Political Economy of the Wheat Sector in Morocco: Seed Systems, Varietal Adoption, and Impacts

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Institut National de la Recherche Agronomique

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Science for resilient livelihoods in dry areas

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Preface

In Morocco, wheat is an important cereal crop that significantly contributes to the livelihoods of farming communities and the national economy. On average for the period 2010–2016, the country produced 5.7 million tonnes of wheat grain on about 3.2 million ha of land. In 2013, total cereal production accounted for 47% of the agricultural value added. Wheat production alone was worth about USD 850 million, making it the second most important crop after olives.

In the 1960s, Morocco was largely self-sufficient, producing more than 80% of the wheat for domestic consumption. This declined over the years and by the turn of the century, on average, only 60% of the total domestic demand for wheat was met. Despite the doubling of its population during the same period, the per capita supply of wheat increased impressively from 138 kg/person in the 1960s to an average of 255 kg/person in the period 2001–2016. Considering the population increase and changing food habits, wheat, and particularly bread, consumption became an even bigger component of food security.

With the introduction of improved wheat varieties in the 1980s, significant increases in yields were observed, though the yield levels were far below both the global average of over 3 t/ha and the African average of 2.3 t/ha. Consequently, Morocco continued to import large volumes, making wheat the most important (in both volume and value terms) of all agricultural imports. Despite the high dependency on imports, wheat remains one of the most important food staples in the Moroccan diet. The Green Morocco Plan (GMP) (the official government strategy to achieve food security), for the sustainable management of natural resources and agricultural competitiveness, considers the cereal seed system as a fundamental component to enhance the agricultural sector and to achieve wider economic development.

The use of high-yielding varieties and the associated crop management practices have been the major drivers for the significant changes in wheat production and productivity. One of the most important results from public investment in agricultural research is the development of new crop varieties and their associated technologies. The Government of Morocco and its

international research and development partners have made substantial investments in agricultural innovation. However, developing new crop varieties is not enough. To have a real impact, crop development should be coupled with an efficient and effective seed-delivery system that will push technologies out to farmers' fields. Within this context, there are several actors in the Moroccan seed sector. These include the national agricultural research system, public and private seed companies with networks of seed dealers, associations of seed growers and seed traders, and regulatory agencies whose individual or collective strengths and weaknesses influence the country's ability to achieve meaningful impacts.

This book, *Political Economy of the Wheat Sector in Morocco: Seed Systems, Varietal Adoption, and Impacts,* documents the studies conducted on the wheat sector in general. It also documents the wheat seed system, its adoption and impacts in Morocco, through support provided by the CGIAR Research Program (CRP) on Wheat and the European Union-International Fund for Agricultural Development (EU-IFAD) Project. Chapter 1 highlights the cereal seed sector, including the policy and regulatory frameworks. Chapter 2 presents the development of improved wheat varieties, their registration and release, including variety protection and licensing for commercialization. Chapter 3 summarizes the early generation seed (breeder, pre-basic, and basic) multiplication by the National Agricultural Research System (NARS), and large-scale certified seed production by the public and private sectors. Chapter 4 elaborates on seed quality assurance and certification. Chapter 5 describes the adoption and impacts of improved varieties and seed demand analysis. Chapter 6 presents perspectives on the wheat seed sector. Chapter 7 synthesizes the overall findings on the wheat seed sector, focusing on delivery systems, variety adoption, and impacts in Morocco.

The experiences documented in this book are expected to inform stakeholders – including policy makers, researchers, farmers, private and public commercial farms, and development partners – about the status, challenges, and opportunities in the wheat sector in Morocco. Additionally, it paves the way for the development of more efficient intervention options for the future.

Editors
February 2019

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The views and opinions expressed in this book are purely those of the authors and do not necessarily reflect the views of their employers.

Abbreviations

AMMS	Association Marocaine des Multiplicateurs de Semences (Moroccan Seed Growers' Association)
AMSP	Association Marocaine des Semences et Plants (Moroccan Seed Trade Association)
CAP	Common Agricultural Policy
CCPOV	Commission Consultative de la Protection des Obtention Végétale
CIHEAM	Centre International de Hautes Etudes Agronomiques Méditerranéennes
CIMMYT	International Maize and Wheat Improvement Center
CNSSP	Comité National de la Sélection des Semences et des Plants
COMADER	Confédération Marocaine de l'Agriculture et du Développement Rural
CRP	CGIAR Research Program
DCSP	Division de Contrôle des Semences et Plants
DDFP	Direction de Développement des Filières de Production
DPA	Direction Provinciale d'Agriculture
DPVCTRF	Direction de la Protection des Végétaux, des Contrôles Techniques et de la Répression des Fraudes
DRA	Direction Régionale d'Agriculture
DSS	Directorate of Strategies and Statistics
DUS	Distinctness, uniformity and stability
EU	European Union
FDA	Fonds de Développement Agricole (Agricultural Development Fund)

FMCA	Fédération Marocaine des Chambres de Agriculture
FNIS	Fédération Nationale Interprofessionnelle des Semences et Plants
GDP	Gross domestic product
GIS	Geographic Information System
GMP (LMV)	Green Morocco Plan (Le Maroc Vert)
GPS	Global positioning system
GTAP	Global Trade Analysis Project
IARC	International Agricultural Research Center
ICARDA	International Center for Agricultural Research in the Dry Areas
IFAD	International Fund for Agricultural Development
INRA	Institut National de la Recherche Agronomique (National Agricultural Research Institute)
ISTA	International Seed Testing Association
MAAR	Ministry of Agriculture and Agrarian Reform
MAD	Moroccan Dirham (USD 1 = MAD 8.62 in 2012 and 8.5 in 2014)
MAPM	Ministère de l'Agriculture et de la Pêche Maritime (Ministry of Agriculture and Maritime Fisheries)
MENA	Middle East and North Africa
MHH	Men heads of households
MoA	Ministry of Agriculture
MoAF	Ministry of Agricuture and Fisheries
MoF	Ministry of Finance
NARS	National Agricultural Research System
OECD	Organisation for Economic Co-operation and Development
ONCA	Office National du Conseil Agricole
ONSSA	Office National de Sécurité Sanitaire des Produits Alimentaires (National Office for the Safety of Agricultural Products)

ORMVA	Office Régional de Mise en Valeur Agricole
PSM	Propensity score matching
PVP	Plant Varieties Protection
SODEA	Société de Développement Agricole (Farm Development Corporation)
SOGETA	Société de Gestion des Terres Agricoles (Agricultural Land Management Corporation)
SONACOS	Société Nationale de Commercialisation des Semences (National Seed Commercialization Company)
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPOV	International Union for the Protection of New Varieties of Plants
USDA	United States Department of Agriculture
VCU	Value for cultivation and use
WHH	Women heads of households
WTO	World Trade Organization

List of tables

Chapter 1: The cereal seed sector in Morocco – policies and regulations

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1 The cereal seed sector in Morocco – policies and regulations

1.1 Executive summary

The Green Morocco Plan (GMP) is the official government strategy to achieve food security, sustainable management of natural resources, and agricultural competitiveness. It considers the cereal seed system as a fundamental component to enhancing the agricultural sector and to achieving broader economic development. As such, the Moroccan government has introduced legislation that regulates the seed sector and protects the rights of breeders in line with international norms and standards. The Fonds de Développement Agricole (FDA) is an operational arm in charge of implementing mechanisms to promote the expansion of investments in the agricultural sector. This mechanism consists of agricultural subsidies that are granted according to pre-established investment commitments between farmer organizations and government offices. These commitments are collective rather than individual, showing the government's intention to promote farmer cooperatives or associations.

The government provides direct price subsidies to farmers that represent about 35% of the cereal seed cost. Since the production cost for bread wheat is between Moroccan Dirhams (MAD) 4,000 (USD 470.6) and MAD 6,000 (USD 705.9) per ha, the subsidy represents 4–6% of the total production cost. This subsidy has directly contributed to improving the marketing of certified cereal seeds. The use of certified cereal seed has increased about 88% in five years (from 0.68 million quintals[1] before 2008 to 1.28 million quintals in 2013). The Government of Morocco subsidizes about 1.2 million quintals of certified seeds and about 220,000 quintals of carry-over certified seed (for all seed companies) per year.

[1] One quintal is equivalent to 100 kg.

1.2 Introduction

The GMP (Le Maroc Vert) is the official strategy of the Government of Morocco to meet challenges related to food security, competitiveness, and the sustainable management of natural resources. The GMP has two core functions:

- It accelerates the development of modern and competitive agriculture, by realizing thousands of new projects with high added value in both production and agricultural processing
- It supports smallholder agriculture by implementing aggregation projects for small farms in marginalized rural areas, which promote greater productivity and, hence, the production and sustainability of farm incomes.

The cereal seed sector plays an important economic role in producing and supplying certified seeds of advanced genetics that improve productivity and quality. It also produces seeds of improved varieties that are resistant to diseases. The cereal seed sector is an important component of the wider agricultural system that creates employment and economic growth in the cereal seed sector and other agricultural sectors. According to the Ministry of Agriculture (MoA), in 2009 the cereal seed sector produced an income of around MAD 600 million (USD 70 million) (Royaume du Maroc 2009). Currently it is estimated that the turnover is more than MAD 1.2 billion (around USD 140 million). Thus, the cereal seed sector is important to the GMP as it improves agricultural productivity and boosts the performance of other agricultural (such as legumes, vegetables, and fruits) and livestock sectors.

In the early 1970s, the Moroccan government managed to set up a few state institutions that built the structure of the cereal seed sector in Morocco. These institutions were INRA for research, and the Agricultural Land Management Corporation (SOGETA), and the Farm Development Corporation (SODEA) for seed production (they actually reclaimed lands from French occupation). The Société Nationale de Commercialisation des Semences (SONACOS) is responsible for seed multiplication and marketing and the Direction de la Protection des Végétaux, des Contrôles Techniques et de la Répression des Fraudes (DPVCTRF) (now named Office National de Sécurité Sanitaire des Produits Alimentaires [ONSSA]) for seed quality control and certification. This set-up was mainly oriented to cereal crops, or low-margin crops, such as wheat.

Later, plant breeders' rights were introduced into the country. The private sector started to become involved in developing improved varieties

and marketing of the seeds. Certified seeds have been produced by farmers who operate under contracts with the private seed companies, which are also involved in marketing certified seeds.

The government has established a regulatory framework for the seed sector with laws, regulations, and strategies designed to provide equal treatment to private and public seed companies. This chapter seeks to provide an overview of the legal framework governing this sector in the country. This overview is complemented with an analysis of policy and regulatory incentives (i.e. subsidies) that affect the cereal seed sector in the country, including aspects of seed policy and international trade.

1.3 Overview of the cereal seed sector

The cereal seed value chain in Morocco is a set of integrated activities ranging from developing improved varieties to the marketing of certified seeds. The chain consists of the following main components:

- *Variety development and release programs*: INRA is mainly responsible for breeding programs to develop improved varieties, while the introduction of foreign varieties included in the Official Catalogue is performed by both public and private seed companies. ONSSA is responsible for release of varieties
- *Production of cereal seeds*: This involves production of pre-basic, basic, and certified seeds. Pre-basic (G1 and G2) seed production is undertaken by INRA, while the production of basic seed (G3 and G4) and certified seed (R1 and R2) is undertaken by seed companies contracting the seed multipliers. Currently there are about 1,200 seed-growing farmers who are members of AMSP. Altogether, they use about 70,000 ha for seed multiplication
- *Processing, storage, and packaging of cereal seeds*: SONACOS and three private companies perform most of the processing, packaging, and storage of cereal seeds. They have the capacity to process nearly 1.5 million quintals per year. The private sector accounts for less than 10% of the total
- *Marketing and distribution of cereal seeds*: SONACOS is the main actor in the marketing of seeds (cereals, potatoes, sugar beet, vegetables, and others). Four other seed companies (Agrin Maroc, Deltasem, Maroc-Semences [Marosem], and Agriculture, Phytosanitaires, Semences d'Elite

du Maroc [Aphysem]) operate in the cereal seed sector. In addition, more than 140 private companies are licensed to market imported seeds. Private companies mainly specialize in the seeds of vegetables, oilseed, and maize

- *Monitoring, control, and certification*: Apart from variety releases (national catalogue), ONSSA oversees seed quality control through field inspection and laboratory seed testing. Seed quality control activities cover multiplication, processing, storage, and marketing. ONSSA is also responsible for controlling and monitoring imported seeds.

Some of these institutions are public and yet they have autonomy to establish their own strategies, internal guidelines, and procedures for better performance (quality products, social services, fair competition, and sustainability).

1.4 Policy and regulatory framework for the cereal seed sector

The Government of Morocco is conscious of the important role of the quality of agricultural inputs in the improvement of agricultural productivity and hence food security. It has tried to install instruments to encourage the use of improved inputs (such as seeds and fertilizers) through its new strategy, GMP. The GMP consists of two pillars:

- Pillar I: Accelerated development of a modern and competitive agricultural sector characterized by market responsive value addition
- Pillar II: Empowerment of vulnerable households and continuing the fight against rural poverty through improved farm incomes.

The GMP focuses on both the crop (cereals, sugar beet, sugar cane, olives, citrus fruits, apricots, argan trees, cactus, and carob) and livestock (milk and red meat) sectors. The overall objectives of the GMP are to:

- Increase levels of production
- Improve product quality for commercialization
- Improve the efficiency and equity of irrigation water
- Generate employment
- Improve the incomes of the rural population
- Enhance the sustainable use of natural resources.

Since its launch in 2008, the GMP has been guiding government strategy to revitalize the agricultural sector and spur economic development. The GMP

considers the cereal seed system as a fundamental component in enhancing the agricultural sector and achieving wider economic development. Under the GMP, improving the performance of the seed sector is one of the priorities in the agricultural transformation agenda of the country.

Morocco has introduced legislation that regulates the seed sector and protects the rights of breeders in line with international norms and standards as established by the Organisation for Economic Co-operation and Development (OECD), the European Union (EU), and the International Union for the Protection of New Varieties of Plants (UPOV). Morocco also adopted the rules, procedures, and methods developed by the International Seed Testing Association (ISTA) for seed quality testing. In particular:

- Law (Dahir) No. 1-69-169 of 25 July 1969, as amended and supplemented by Law (Dahir) No. 1-76-472 of 19 September 1977, is the main seed law. This law regulates the production and marketing of seeds and planting materials. It comprises a set of 15 technical regulations, decrees or orders defining the production, control, packaging, and certification of seeds and planting materials. These technical regulations apply to most plant species produced in Morocco and to imported seeds. The implementation of this law has been achieved through the following set of regulations or decrees (Tourkmani 1994; ONSSA, 2018):
    - Ministerial Decree No. 864-75 of 22 September 1977, as amended by Decree No. 3538-13 of 4 December 2013, decides the composition and responsibilities of the National Commission for the Improvement of Seeds and Propagating Materials
    - Ministerial Decree No. 863-75 of 22 September 1977 regulates the inscription of species and varieties in the Official Catalogue
    - An inter-ministerial decree levies fees for inscription in the Official Catalogue
    - A joint ministerial decree No. 865-75 of 22 September 1977 of the Ministry of Agriculture and Agrarian Reform (MAAR) and the Ministry of Finance (MoF) levies fees for seed quality control
    - A ministerial decree sanctions regulations related to processing, control, and certification
    - A ministerial decree licenses enterprises to market seed and planting materials

- Ministerial Decree No. 966-93 of 20 April 1993, as amended by Order No. 3828-94 of 9 November 1994, covers importing seed and planting materials.

- Law No. 9-94 on Plant Varieties Protection (PVP) is an intellectual property statute in Morocco. This law grants plant breeders legal rights over new plant varieties implemented through the establishment of legal instruments that:
  - Allow breeders to protect their property rights related to variety development. The instruments are meant to encourage breeders to develop new protected varieties
  - Allow Moroccan farmers to benefit from access to new plant varieties adapted to domestic conditions developed from breeding programs abroad.

Some of the decrees for implementing the PVP law include (http://www.onssa.gov.ma/fr/reglementation/reglementation-sectorielle/vegetaux-et-produits-dorigine-vegetale/semences-et-plants):

- Decree No. 2-01-2324 of 12 March 2002 adopted for the application of Law No. 9-94 on the Protection of New Varieties of Plants
- Decree No. 2-01-2325 of 12 March 2002 institutes remuneration for services rendered by the MoA for the protection of plant varieties.

- Harmonization of seed testing is conducted in line with the international procedures and methods defined by the International Rules for Seed Testing of ISTA. Also, harmonization of varietal certification procedures is in line with the international procedures and methods as defined by the OECD seed schemes for crops where the country is a member.

1.5 Policy and regulatory incentives for the cereal seed sector

The GMP provides the policy and strategy for sustainable agricultural development, while the FDA oversees the implementing mechanisms to promote the expansion of investment in all agricultural sectors of the economy. Since its inception in 1986, the FDA has been promoting private sector investment in agriculture. The investment is encouraged through targeted subsidies and technical assistance granted to activities that permit better

exploitation of agricultural potential. The FDA has been a key instrument in implementing government policy in the agricultural sector through investment, leveraging funding, and improvement of the overall growth of the economy.

These agricultural subsidies are granted according to pre-established investment commitments agreed between farmers' organizations and government offices (regional or national). These commitments are formalized through production contracts between both parties. The contracts are collective rather than individual, which clearly shows the intention of the government to promote farmer aggregation into cooperatives or farmers' associations. The FDA provides subsidies to promote investment in land improvement, irrigation, farm equipment, certified seed and planting material, export promotion, genetic improvement, agro-processing units, and farmer aggregation.

The government, through the MoA, has provided incentives for the development of the cereal seed sector by providing seed control and certification services, undertaken by ONSSA. At national level, extension services are coordinated by the MoA. At regional level, extension is delivered through the Direction Régionale d'Agriculture (DRA). This organization comprises two regional institutions, the Office Régional de Mise en Valeur Agricole (ORMVA) for large irrigated areas[2], and the Direction Provinciale d'Agriculture (DPA) for rainfed areas. The newly created Office National du Conseil Agricole (ONCA) is responsible for defining strategies for technology transfer and extension services, promoting plans, undertaking open field demonstrations, and media campaigns.

ORMVA and DPA have technical arms, called nodes of extension, which are used for seed and fertilizer distribution. Seed companies, in coordination with regional offices, estimate the amounts of seed required to meet demands at the regional level. This information is communicated to SONACOS. Agreements between seed companies and ONCA, and between seed companies and ORMVA help identify the areas and responsibilities for the marketing of seeds. ORMVA and DPA provide storage facilities (warehouses) to assist seed companies to market seed through distribution networks. There are almost 400 local distribution centers used by seed companies for the marketing of their seeds. In 2013 the price of one quintal of R2 certified bread wheat seed was MAD 325 (USD 38.2). The selling period typically starts in early September and extends to December each year.

[2] Large irrigation dams were built primarily to promote production of high market value crops like fruit trees (olives, citrus, and fruits), and vegetables, but few irrigation schemes benefit cereal grain and seed production.

1.6 Subsidies to farmers

The government, through the MoA, provides direct price subsidies to both seed and producer farmers. This seed subsidy is MAD 170/quintal (USD 20/quintal) for bread wheat, MAD 180/quintal (USD 21.2/quintal) for durum wheat, and MAD 160/quintal (USD 18.8/quintal) for barley and is based on the grain price. For example, a typical subsidy structure for bread wheat is a grain price of MAD 325/quintal (USD 38.2/quintal) and a subsidy of MAD 170/quintal (USD 20/quintal). This results in a total price of MAD 495/quintal (USD 58.2/quintal), where about 35% of the cereal seed cost is subsidized by the government. The production cost for bread wheat is between MAD 4,000 and 6,000 (USD 470.6–705.9) per ha depending on the production system. Thus, the subsidy represents 4–6% of the total production cost per ha[3].

This subsidy has directly contributed to improving the marketing of certified cereal seeds. Production has increased from 0.68 million quintals before 2008 to 1.28 million quintals in 2013 – an increase of almost 88% in just five years[4]. The use rate for certified bread wheat seed has increased from 18% before 2009 to almost to 35% in 2013. The Government of Morocco subsidizes about 1.2 million quintals of certified seed and about 220,000 quintals of carry-over certified seed per year. The distribution of these subsidized quantities among seed companies is proportional to the level of sales reached by each company in the previous year.

The government, through the MoA, provides subsidies to both seed-producer and grain-producer farmers:

- The cereal seed producers are supported through a government subsidy on basic seeds (G3 and G4) and certified seeds (R1 and R2) for wheat, which are domestically produced and marketed through national authorized seed companies. Yet, imported basic seeds are also subsidized so that they can be sold at the same price as domestically produced ones. The wheat seed subsidy per quintal was MAD 50 (USD 5.9) in 2010/11, MAD 45 (USD 5.3) in 2011/12, MAD 40 (USD 4.7) in 2012/13, MAD 35 (USD 4.1) in 2013/14, and MAD 30 (USD 3.5) in 2014/15 (MAPM 2014). Producers of pre-basic seeds (G1 and G2) do not benefit from subsidies

[3] Note that other subsidies available to farmers are for irrigation, mechanization, soil analysis, and storage facilities.

[4] In 2009, production of one million quintals of certified seed was reached, and since then, the average level is more or less 1.2 million quintals.

- Farmers producing wheat grain have been receiving a subsidy on certified seed. The MoA provides funding to seed companies and they, in turn, pass the subsidy on to farmers. This subsidy reaches farmers in the form of lower prices than they would pay for certified cereal seeds.

The documentation needed for the seed companies to handle the subsidies consists of:

- A summary of certified seeds harvested during the year and a summary of current seed stocks according to standards as set by ONSSA
- A summary of seed stocks at the end of the sales period according to safety norms as set by ONSSA
- A summary of cereal seed stocks at the end of the seed sales period, issued by ONSSA, based on the declarations of the seed stocks handled by the seed companies
- Reports on detailed seed sales by crop, variety, and class, signed by the directors of the respective seed companies
- Statements signed by the directors of the corresponding seed companies in the event of loss of or damage to seeds during the sales period.

According to Joint Law No. 1060.90 (29 August 1990), the government subsidizes part of the total cost of laboratory analysis, such as purity, germination, and health tests. This subsidy is directly paid to the certified laboratories which, in turn, allow farmers a deduction from the analysis costs at the time of payment. The operationalization of the subsidy involves the MoA, which collects information on the laboratories participating in the scheme, the rates being charged to farmers, and the invoices submitted by farmers. This information highlights the cost of analysis and the amounts deducted, generating annual and monthly summary reports. These reports include a complete list of farmers (with their addresses) who benefited from the subsidy, the types and numbers of analyses, and the total amount covered by the subsidy. In addition to these incentives, the government provides other incentives (i.e. subsidies) to the agricultural sector for equipment, farmer aggregation (associations), irrigation, mechanization, credit, etc[5].

[5] Information about these other incentives can be seen in the following report: http://www.agriculture.gov.ma/pages/regime-des-aides-aux-projets-d%E2%80%99agregation.

1.7 Cereal seed policy and international trade

Over time, the Government of Morocco has provided significant subsidies to the agricultural sector, and particularly to wheat production. Because of these subsidies, ordinary people in Morocco pay as little as USD 0.2 per loaf of bread (of about 500 g). This wheat subsidy has driven patterns of consumption to be based intensively on cereal consumption to the point that Morocco has become one of the highest wheat-consuming countries in the world (about 255 kg/year per capita[6]). Decades of subsidies and investment to improve wheat productivity, together with high import tariffs to protect domestic wheat production from more competitive imports, have not stemmed the decline in total domestic wheat production in comparison with wheat imports.

World Trade Organization (WTO) countries have been encouraged to eliminate import tariffs to experience economic benefits from international trade. Morocco did so by liberalizing the cereal seed sector, which brought diversification through the import and use of seed of foreign varieties. In fact, the Moroccan catalogue of varieties currently shows that there is an ever-increasing presence of foreign improved varieties (> 90%), which are imported through seed companies and protected under domestic plant protection laws. In terms of tariffs, pre-basic and basic seeds have always been tariff-free. This has been extended to certified seeds. Certified seeds (R1 and R2) used to pay a customs tariff of 49% of the "free on board" (FOB) price. Lately, these tariffs have been reduced for all generations (including certified seed) to as low as 2.5% of the FOB price.

The government subsidizes imported basic (G3 and G4) cereal seed costs. The subsidies per quintal are MAD 500 (USD 58.8) for G3 seed and MAD 400 (USD 47) for G4 seed. This subsidy considers the cost of seeds produced abroad.

The government has encouraged foreign private seed companies to establish partnerships with Moroccan counterparts (including producers) through special concessions. The concessions include providing government land to foreign seed companies on condition they partner with local entrepreneurs (so far 11 partnerships have been established).

[6] In Morocco, wheat is used to make a wide range of foods like bread, crumpets, muffins, noodles, pasta, cakes, pastries, cereal bars, sweet and savory snack foods, crisp-breads, sauces, and confectionery.

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Political Economy of the Wheat Sector in Morocco: Seed Systems, Varietal Adoption, and Impacts

Literature on the wheat sector in Morocco has been very thin on the ground. This is particularly so for national-level analysis of the country's seed system and varietal release, adoption, and impacts. By producing this book, the authors aim to address this gap in analysis.

As well as a review of existing literature on the topic, this book provides a comprehensive analysis of the seed system in Morocco, using published and unpublished secondary data collected from different sources; some of this data are not adequately documented elsewhere. The book also uses a large dataset collected from a representative sample of 1,230 wheat-growing farm households. These households reside in the 21 major wheat-growing provinces of Morocco, which constitute more than 75% of total wheat production in the country.

This book provides a thorough analysis of the historical evolution of the institutional and policy environment – in Morocco's wheat sector in general and the seed system in particular. It also provides adoption, impacts, and seed demand analysis at household, district, province, and national levels. Given the tremendous amount of data and information this book contains, I believe that it will not only provide guidance for necessary institutional, regulatory, and policy reforms, but will also be the single most important reference material regarding the wheat sector in Morocco for many years to come. The methodological background and the results reported in this book could also inspire similar work in other countries.

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About ICARDA

Established in 1977, the International Center for Agricultural Research in the Dry Areas (ICARDA) is a non-profit, CGIAR Research Center that focusses on delivering innovative solutions for sustainable agricultural development in the non-tropical dry areas of the developing world.

We provide innovative, science-based solutions to improve the livelihoods and resilience of resource-poor smallholder farmers. We do this through strategic partnerships, linking research to development, and capacity development, and by taking into account gender equality and the role of youth in transforming the non-tropical dry areas.

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