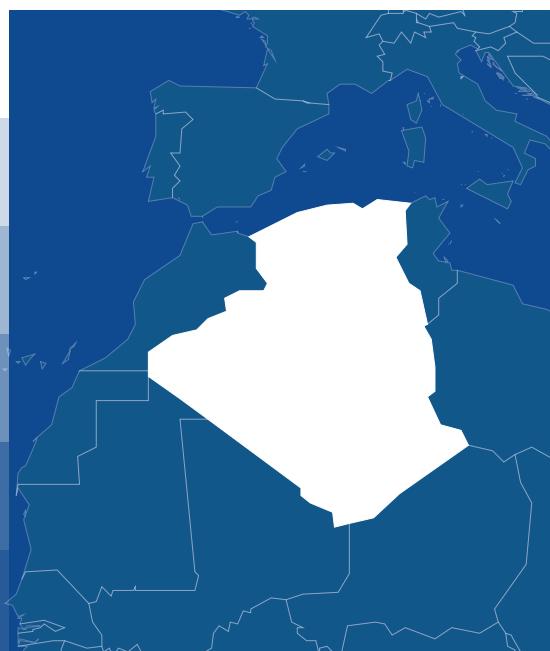


Algeria

Country profile



Key messages

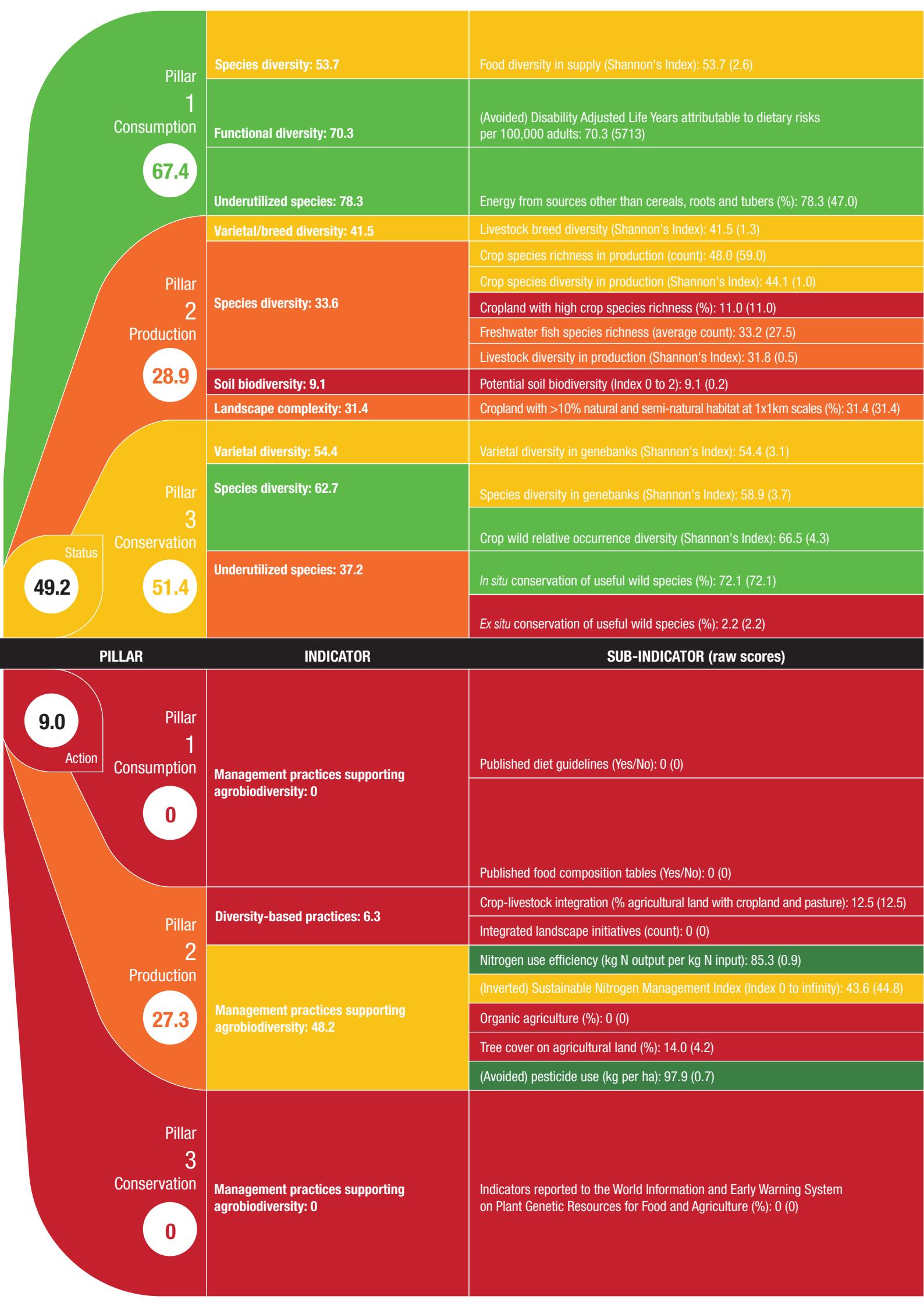
- Algeria has an Agrobiodiversity Index status score of 49.2 reflecting moderate to low integration of agrobiodiversity in the food system.
- In consumption, there is a high diversity of food items available for consumption resulting in relatively low prevalence of diet-related diseases.
- In production, crop species and varietal richness are low indicating a great potential to substantially increase the diversity of livestock breeds in production, improve soil biodiversity, and increase the proportion of natural habitat in cropped landscapes.
- In conservation, *ex situ* conservation of plant species diversity is relatively high compared to other countries around the world, but useful wild plants and varietal diversity are poorly represented in genebanks and botanical gardens.
- There is potential for more diverse and stronger policies for integrating agrobiodiversity across the whole food system.

Pillar 1: Agrobiodiversity in consumption for healthy diets
Pillar 2: Agrobiodiversity in production for sustainable agriculture
Pillar 3: Agrobiodiversity in conservation for future use options

Score	41-60
0-20	61-80
21-40	81-100

All raw scores are scaled from 0 to 100.
See Annex 2 for details.





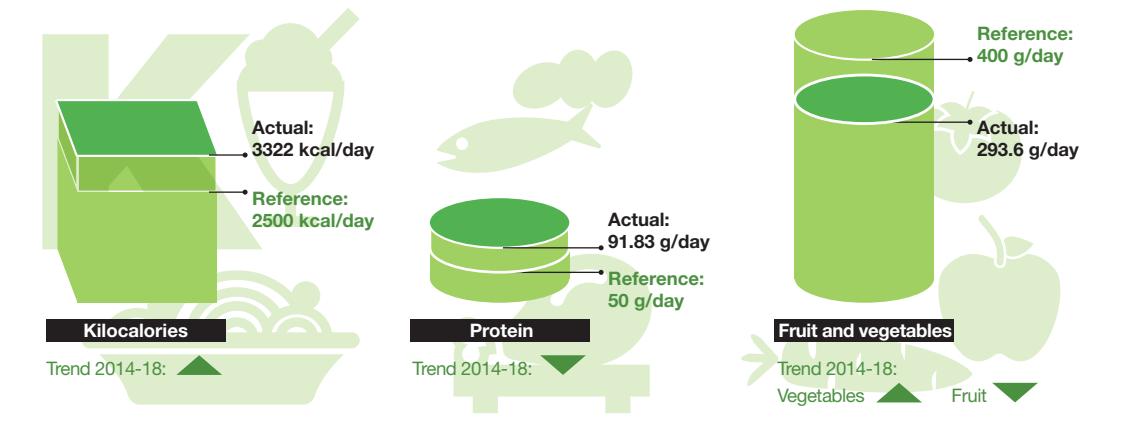
Context

Algeria is a lower middle income country with an annual GDP of US\$ 171.091 billion in 2019.¹ Its population, estimated at around 4.3 million individuals, has a density of 17.7 people per square kilometer of land area.^{2,3} Algeria is the largest country in Africa, with a land area of 2.4 million km².⁴ The country has a semi-arid geography and is subdivided into three contrasting zones: the fertile northern “Tell” region, the semi-arid highlands, and the Sahara, which is severely arid due to scarcity of rainfall.⁵ An estimated 5.5% of Algeria’s population live below the national poverty line.⁶ In the country, 5.8% of the population is vulnerable to multidimensional poverty according to the latest survey data in 2013.^{6,1}

Consumption for healthy diets

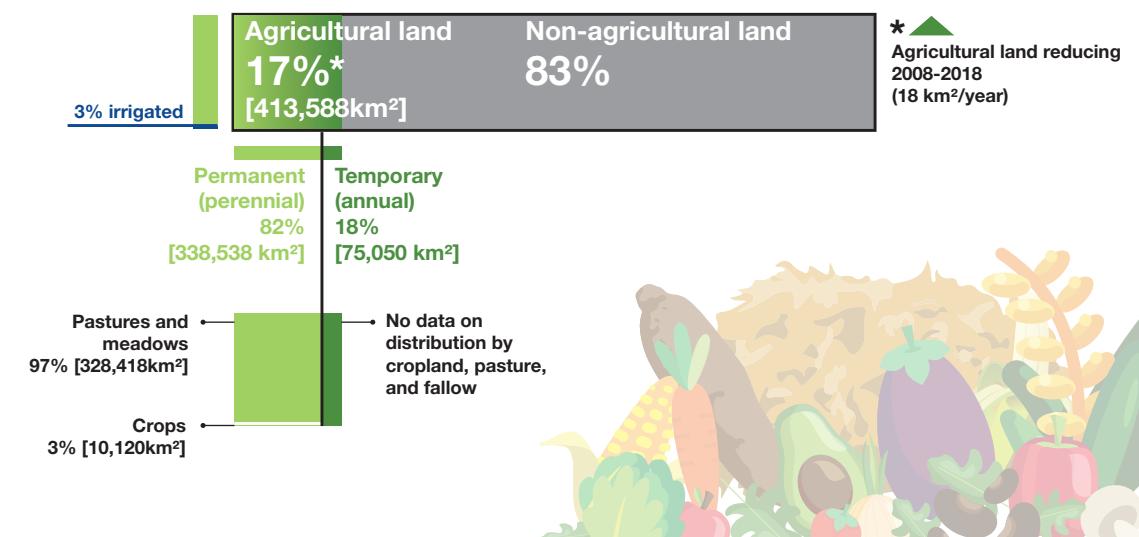
Typical ingredients of Algerian cuisine include lamb, chicken, fish, grains, vegetables, and dried fruit (Figure 1). Couscous is a main Algerian staple food usually accompanied by a vegetable sauce. However, the consumption of traditionally prepared couscous has declined compared to industrial couscous.⁷ A variety of traditionally manufactured dairy products, such as fermented milk, cheese, and butter are also part of the traditional Algerian diet, but are slowing disappearing.⁸ The average life expectancy of an Algerian person is estimated at 77 years old.⁹ During the period 2017–2019, approximately 1.2 million people were undernourished in Algeria¹⁰ with 9.3% of the population facing severe food insecurity.¹¹ Healthwise, about 36% of women of reproductive age suffer from anemia¹² and 12.6% of women and 12.3% of men are diabetic.¹³ As of 2012, the national prevalence of under-five stunting was 11.7%,¹⁴ and under-five wasting prevalence was 4.1%.¹⁵ An estimated 34.9% of adult women (aged 18 years and over) and 19.9% of adult men are living with obesity.¹⁶

Figure 1: Kilocalorie, protein, fruit and vegetable supply



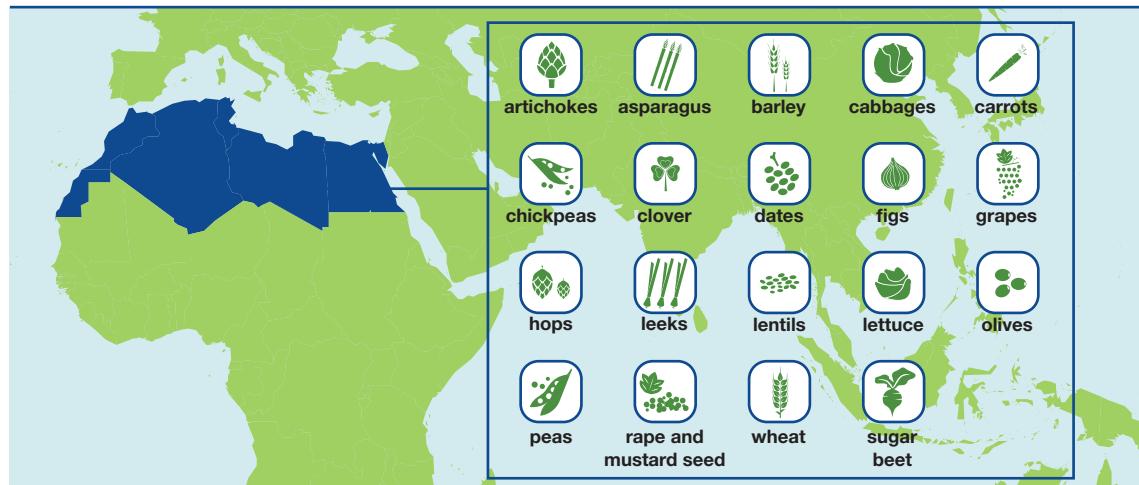
Production for sustainable agriculture

In Algeria, about 17.4% (413,588 km²) of the total land area is under agricultural use, of which 75,050 km² is used as arable land (~18% of the total agricultural land area).¹⁷ About 61% of the arable land is under temporary crops and 39% under temporary fallow¹⁸ (Figure 2). Agriculture contributes to 12% of Algeria’s annual GDP¹⁹ and represents 10% of the Algerian labor force,²⁰ of whom 3% are female workers and 7% are male.²¹ In 2016, annual fisheries capture and aquaculture (fish, crustaceans, molluscs) production were estimated at 95,000 tonnes and 1,361 tonnes, respectively²² (Figure 2).

Figure 2: Land used for agriculture

Conservation for future use options

About 107,865 km² of Algeria's total land and above 128,993 km² of its marine area are protected, respectively 4.64% of terrestrial land and 0.07% of the marine area.²³ Only 0.8% of Algerian land area (19,636 km²) is forested and net tree cover loss from 2001 to 2019 was 1,580 km², equivalent to a loss of 13% since 2000.²⁴ The country has 22 hotspots of plant diversity and a rich diversity of fauna, which is however threatened by agricultural activities among other factors. The northern part of the country, beyond the Tell Atlas mountain chain, is an area identified as a center of origin of cultivated plants²⁵ (Figure 3). In terms of biodiversity *in situ* conservation, Algeria has nine national parks, four nature reserves, four hunting reserves, 50 wetlands of international importance and one marine nature reserve, accounting for 44% of the country's surface area and 1% of its marine areas.²⁶ Marine ecosystems represent a key source of both animal protein and income for the Algerian population, as many depend on small-scale fishery and trade.²⁷ In 2010, the country predicted that by 2020, fishery resources (tuna, anchovies, sardines and langoustines) would decrease by 30%, even if only exploiting a third of the authorized stock available.²⁸ This reduction is driven mostly by the increased number of fishing vessels, climate change and narrowing of exploited areas which affect commercial species such as sardines, anchovies, and pikes.²⁹

Figure 3: Crops originating from South and East Mediterranean

Agrobiodiversity Index score

Algeria has an Agrobiodiversity Index status score of 49.5.

Status: What's driving the Agrobiodiversity Index score?

Algeria's status score reflects variable levels of agrobiodiversity in consumption, production, and conservation, with some high scores in each area except for production, the pillar with the lowest scores.

Consumption

Species diversity in diets: Food species diversity is moderate in Algeria relative to other countries in the world and lower than most other Mediterranean countries. While consumption of fruits is relatively high, consumption of vegetables, nuts, and whole grains is lower than in the region and could be increased to ensure a balanced diet and drive food system diversity.

Functional diversity: Algeria's functional diversity score of 70 reflects a moderate number of Disability Adjusted Life Years attributable to dietary risk factors, indicating that diets are functionally relatively diverse. We note, however, that Algeria is 'off course' to meet targets for maternal, infant and young child nutrition³⁰. No progress has been made towards achieving the target of reducing anemia among women of reproductive age, with 35.7% of women aged 15 to 49 years now affected. Consumption of sugar-sweetened beverages is higher than in other countries in the region.¹⁶

Underutilized species: 47% of energy in Algerian diets is obtained from sources other than cereals, roots, and tubers. This is 78% of the 60% recommended threshold, explaining the high score for consumption of underutilized species. Consumption of whole grains is low, however, indicating that cereals are mainly consumed as highly processed products.

There were no data available on varietal diversity in consumption.

Production

Varietal diversity: A relatively low number of livestock breeds are maintained in production in Algeria. Algeria has a livestock breed diversity of 1.3, which is much lower than the current global maximum recorded at 3.08 (in the USA). The score for Algeria is driven up mainly by the diversity of sheep breeds in production, of which the most numerous are Ouled Jellal, Rembi, and Berbere. The country has lost 94% of cattle breeds, 60% of horse breeds, and 40% of sheep breeds since records began³¹, so Algeria has the potential to produce a much wider range of sheep and other livestock. In addition to averting the loss of animal genetic resources, keeping multiple breeds in production should help farmers maintain livelihoods in times of pest and disease outbreaks or other production challenges, because different breeds have different resistance to pests and diseases.

Species diversity: Crop species richness in Algeria's production systems is moderately high at 59 but lower than the Mediterranean average value of 74 crop species (global minimum and maximum values range from 0 to 123 species). However, there is a very low percentage (11%) of cropped land containing a high diversity of crop species at 10x10km scales, which suggests that cropped landscapes lack crop diversity. The top ten crops in production by area, constituting 87% of the harvested area, are wheat, barley, olives, dates, potatoes, oats, grapes, watermelon, vegetables (mixed), and oranges. The potential to increase crop species and varietal diversity is highlighted by national records documenting shrinking crop diversity in production over time. For example, Algeria estimates it has lost 51%-66% of its 4,209 crop species or varieties documented when records began, including 64% of the 109 cereal (wheat, oat, rye, barley) species or varieties, 69% of its 151 olive tree species or varieties, and 95% of its 1,376 grape species or varieties. Reintroducing traditional species and cultivars into production would help recover crop species richness and diversity with potential benefits including healthier soils and improved yield stability. With just 28 recorded freshwater fish species, fish richness is lower than in most other countries globally. Livestock species diversity is low at 0.5 compared to the global maximum of 1.62 (in Curaçao). Actions to boost fish and livestock richness in areas of the country where these are low would help ensure farmers in all regions rely on a wide species base, helping

shield them against pests and diseases and other production challenges.

Soil biodiversity: Soil biodiversity is very low for most of the country, averaging 0.2 on a scale of 0.11 to 1.35 (representing the minimum and maximum global extremes). Adopting integrated plant nutrient management practices, like using cover crops, applying mulch and animal manure, and intercropping with legumes, would be beneficial to maintain and restore soil health throughout the country.

Landscape complexity: 31.4% of Algeria's cropped landscapes have more than 10% natural vegetation at a 1x1 km scale, meaning that natural habitat is integrated into cropland in these landscapes. Maintaining natural vegetation in and around cropland helps maintain habitat connectivity and ecosystem functioning to sustain nature's contributions to agriculture, including reducing the risk of pest and disease outbreaks, maintaining pollinators, and safeguarding crop wild relatives. Retaining at least 10% natural habitat at local (1x1 km) and landscape (10x10 km) scales could be achieved through practices on farm, such as live fences (trees, hedgerows), woodlots, flower strips, riparian vegetation and set aside, and off-farm practices like safeguarding portions of natural or semi-natural forests, wetlands and grasslands around cultivated areas.

There were no data on functional diversity, underutilized species, or pollinator and natural enemies in production.

Conservation

Varietal diversity: Algeria scores moderately (54.4) for varietal diversity in genebanks, relative to the globally best performing country (France). This indicates that there are a substantial number of crop samples (accessions) of Algerian origin conserved in genebanks. Nonetheless, there is a need for concerted efforts to ensure all local varieties are conserved *ex situ* given the well documented loss of many varieties from production systems.

Species diversity: The score for species diversity is moderate (62.7), indicating that a moderate diversity of Algeria's cultivated and wild species are conserved in genebanks and there is a high diversity of crop wild relatives growing in Algeria relative to other countries in the world. Efforts to include samples of all cultivated species and crop wild relatives in genebanks are advised to safeguard plant genetic resources for food and agriculture.

Underutilized species: Algeria has a low score (37.2) for the underutilized species indicator (measured as 'wild useful plants'). While 72.1% of known wild useful plants are conserved *in situ*, their representativeness in *ex situ* repositories is very low (2.2%).

No data were available for functional diversity of genetic resources in conservation.



Credit: ©IFAD/Martine Zaugg

Actions: What actions are being taken to maintain and increase agrobiodiversity?

For **consumption**, actions to use agrobiodiversity in consumption are lacking. Algeria does not have published dietary guidelines and no national food composition tables are available to support dietary diversity for healthy diets.

Action scores in **production** are low (27.3) reflecting a low adoption of diversity-based practices and variable implementation of agrobiodiversity-supporting management practices. The main findings are as follows:

- **Diversity-based practices:** Available data indicate that diversity-based practices are not widespread in Algeria. Only 12.5% of its agricultural landscapes (10x10 km areas) have both cropland and pasture, facilitating crop–livestock integration. An Africa-wide assessment of integrated landscape initiatives in 2014,³² did not find initiatives actively promoting agrobiodiversity in Algeria.
- **Production management practices supporting agrobiodiversity:** Current data indicate nitrogen use efficiency is very good, with Algeria scoring 85.3, reflecting a nitrogen use efficiency of 0.9 kg N output per kg N input. This is close to the highest levels recorded globally (1.08 kg N output per kg N input). Land use efficiency could be made more sustainable by increasing yields, as indicated by a moderate score of 44.8 on the Sustainable Nitrogen Management Index (which combines data on nitrogen use efficiency and crop yields). The very high score for the sub-indicator on avoided pesticide use (97.9) reflects a very low use of pesticides, estimated at 0.7 kg per hectare. This is likely to be having a strong positive impact on soil biodiversity, pollinators and natural enemies of pests. Based on national statistics, no organic agriculture is practiced in Algeria and there were no data available on conservation agriculture adoption. Trees are integrated into only 4.2% of agricultural land in Algeria. Evidence suggests tree coverage on farm could be increased to up to 30% with limited impacts on yield,³³ while providing valuable carbon sequestration services and helping maintain tree, soil and animal biodiversity in agricultural landscapes. Drought-resistant and native tree varieties could be prioritized to minimize water consumption while providing other benefits to farmers.

Conservation: It was not possible to properly evaluate the action indicators for Algeria, given that the country has not reported its progress towards the implementation of the second Global Plan



of Action for the conservation and sustainable utilization of plant genetic resources in the country, developed by the UN Food and Agriculture Organization (FAO). The Algeria FAO country report in 2006 stated that conservation of local genetic resources was not subject to any organized action by the state, but farmers in the oases continued to maintain diversity of local wheat varieties, date palms, and fruit trees (olive, figs, pomegranate). Local farmers also conserved and protected biodiversity, including wild relatives, around their fields. However, there is a declining trend in traditional means of conservation.³⁴

Commitments: How supportive of agrobiodiversity are national policies?

The commitments analysis for Algeria was based on their *National Biodiversity Strategy and Action Plan for 2016-2030*.³⁵

Consumption: No commitments to agrobiodiversity in consumption were identified. This is based on a review of Algeria's NBSAP; other national documents may include commitments to promoting the use of food diversity for healthy diets. Nonetheless, it highlights a potential gap in agrobiodiversity policy.

Production: Algeria has a very low score (16.7) for commitments to enhancing agrobiodiversity in production. The loss of the varietal diversity of the date palm, a key species for people's livelihoods, is of great concern in the country. The NBSAP mentions the need to document and foster *in situ* conservation of date palm for the sustainability of production systems. Likewise, the NBSAP mentions that biological corridors should be developed to guarantee ecological connectivity between natural and protected habitats. Organic agriculture is mentioned as a strategy for adding value to the local and artisanal heritage and experts are involved, yet there is a lack of targets in terms of area, production systems, or diversification strategy. Overall, Algeria has planned to protect biological diversity by sustainably managing agriculture, aquaculture, and silviculture in the coming years. This includes developing strategies to halt the genetic erosion of crops, livestock, domestic animals, and their wild relatives.

Conservation: Algeria has a low score (33.3) for commitments to enhance agrobiodiversity in conservation. Algeria was one of the first African countries to ratify all the international environmental protection agreements, including the Kyoto Protocol and the Barcelona Convention. However, their application and monitoring has been inadequate³⁴. Genetic erosion of agrobiodiversity remains a national concern.



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Recommendations

This section suggests concrete actions that can be taken to improve the use and conservation of agrobiodiversity for more sustainable food systems (Table 1). The list of actions is by no means exhaustive or prescriptive. It is intended for review, discussion, and improvement by in-country policy specialists.

Table 1: Recommended actions to enhance agrobiodiversity in the national food system

Food system pillar in the Agrobiodiversity Index	Recommendations	Contributing to:	
		Risk and resilience	Global policy
Consumption for healthy diets	<p>Develop food-based dietary guidelines including a rich diversity of local foods. Give special emphasis to vegetables, nuts, legumes, whole grains and fruits.</p> <p>Develop food composition tables that demonstrate the diversity in nutritional value of local products.</p> <p>Reduce the dependency on major staples and promote whole grains, versus highly processed cereals.</p>		SDG2 Zero Hunger SDG12 Responsible Consumption and Production WHO Decade of Action on Nutrition
Production for sustainable agriculture	<p>Improve monitoring and reporting of organic and conservation agriculture practices to FAO, and actively promote their uptake through policy and incentives. Promote integration of drought-resistant and native tree varieties into agricultural land through policies and training courses. Reintroduce traditional crop species and varieties, and livestock breeds, into production.</p>		Convention on Biological Diversity (CBD) Post-2020 Goal 1' No Net Loss SDG 1 No Poverty, 2 Zero Hunger, 14 Life Below Water, 15 Life on Land
Conservation for future use options	<p>Take action to report on progress in implementing the FAO second Global Plan of Action on Plant Genetic Resources for Food and Agriculture through the online reporting format established by FAO for this purpose.</p> <p>Develop a national program to promote <i>in situ</i> and on-farm conservation of genetic resources, including undertaking a systematic inventory of agrobiodiversity in the country and building the capacity of staff for effective conservation of genetic resources in the country.</p>		CBD Post-2020 Goal 3 Genetic Diversity & 4 Nature's benefits SDG 15 Life on Land FAO second Global Plan of Action on Plant Genetic Resources for Food and Agriculture

Agrobiodiversity highlight

Ghouts – using dunes and water management for green islands in the desert

In the deserts of Algeria, local communities are faced with farming arid and semi-arid land that is threatened by desertification. Algeria loses a few thousand hectares of land each year.³⁶ However, thanks to innovative farming techniques and groundwater deep under the soil, farmers have succeeded in using dunes and water management to grow food plants and livestock since the 15th century.

The *ghout* traditional hydro-agricultural system consists of digging into the soil and using knowledge of the wind to plant date palm at the top of the groundwater resources. This system integrates vegetables, cereals, fruit trees, and date palm production through a complex multilayered organization. Divided into three levels, these mixed crops are sustainable from the perspective of soil and water resources.

There are more than 9,500 ghouts shaping the landscape of the desert. Not exceeding 0.5 hectares, these green, living 'islands' turn the Souf region into a unique place. Indeed, *ghouts* play a role as a habitat to maintain biodiversity of plants, insects, and animals. However, even though they are sustainable and adapted to dry conditions, *ghouts* – and the biodiversity they maintain – are currently threatened by the use of groundwater for cities.

Sources: ³⁷



Credit: ©IFAD/Martine Zaugg

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End notes

- I. The Convention on Biological Diversity is an international treaty for the sustainable use and conservation of biological diversity. In 2010 it launched a strategic plan, running from 2011 to 2020, with 20 ambitious targets known as the Aichi Targets from the city in which they were signed. The international community has developed new targets, but their signature has been delayed due to the COVID-19 crisis.



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THE "AGROBIODIVERSITY INDEX REPORT
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SYSTEMS", DOWNLOADABLE HERE:
<https://cgospace.cgiar.org/handle/10568/118471>

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