

Role and Performance of Agricultural Sector from 1969 to 2007

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Abstract:

This paper aims to summarize the reality of the Libyan agricultural sector from 1969 to 2007 by showing the development of agricultural production, performance of the agricultural sector, challenges, problems and constraints of agriculture in Libya. Agriculture and livestock have been important components of the Libyan social, political and economic fabric, with more than half the population engaged in agriculture in some form until the 1950s and 1960s. The sector has received generous subsidies in the quest for self-sufficiency. However, The Libyan agricultural growth has been inversely related with growth in the Libyan oil sector. Also, the agricultural sector's contribution to gross domestic product (GDP) has been declining since the discovery of oil in 1958. According to the Ministry of Agriculture (MoA, 2008) food imports have rapidly increased over recent decades, reaching approximately \$ 270 million in 2007. Cereals contribute the largest share of these imports with 35%; wheat alone representing 6% of total imports in 2007. Apart from limited wheat and barley production, the major agricultural production consists of mostly fruit and vegetables especially, dates, grapes, olives, citrus, watermelon, onions, tomatoes and potatoes. In short, the agricultural sector still faces many challenges, problems and constraints including limited agricultural resources, and the ability to exploit these resources efficiently. Also, unfortunately, performance of agriculture in Libya has not been up to expectations and has been characterized over the decades by ups and downs.

Keywords: Gross Domestic Product (GDP), Agriculture, Agricultural Production.

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Introduction:

Libya is a Mediterranean country that occupies the North-central part of the African continent between the latitudes 18°33' north, and longitude 9°25' east. The country has a total area of approximately 1,759,540 km². In general, much of the mainland of Libya is a flat surface desert (95%); the cultivable area is estimated to be approximately 1.2 % of the total area of the country General Authority for Information (GAI, 2008). Libyan climatic conditions can be generally classified as a dry desert particularly in the central and southern climatic regions, characterized by large variations in temperature between winter and summer along with low and irregular annual rainfall. Also there is a Mediterranean climate along the coastal strip with moderate temperatures and rainfall is between 200 and 400 mm/year in winter and it is hot and dry in the summer. In this narrow coastal strip, which represents about 2% of the total area of Libya, irrigated agriculture and dry farming are widely practiced (GAI, 2008).

The total Libyan population is estimated to be 5.29 million according to the most recent census, which occurred in 2006 (Figure 1A) and over 80% of the Libyan population lives in the Mediterranean coastal strip. The annual population growth rate of the period 1995-2006 was estimated to be 1.56% (Figure 1B). In the recent years, a gradual decrease in the growth rates from between 4% to less than 2% is recorded (GAI, 2008). Population densities may exceed one hundred and twenty inhabitants/km² (north) and less than 1 inhabitants/km² in the desert areas (central and southern regions). The average population density is approximately three inhabitants/ km². Figure 1 shows populations of Libyan and non-Libyan residents living in Libya, with the data taken from censuses from 1973, 1984, 1995 and 2006 by type. In 2006, about 54% of the Libyan population resides in the western coastal strip (Jaffara Plain) (GAI, 2008). The eastern coastal strip (Jabal Alakhdar) has the second highest population concentration with 21% (GAI, 2008).

For decades, agriculture has been associated with production of essential food crops. At present, agriculture above and beyond farming includes forestry, dairy, fruit cultivation, poultry, beekeeping... etc. Today, processing, marketing and distribution of crops and livestock products etc. are all acknowledged as part of current agriculture. Thus, agriculture could be referred to as the production, processing, promotion and distribution agricultural products. In short, the importance of agriculture lies in the following: source of livelihood, contribution to national revenue, economic development, supply of food as well as fodder, significance to the international trade, marketable surplus, source of raw material, significance in transport, foreign exchange resource, great employment opportunities, and food security.

The rest of the paper is organized as follows. Section (ii) reviews development of agricultural production in Libya. In this section, we presented whole Libyan's scenario of agriculture sector, performance of the agricultural sector, challenges of agriculture, and problems and constraints of agriculture in Libya. Concluding remarks are presented in the final section.

Methodology

The study was based on descriptive statistical approach to summarize and display data in a clear manner. Also, the study relied on published data from ministry of agriculture, general authority for information and Libyan general water authority.

Research problem:

Libya has sought to expand and develop the agricultural sector and has invested a significant share of national revenues for agricultural sector in the hope of one day becoming agriculturally self-sufficient. However, The Libyan agricultural growth has been inversely related with growth in the Libyan oil sector. Also, the agricultural sector's contribution to gross domestic product has been declining since the discovery of oil.

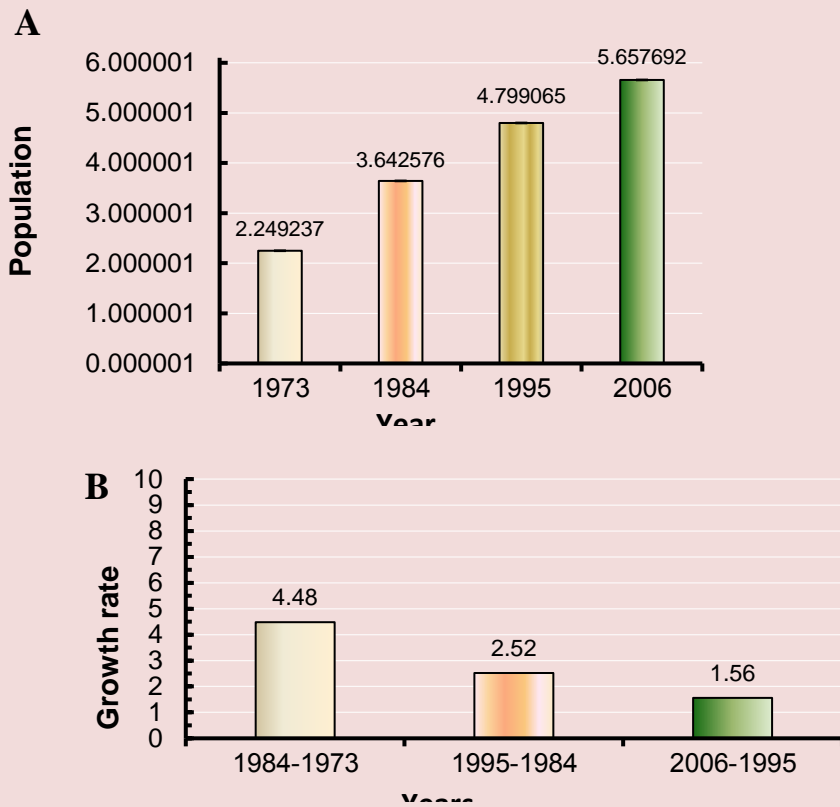


Figure 1: The total population (A) and growth rate (B) of Libyan and non-Libyan residents living in the country as determined from the census between 1973- 2006. Source: Statistics Book, General Authority for Information Yearly Book 2008.

Development of Agricultural Production in Libya

Historically, agriculture and livestock have been important components of the Libyan social, political and economic fabric, with more than half the population engaged in agriculture in some form until the 1950s or 1960s. The sector has received generous subsidies in the quest for self-sufficiency. However, the Libyan agricultural growth has been inversely related with growth in the Libyan oil sector. Also, the agricultural sector's contribution to gross domestic product (GDP) has been declining since the discovery of oil in 1958. Before and shortly after 1958, the agricultural sector was the main source of national income to the country, when it contributed over 26% GDP (LGAA, 2008). Beginning of the 1960s, the increase of oil exploration and production in the country, meant that the agricultural sector contribution to GDP decreased gradually to only 2% in 2007 according to the Libyan General Authority for Agriculture. Conversely, the contribution of the oil sector increased to 61.2% of GDP (GAI, 2008). The retrenchment of agriculture's contribution to GDP has also been accompanied by diminishing employment in the agricultural sector.

In the 1960s, the agricultural sector was the leading employer of all economic sectors, and employing approximately 37% of the total labour force (LGAA, 2008). Since then agriculture's contribution has dramatically decreased to approximately 5% of the total labour force in 2002 (LGAA, 2008). Table 1 illustrates the contribution of the agricultural sector to the GDP and the agricultural labour force between 1999 and 2007.

Table 1: Percentage of agricultural sector contribution in GDP and labour force through the years 1999-2007

Year	% Agricultural contribution in GDP	% Labour force
1999	10.3	6
2000	8.1	6
2001	7.5	6
2002	5.3	5
2003	4.3	6.7
2004	5.0	6.9
2005	2.2	7.0
2006	2.0	7.3
2007	2.0	7.6

Source: Libyan General Authority for Agriculture, 2008.

The cultivable area in Libya is estimated to be approximately 2.2 million ha (1.2%) of its total land (GAI, 2008). Only 1.82 million ha is cultivated for annual agricultural crops, and just 0.34 million ha is cultivated for permanent agricultural crops (GAI, 2008). Most arable land is found along the coastline, especially in the Jaffara Plain and Jabal Alakhdar regions. Table 2 gives an overview of land usage, Libya's total economically active population and Libya's agricultural labour force.

Table 2: Land use, Libya's population and agricultural labour force in 2006

Physical area in 2006	
Total area of the country	1,750,000 km ²
Arable land	2.2 million ha
- as % of the total area of the country	1.2 %
- area under permanent crops	335,000 ha
- cultivated land under annual crops	1.82 million ha
Population in 2006	
- Total population	5,657,692 inhabitants
- of which rural	13 %
- population density	3 inhabitants/km ²
All economically active population	2020000 inhabitants
- as % of total population	36 %
- female	25 %
- male	75 %
Population economically active in agriculture	94000 inhabitants
- as % of all economically active population	5 %
- female	33 %
- male	67 %

Source: The agricultural census for 2007 (GAI, 2008)

Agriculture is one of the Libyan government's main concerns. The state has been implementing large investments and has instituted important support for agricultural development, especially for irrigation water. At present, no water fees are imposed on users of water for agricultural purposes. Because of the arid nature of most of Libya's territory, irrigation has long constituted a common and important practice (FAO, 2008).

According to General Authority for Information (GAI, 2008), the total area of irrigated land is estimated to be approximately 470000 ha, all of which is equipped with either full or partial controlled irrigation. Over almost the entire area of arable land, sprinkler irrigation is practiced due to the prevailing sandy soils. Approximately 98.7 % of irrigation uses groundwater, while the remaining 1.3 % uses surface water and treated wastewater (Figure 2).

According to the final results of the agricultural census (GAI, 2008), the total number of agricultural land holdings in Libya was 163714, which is quite a low number indicating the scarcity of arable land. Table 3 shows land holdings categorized by farming area for 2007. Small-scale farms dominate the structure of land holdings, where farms of fewer than 5 ha represent the bulk of the 48% of the total land holdings. Farms of more than 20 ha and fewer than 100 ha represent 11.83% and farms of more than 100 ha represent 0.42%. Most of the large farms are owned by the state and run by its technicians. In short, the major constraints for agricultural development within Libya are the scarcity of suitable arable land and water shortage (FAO, 2008).

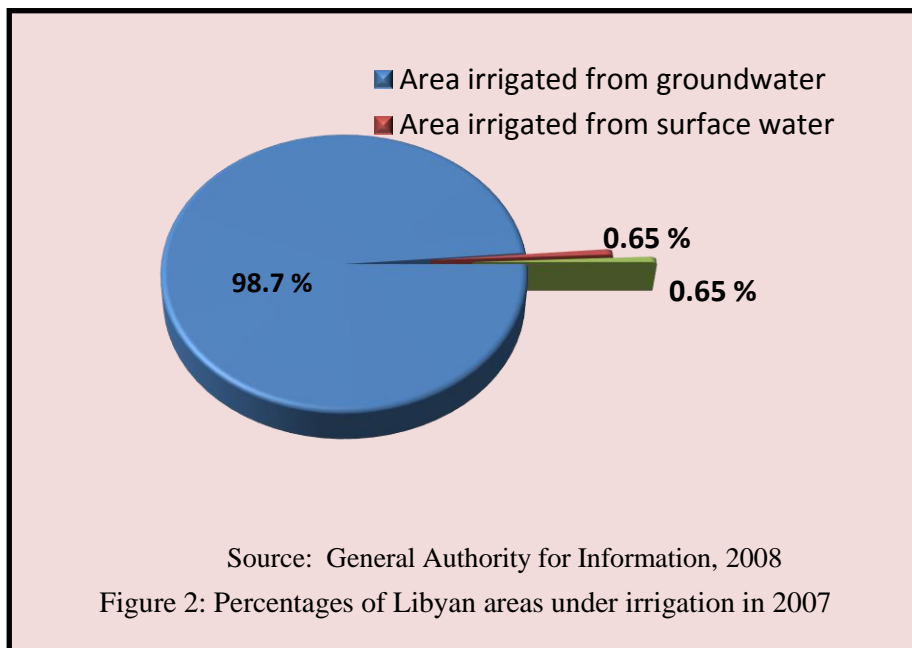


Table 3: Land holdings in Libya in the year 2007

Land holding class (ha)	Number of holdings	% of total area holdings
Less than 0.5	2710	1.65
0.5 - 0.99	3177	1.94
1 - 1.99	7615	4.65
2 - 2.99	17654	10.78
3 - 3.99	16495	10.08
4 - 4.99	14909	9.11
5 - 9.99	12500	7.64
10 - 14.99	40406	24.68
15 - 19.99	20143	12.30
20 - 29.99	8039	4.91
30 - 39.99	9454	5.77
40 - 49.99	4101	2.50
50 - 45.99	2432	1.49
60 - 74.99	2489	1.52
75 - 99.9	904	0.55
>100	686	0.42
Total	163714	100.00

Source: General Authority for Information, (2008).

Performance of the Agricultural Sector

Libya has sought to expand and develop the agricultural sector since the early 1960s and has invested a significant share of national revenues for agricultural development in the hope of one day becoming agriculturally self-sufficient. However, the agricultural sector still faces many challenges including limited agricultural resources, and the ability to exploit these resources efficiently. Concomitantly, there are harsh prevailing climatic conditions in the country. Consequently, agriculture is characterized by an extensive production system with low agricultural productivity. In other words, although the total agricultural production has increased as a consequence of the development of desalination and wastewater treatment plants and

irrigation projects, Libya still relies heavily upon imports to satisfy food requirements.

According to the Libyan General Authority for Agriculture (LGAA, 2008) food imports have rapidly increased over recent decades, reaching approximately \$ 270 million in 2007. Cereals contribute the largest share of these imports with 35%; wheat alone representing 6% of total imports in 2007. Apart from limited wheat and barley production, the major agricultural production consists of mostly fruit and vegetables especially, dates, grapes, olives, citrus, watermelon, onions, tomatoes and potatoes. The average yields for these crops are also generally lower than those obtained in other neighboring North African countries (MoA, 2008). Tables 4, 5 and 6 give an overview of the local production, imports, consumed and also per capita consumption of wheat, fruits and vegetables between 2000 and 2007.

Table 4: Local production, imports of wheat during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local wheat	1000 ton	64	49	54	46	61	48	104	96
Imports	1000 ton	1693	1483	1768	1691	1552	1509	1620	1600
Available for consumption	1000 ton	1757	1532	1822	1737	1613	1557	1724	1696
per capita consumption	Kilogram	369	316	369	345	315	298	323	312

Source: Libyan General Authority for Agriculture, 2008.

Table 5: Local production, imports of vegetables during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local vegetables	1000 ton	1226	1226	1239	1256	1321	1254	1258	1260
Imports	1000 ton	47	47	47	47	49	49	49	49
Available for consumption	1000 ton	1273	1273	1286	1303	1370	1303	1307	1309
per capita consumption	Kilogram	267	263	260	259	268	250	245	242

Source: Libyan General Authority for Agriculture, 2008.

Table 6: Local production, imports of fruits during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local fruits	1000 ton	365	365	365	365	361	367	367	360
Imports	1000 ton	40	42	43	44	45	46	46	45
Available for consumption	1000 ton	405	407	408	409	406	413	413	405
per capita consumption	Kilogram	85	84	83	81	79	79	78	66

Source: Libyan General Authority for Agriculture, 2008.

Vegetables and fruits occupy the majority of the available arable land since 1992. In terms of the output, vegetable production was the highest with 1260 tons in 2007. . However, between 2000 and 2007, the annual domestically produced quantities have met around 75 % of Libya's vegetable requirements. Annually, Libya's vegetables imports are approximately \$ 50 million making up for a 25 % production

deficit. While fruit production was approximately 360000 tons in the same year, the average annual production of fruit is 336000 metric tons, satisfying approximately 91 % of Libya's requirements.

Therefore, Libya imported fruit costing about \$ 25 million to make up for 9 % deficit for the same period. Meanwhile, cereals production amounted to about 96000 metric tons of wheat. As mentioned above, Libya imports large amounts of cereals, particularly wheat, in order to satisfy need. The highest imported quantity of all agricultural products is consistently cereals.

For intermediate inputs, Libya imports nearly all of agricultural intermediate inputs needs, which include pesticides, fertilizers, different varieties of seeds and agricultural machinery, but not urea, which is domestically produced. Statistical data extracted from MoA (2008) illustrates that from 2000 to 2007 the average total fertilizer consumption was approximately 67525 tons per year, with an average of 32 kg per hectare of arable land (Table 7). Libya produced around 400000 tons of urea per year for the same period. The only available pesticide data is for imports, the annual average value of imported pesticides was about 17 % of total imported agricultural intermediate inputs from 2000 to 2007.

Table 7: Libya's fertilizer consumption during 2000-2007

Fertilizer/year	2000	2001	2002	2003	2004	2005	2006	2007
Phosphate fertilizer	55 000	40 400	40 900	27 000	34 700	18 000	47 000	39 200
Nitrogenous fertilizer	30 000	16 600	17 500	20 000	43 600	31 700	20 700	17 700
Potash fertilizer	4 000	5 400	3 300	3 500	8 200	5 300	5 500	5 000
Total fertilizer	89 000	62 400	61 700	50 500	86 500	55 000	73 200	61 900
Urea production	409 500	398 800	383 400	408 200	386 860	407 100	365200	389600

Source: Libyan General Authority for Agriculture, 2008.

Data concerning value and quantities of seeds and seedlings are limited. On the other hand, since the 1960s, Libya has planted millions of seedlings in an effort to prevent desertification and soil erosion (MoA, 2008). With regard to animal production, Tables 8 and 9 give an overview of the local production, imports, consumed and also per capita consumption of meat and dairy from 2000 to 2007. As well, tables 10 and 11 give an overview of the local production and per capita consumption of eggs and Fish from 2000 to 2007.

Table 8: Local production, imports, consumed and also per capita consumption of meat during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local meat	1000 ton	163	167	171	175	361	183	185	185
Imports	1000 ton	2	2	2	2	45	3	3	4
Available for consumption	1000 ton	165	169	173	177	406	186	188	189
per capita consumption	Kilogram	34.65	34.85	35.04	35.21	79	35.68	35.31	34.88

Source: Libyan General Authority for Agriculture, 2008.

Table 9: Local production, imports, consumed and also per capita consumption of dairy during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local dairy	1000 ton	270	278	286	294	112	310	300	290
Imports	1000 ton	190	198	200	220	22	245	235	225
Available for consumption	1000 ton	460	476	486	514	134	555	535	515
per capita consumption	Kilogram	97	98	98	102	61	106	100	95

Source: Libyan General Authority for Agriculture, 2008.

Table 10: Local production and per capita consumption of eggs during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local eggs	1000 ton	800	826	854	873	45	932	900	880
per capita consumption	Kilogram	168	170	173	174	406	179	169	162

Source: Libyan General Authority for Agriculture, 2008.

Table 11: Local production and per capita consumption of fish during 2000-2007

Product	Unit	2000	2001	2002	2003	2004	2005	2006	2007
Local fish	1000 ton	18.6	22.3	21	20.2	79	19.8	22	20
per capita consumption	Kilogram	3.9	4.5	4.25	40.2	112	3.8	4.132	3.69

Source: Libyan General Authority for Agriculture, 2008.

The Challenges of Agriculture in Libya

In Libya, agriculture faces many challenges that are not only limited agricultural resources, but are also in the following:

- The ability to exploit these resources effectively.
- Development of these resources compared to the levels that are achieved by many countries of the world.

Specifically, the most important of these challenges are as following:

1. The ability to increase resources development, especially water resources.
2. Harmonization with the international and regional changes.
3. Catch up with the rapid technological developments.
4. Increasing the effectiveness of institutions those are working with agricultural sector, especially private institutions, in order to strengthen production activities and provision of food.
5. Improving the living conditions for farmers.

6. Increasing the competitiveness of local agricultural products in local and regional markets.

Problems and Constraints of Agriculture in Libya

The most important problems and constraints faced by the agricultural sector are as follows:

1. Climate changes are inappropriate.
2. Limited fertile farmland and water resources.
3. Decreasing productivity levels for most crops, especially in rain-fed agriculture.
4. Decreasing levels of self-sufficiency in major food commodities.
5. Increasing reliance on overseas to meet the food needs.
6. Thus, aggravating the food gap.
7. Especially in light of global changes such as:
 - Shortage in supply of goods in the global markets.
 - Rise in global prices.
 - Shift some of the major producers of food to production of bio-fuels at the expense of food crops.

Conclusion:

This paper briefly explained the reality of the Libyan agricultural sector from 1969 to 2007 by showing the development of agricultural production, performance of the agricultural sector. Also, we illustrated the challenges, problems and constraints of agricultural sector. Libya has sought to expand and develop the agricultural sector since the early 1960s and has invested a significant share of national revenues for agricultural sector in the hope of one day becoming agriculturally self-sufficient. However, the agricultural sector still faces many challenges, problems and constraints including limited agricultural resources, and the ability to exploit these resources efficiently. The Libyan agricultural growth has been inversely related with growth in the Libyan oil sector. Also, the agricultural sector's contribution to gross domestic product (GDP) has been declining since the discovery of oil in 1958. Before and shortly after 1958, the agricultural sector was the main source of national

income to the country, when it contributed over 26% GDP. Due to the increase of oil production in the country, the agricultural sector contribution to GDP decreased gradually to only 2% in 2007 according to the Libyan General Authority for Agriculture. Although the total agricultural production has increased as a consequence of the development of desalination and wastewater treatment plants and irrigation projects, Libya still relies heavily upon imports to satisfy food requirements. In addition to, in the 1960s, the agricultural sector was the leading employer of all economic sectors, and employing approximately 37% of the total labour force. Since then agriculture's contribution has dramatically decreased to approximately 5% of the total labour force in 2002.

أمان رمالي*

المستخلص:

تهدف الورقة الي تلخيص واقع قطاع الزراعة خلال الفترة 1969-2007 مبينة تطور الانتاج الزراعي وأداء القطاع والتحديات والمشاكل والمعوقات الزراعة في ليبيا. الزراعة والإنتاج الحيواني من المكونات الهامة للتركيبية الاقتصادية والسياسية والاجتماعية، حيث يشتغل اكثر من نصف السكان بشكل ما في الزراعة حتى العقدين 1960/1950.

تم دعم القطاع بسخاء للوصول الي الاكتفاء الذاتي ولكن النمو الزراعي كان عكسيا مقارنة بنمو قطاع النفط. اضافة الي ان مساهمة قطاع الزراعة في الناتج المحلي الاجمالي استمر في الانخفاض منذ اكتشاف النفط في سنة 1958 وحسب تقرير وزارة الزراعة 2008 استيراد الغذاء استمر في الزيادة السريعة خلال العقود الماضية حيث بلغ حوالي 120 مليون دولار سنة 2007. الحبوب كان لها النصيب الاكبر في الواردات حيث بلغت حوالي 35%. القمح لوحده بلغت نسبته 6% من اجمالي الواردات سنة 2007. وخلافا للإنتاج المحدود للقمح والشعير، الانتاج الزراعي الرئيسي يتكون معظمه من الفواكه والخضروات خاصة التمور والعنب والزيتون والحمضيات والبصل والطماطم والبطاطس.

اختصارا، قطاع الزراعة لايزال يواجهه عددا من التحديات والمشاكل والمعوقات منها محدودية المصادر الزراعية، القدرة على استغلال المصادر بكفاءة. اضافة الي ان الاداء الزراعي لسوء الحظ لم يصل الي التطلعات المتوقعة، حيث تميز عبر العقود الماضية بعدم الاستقرار.

الكلمات الدالة: الناتج الاجمالي المحلي، الزراعة، الانتاج الزراعي.

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