, pesticides and small equipment for field operations) to enable most farmers to have access
- Promotion of a wide range of productive varieties and crop management options to increase productivity
- Development of sustainable seed production and delivery schemes to increase access and availability of seed of preferred varieties
- Promote the adoption of best-bet pre- and postharvesting techniques to minimize aflatoxin contamination in groundnut. Aflatoxin reduction in groundnut will improve access to international markets
- Increased awareness of the dangers of aflatoxin contamination to improve health of rural and urban groundnut consumers

## **Mechanization as it relates to timely planting/harvesting and processing**

All production operations (land preparation, planting, weeding, and harvesting) are done manually by using hand tools that severely limit the area planted. Thirty-three percent own a plow, less than 1% own a seeder and 52% own oxen. Groundnut production is a labor intensive enterprise. In this case the returns to investment in small mechanization in the form of simple animal traction may be high. Access to suitable machinery for various small-scale field operations is essential to increase productivity and profitability of groundnut.

## **Monitoring and evaluation**

- Groundnut production, area cultivated and yield are monitored every year through surveys of households
- A good monitoring system is needed to be put in place at the national level
- Annual sub-regional review meetings of stakeholders
- Monitoring tours and visits to experimental sites will be encouraged among scientists
- Annual progress reports of the project
- Institutional work planning and review meetings

## **Perspectives for Phase 2**

Since Senegal did not participate in Phase 1 it is envisaged that the groundnut programs will be enhanced with the genetic resources from ICRISAT to select appropriate varieties for local adaptation. Others include:

- Large-scale dissemination and adoption of improved technologies (varieties and productivity enhancing agronomic practices) through on-farm participatory trials

- Training extension agents in technology transfer
- Facilitating interaction among the various stakeholders to exploit synergies and comparative advantages
- Scientists and technicians are expected to gain skills in the use of new tools of molecular breeding methodologies and data management

### **The seed production strategy**

Seed production has over the years been the responsibility of the national program (ISRA for breeder seed, National Seed Services for foundation seed and ONCAD for certified seed). Control and certification was the responsibility of seed service. With this scheme, seed capital was totally reconstituted. The advantages of this scheme were:

- A close follow-up by different actors: extension organizations (SRDR), ONCAD, Seed Service, ISRA, Department of Agriculture, different inspections of agriculture and Department of Crop Protection. These met annually to analyze the situation of the past year (quantities available at each level) and estimate the needs for the new crop season. This enhanced production planning by knowing beforehand the seed requirement of each region.
- Training of farmers was assured by ONCAD, which had agents in the field to conduct the training.
- Precise national seed needs by region were published in a document presented at annual seed meetings.
- This state controlled scheme has regressively been liberalized with the sector and emergence of the private sector. Hence the creation of the national Union of Interprofessional Seed Producers (UNIS) and final state disengagement from seed sector control. The private sector has however over time been weakened by the entry of other nonprofessional operators.

The current strategy is to produce adequate quantities of breeder and foundation seeds to meet the needs of certified seed. The seed roadmap is presented in Table 3.

Table 3. Groundnut seed roadmap for Senegal.

Ecology	Demand (ha)	Varieties	Available (t)		Goal 20% adoption (t)	Breeder seed needs (t)			Foundation seed needs (t)			Certified seed needs (t)				
			Breeder seed	Foundation seed		Certified seed	Year 1 2012	Year 2 2013	Year 3 2014	Year 1 2012	Year 2 2013	Year 3 2014	Year 1 2012	Year 2 2013	Year 3 2014	
River zone	4000	Fleur 11 57-313 Hâtive de Séfa	1	0	0	10	100	800	0	500	0	0	0	0	0	8000
North Peanut basin (Louga)	116400	55-33	1	3	1	0.5	0	0	0	5	10	0	0	0	40	400
		78-936	1	2	1	0.5	0	0	0	5	10	0	0	0	40	400
		SRV1-19	1	2	2	0.5	0	0	0	5	10	0	0	0	40	400
		73-9-11	1	3	2	0.5	0	0	0	5	10	0	0	0	40	400
Central North Peanut Basin (Fatick)	100,000	55-437	0.5	2	4	1	0	0	0	10	20	0	0	80	800	
		Fleur 11	0.5	4	5	1	0	0	0	10	20	0	0	80	800	
Kaolack (Central South Peanut basin)	260000	73-33	0.15	1	2	1	0	0	0	8	15	0	0	60	690	
		Hâtive de Séfa	0.20	2	1	0.7	2	0	0	8	15	0	0	60	690	
		GH119-20	0.15	0.5	2	0.5	1	0	0	8	15	0	0	60	690	
		H75-0	0.4	0.5	1	1	2	0	0	8	15	0	0	60	690	
High Casamance and Eastern Senegal zone	10000	28-206	0.2	2.5	1	0.5	2	0	0	8	15	0	0	60	690	
		PC79-79	0.3	2.0	2	0.5	2	0	0	8	15	0	0	60	690	
		73-33, 57-313	1	0	0	10	100	800	0	500	0	0	0	0	5000	