The Economics of White Gold: Dynamics in Global Cotton Production and Türkiye's Position

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Abstract: Cotton is one of the most important agricultural commodities due to its role in the textile industry, rural employment, and agricultural income. This study aims to analyse the economic and structural dynamics of cotton production at both global and national levels and to evaluate Türkiye's position in terms of production, cost structure, foreign trade, and support policies. The study is based on statistical data published by the International Cotton Advisory Committee (ICAC), the Turkish Statistical Institute (TURKSTAT), and other official institutions. A descriptive and comparative analysis approach was used, and time-series data covering the period 2000/2001–2022/2023 were examined. The data show that global cotton production has remained around 24–25 million tons, while cultivated areas remained relatively stable and production growth was mainly driven by yield increases. At the same time, high stock-to-use ratios indicate a structural surplus in the global cotton market, influenced by trade policies and government support programs. Cost analysis reveals significant differences among countries in terms of productivity, input use, and competitiveness. In Türkiye, declining cultivation areas and increasing domestic demand have led to a higher dependence on imports despite improvements in yield. The originality of this study lies in the joint evaluation of production, cost, trade, and policy indicators within a single analytical framework. The results indicate that long-term planning, efficient resource use, technological adoption, and stable support policies are essential for ensuring sustainable and competitive cotton production.

Keywords: cotton production, global cotton market, production cost, support policies, Türkiye

Beyaz Altının Ekonomisi: Küresel Pamuk Üretiminde Dinamikler ve Türkiye'nin Konumu

Özet: *Pamuk, tekstil sanayindeki rolü, kırsal istihdam ve tarımsal gelir üzerindeki etkisi nedeniyle en önemli tarımsal ürünlerden biridir. Bu çalışmanın amacı, pamuk üretiminin küresel ve ulusal düzeydeki ekonomik ve yapısal dinamiklerini analiz etmek ve Türkiye'nin sektördeki konumunu üretim, maliyet yapısı, dış ticaret ve destekleme politikaları açısından değerlendirmektir. Çalışma, Uluslararası Pamuk Danışma Komitesi (ICAC), Türkiye İstatistik Kurumu (TÜİK) ve diğer resmi kurumlar tarafından yayımlanan istatistiksel verilere dayanmaktadır. Araştırmada tanımlayıcı ve karşılaştırmalı analiz yöntemi kullanılmış ve 2000/2001–2022/2023 dönemine ait zaman serisi verileri incelenmiştir. Veriler, küresel pamuk üretiminin yaklaşık 24–25 milyon ton düzeyinde seyrettiğini, ekim alanlarının görece sabit kaldığını ve üretim artışının büyük ölçüde verim artışlarından kaynaklandığını göstermektedir. Aynı zamanda, yüksek stok/kullanım oranları, ticaret politikaları ve devlet destek programlarının etkisiyle küresel pamuk piyasasında yapısal bir arz fazlasına işaret etmektedir. Maliyet analizleri, ülkeler arasında verimlilik, girdi kullanımı ve rekabet gücü açısından önemli farklılıklar bulunduğunu ortaya koymaktadır. Türkiye'de ise ekim alanlarının azalması ve iç talebin artması, verimlilikteki iyileşmelere rağmen ithalata bağımlılığın artmasına neden olmuştur. Bu çalışmanın özgün yönü, üretim, maliyet, ticaret ve politika göstergelerini tek bir analitik çerçevede birlikte değerlendirmesidir. Sonuçlar, sürdürülebilir ve rekabetçi pamuk üretimi için uzun vadeli planlama, etkin kaynak kullanımı, teknolojik uygulamaların yaygınlaştırılması ve istikrarlı destekleme politikalarının gerekli olduğunu göstermektedir.*

Anahtar kelimeler: *pamuk üretimi, küresel pamuk piyasası, üretim maliyeti, destekleme politikaları, Türkiye*

INTRODUCTION

Cotton (Gossypium hirsutum L.), belonging to the Malvaceae family, is an important industrial crop that has been cultivated for nearly 3,000 years and is widely grown worldwide for natural fiber production (Nix et al., 2017; Fang, 2018). Approximately 25 million tons of cotton fiber are produced annually, meeting nearly one-third of global fiber demand (Mollaee et al., 2019; Malinga, 2021). As the primary raw material of the textile industry, cotton has a critical role in the world economy, with the textile sector reaching an annual economic volume of about 600 billion US dollars (Khan et al., 2020). In addition to fiber, cotton also provides valuable by-products such as cottonseed oil and cottonseed meal, which are used in food, biofuel, cosmetic, and livestock industries (Nix et al., 2017). Due to its economic importance and wide industrial use, cotton has long been referred to as "white gold" (Şahinli, 2011; Khan et al., 2020).

Cotton production is concentrated in a limited number of countries because of its dependence on suitable climate and soil conditions. China, India, the United States, Brazil, Türkiye, Pakistan, and Uzbekistan are among the major producers worldwide (Bozkıran Yılmaz and Gören, 2024; Looney, 2024). In Türkiye, cotton is a strategic crop since it constitutes the main raw material for the textile industry, whose share in total exports is about 35% (Cevheri and

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Şahin, 2020). Although cotton cultivation represents a small share of total agricultural land, it generates a disproportionately large share of agricultural income, making it one of the most valuable crops per unit area. In recent years, strong demand from the textile sector has increased the importance of cotton, while high input costs and climate variability have posed significant challenges to the sustainability of cotton production (Çuhadar, 2024; National Cotton Council of Türkiye, 2024; Semerci and Ken, 2024).

Previous studies have examined cotton production from different perspectives, including economic performance, cost structure, trade, resource use efficiency, and sustainability. At the global level, research highlights the effects of input prices, market structure, and policy interventions on production and trade (Baffes, 2004; MacDonald et al., 2015; Ridley and Devadoss, 2023), while other studies focus on productivity, farm management, and environmental sustainability (Tausif et al., 2018; Addis et al., 2021). In Türkiye, several studies have emphasized the importance of cotton production for the national economy and evaluated the sector in terms of cost, profitability and efficiency (Küçük and Issı, 2019; Semerci and Çelik, 2019; Özüdoğru, 2021). Resource use efficiency and production performance have also been analyzed by Çobanoğlu (2013), while price expectations and market dynamics were discussed by Özer and İlkdoğan (2013). In the context of sustainability, Adanacıoğlu (2014) evaluated cotton production practices in Türkiye within the framework of sustainable agriculture approaches, emphasizing the importance of environmentally friendly production systems. In this context, the present study aims to analyze the economic and structural dynamics of cotton production at both global and national levels. Using Türkiye as a case study, the research evaluates productivity, cost structure, foreign trade performance, and support policies together, and compares major cotton-producing countries in terms of production inputs, efficiency indicators, and policy mechanisms. The study seeks to contribute to the literature and to provide findings that may guide policymakers and sector stakeholders in developing sustainable cotton production strategies. Unlike purely descriptive sectoral evaluations, this study integrates production, trade, cost, and policy indicators within a comparative analytical framework.

MATERIALS AND METHODS

The main data source of this study consists of statistical data, evaluation reports, and methodological documents published by the International Cotton Advisory Committee (ICAC). The research was conducted within the framework of a descriptive and comparative analysis approach, and the main indicators of the global cotton market as well as Türkiye's position in the sector were examined using time series data covering the period 2000/2001–2022/2023. All data were adapted according to the international cotton marketing season, which is defined as the period between 1 August and 31 July.

Within the methodological framework of the study, several indicators commonly used in cotton market analysis were calculated based on ICAC methodology (ICAC, 2025a). Productivity was measured as the ratio of production to harvested area and expressed as yield per hectare using the following formula:

$$\text{Yield}\left(\frac{\text{kg}}{\text{ha}}\right) = \left(\frac{\text{Production(ton)}}{\text{Harvested Area (ha)}}\right) * 1000 \quad (1)$$

Stock data play a critical role in ICAC supply–demand balance analysis, as they allow the evaluation of the adequacy of cotton supply relative to total use at both national and global levels. In this context, ending stocks were calculated using the following equation:

Ending Stocks = [(Beginning Stocks + Production + Imports) – (Consumption + Exports)] + Stock Adjustment (2)

In this calculation, the stock adjustment or trade imbalance term represents corrections made to eliminate inconsistencies arising from reporting differences, losses, statistical revisions, or unobserved data flows.

Based on ending stocks, two important indicators widely used in market analysis were derived (ICAC, 2025a):

Stock-to-Consumption Ratio = (Ending Stocks / Consumption) × 100 (3)

Stock-to-Use Ratio = (Ending Stocks / (Consumption + Exports)) × 100 (4)

The first indicator reflects the ability of stocks to cover domestic consumption, while the second shows the adequacy of stocks relative to total use, including both domestic consumption and exports. These indicators are commonly used to evaluate supply tightness and to analyze structural factors affecting price formation in cotton markets.

In addition, total supply and total use variables were calculated as follows (Özüdoğru, 2021):

Total Supply = Production + Imports + Beginning Stocks (5)

Total Use = Consumption + Exports (6)

All statistical data used in this study were obtained from the most recent ICAC datasets and reports published as of 2025 and were supported by tables and graphical presentations

for descriptive analysis. For Türkiye, national statistics provided by the Turkish Statistical Institute (TURKSTAT) and the Ministry of Agriculture and Forestry were integrated into the analysis in order to evaluate national trends together with global developments. In addition, relevant academic studies, sectoral reports, and official publications at both national and international levels were used as secondary sources to support the analysis.

FINDINGS AND DISCUSSION

Current state of global cotton production

The findings from Table 1 indicate that global cotton production remained around 24–25 million tons in recent seasons, reaching approximately 24.4 million tons in 2022/23. Country-level data (Figure 1) show that production is concentrated in a limited number of countries, with China, India, and the United States accounting for a substantial share of total output. Despite the relatively stable harvested area over time, yield levels increased considerably (Table 1), which can be linked to the adoption of modern agricultural practices, improved seed varieties, and advances in irrigation infrastructure (Imran et al., 2018; Ghaffar et al., 2020). The high productivity observed in countries such as China, Australia, Brazil, and Türkiye supports this relationship between technological progress and yield performance.

Table 1 also reveals high stock levels and increasing stock-to-use ratios, particularly after 2010, while Figure 1 shows that consumption is heavily concentrated in Asian countries, especially China, India, Pakistan, Bangladesh, and Türkiye. As noted by Gruère and Plastina (2010) and Johnson et al. (2018), high stock-to-use ratios may exert downward pressure on prices while reducing market volatility. In addition, the concentration of consumption in a few countries increases the importance of policy decisions in these economies. Large market participants, particularly China, may use stock management policies such as reserve purchases or releases to stabilize prices and influence market conditions (Janzen et al., 2012).

Trade data further confirm the structural concentration of the global cotton market. While production is led by a few major producers, exports are dominated by the United States, Brazil, and Australia, whereas imports are concentrated in Asian textile-producing countries (Figure 1). This structure suggests that global price movements are shaped not only by supply–demand balances shown in Table 1, but also by exchange rate fluctuations, trade policies, stock management practices (Robledo, 2020), input costs, and price competition with synthetic fibers such as polyester (Gruère and Plastina, 2010). Therefore, stock levels and price indicators observed in Table 1 are closely related to the policy preferences and market interventions of major producing and consuming countries (Ridley and Devadoss, 2023).

Table 1. Global cotton supply, use, trade, stocks and price developments

Seasons	2000/01	2005/06	2010/11	2015/16	2020/21	2021/22	2022/23
Harvested Area (000 ha)	31,879	34,790	32,964	30,775	31,750	32,710	31,934
Yield (kg/ha)	609	746	762	712	775	766	765
Supply (000 tons)							
Production	19,407	25,939	25,103	21,921	24,614	25,057	24,434
Imports	5,764	9,603	7,804	7,829	10,659	9,612	8,231
Beginning Stocks	11,187	11,920	9,308	22,722	20,610	19,486	18,710
Total Supply	36,358	47,462	42,215	52,472	55,883	54,155	51,374
Use (000 tons)							
Consumption	20,213	25,013	24,805	24,413	25,710	25,843	23,641
Exports	5,796	9,757	7,633	7,592	10,697	9,610	8,282
Total Use	26,009	34,770	32,439	32,005	36,407	35,453	31,922
Ending Stocks	10,622	12,649	9,737	20,431	19,485	18,710	19,469
Trade Imbalance	-32	-154	-171	-238	-38	-2	-51
Stock / Use Ratio (%)	53	51	39	84	76	72	82
Cotlook A Index (US cents/lb)	57.17	56.13	164.10	70.39	84.96	131.68	101.62

Source: ICAC, 2025b.

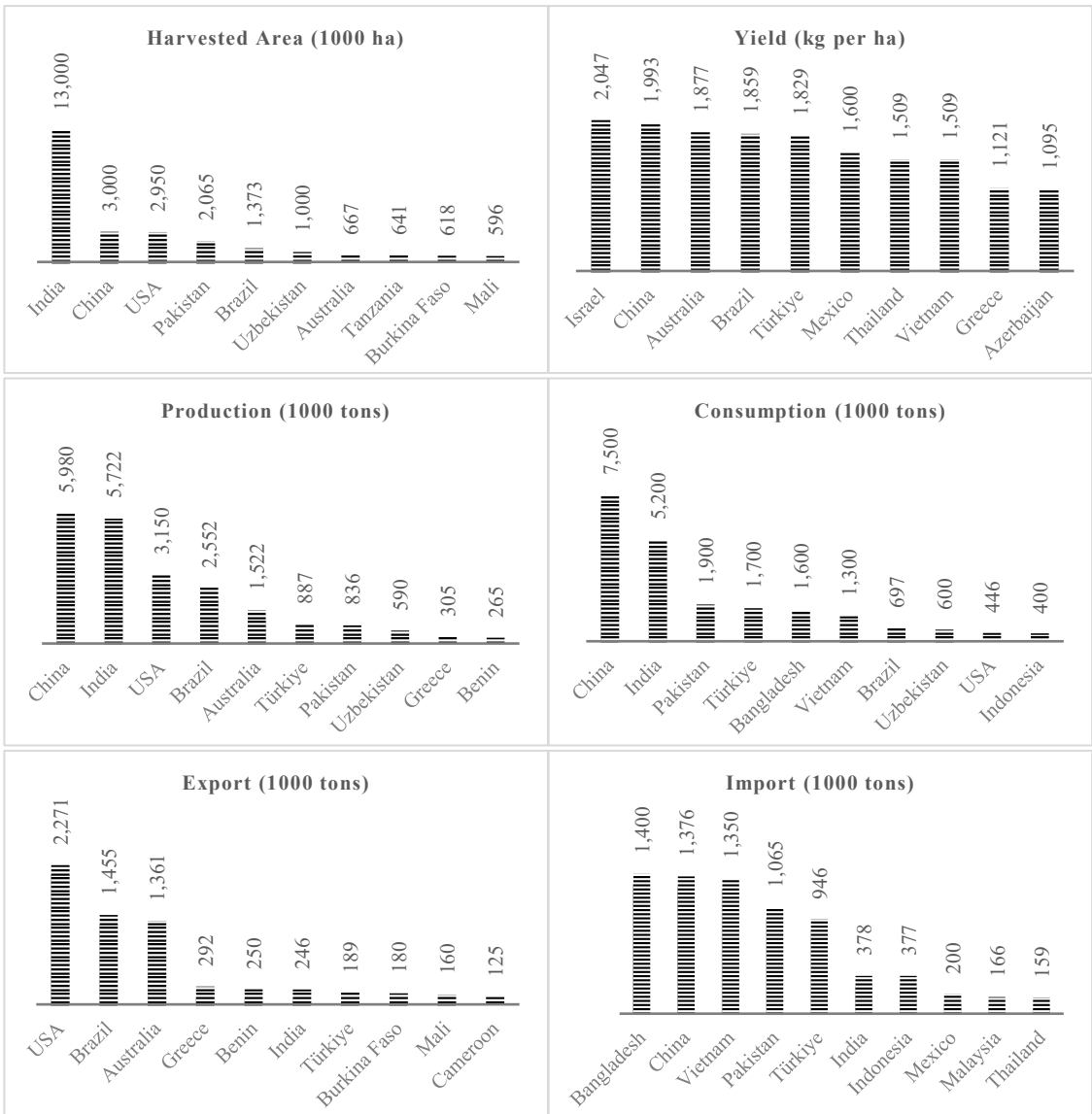

Figure 1. Country-based indicators in the global cotton sector: production, consumption, yield, and foreign trade (2022/23 season) (Source: ICAC, 2025b)

Economic analysis of global cotton production

Table 2 presents the cost and return structure of major cotton-producing countries for the 2021/22 season. The results show significant differences among countries in terms of production costs, market value, gross returns, and unit production costs, indicating substantial variation in production efficiency and competitiveness in the global cotton sector.

Production costs per hectare are highest in Australia (2,953 US$/ha) and Brazil (2,744 US$/ha), followed by China (2,119 US$/ha) and Türkiye (1,896 US$/ha), all of which are above the world average of 1,146 US$/ha. In contrast, Pakistan (713 US$/ha) and India (874 US$/ha) have the lowest production costs. Despite high production costs, countries such as Türkiye, China, and Brazil achieve high market values and gross returns per hectare, reflecting higher productivity and better price realization (Table 2).

Gross returns per hectare are particularly high in Türkiye (3,378 US$/ha), China (2,866 US$/ha), and Australia (2,277 US$/ha), whereas lower returns are observed in India and Uzbekistan. Similarly, market value per hectare is highest in Türkiye and China, indicating that these countries benefit from both relatively high yields and favorable price conditions (Table 2).

Table 2. Costs and returns of major cotton-producing countries (2021/22 season)

Countries	Production Cost (US$/ha)		Market Value (US$/ha)			Gross Return (US$/ha)		Production Cost (US$/kg)	
	Seed cotton	Lint	Seed cotton	Lint	Seed	Seed cotton	Lint	Seed cotton	Lint
India	874	963	117	925	336	297	299	0.66	2.16
Uzbekistan	1,358	1,433	1,763	1,329	510	405	405	0.66	2.07
Brazil	2,744	2,984	4,045	3,377	908	1,301	1,302	0.66	1.70
Australia	2,953	3,733	523	2,506	2,724	2,277	1,497	0.56	1.49
United States	1,294	1,554	2,571	209	481	1,277	1,017	0.45	1.43
China	2,119	2,499	4,985	4,399	965	2,866	2,865	0.45	1.32
Türkiye	1,896	2,056	5,274	4,476	958	3,378	3,378	0.44	1.13
Pakistan	713	760	1,807	1,877	291	1,094	1,408	0.33	1.06
World Average	1,146	1,297	1,975	1,664	374	828	850	0.50	1.40

Source: ICAC, 2025c.

Table 3. Main cost components in cotton lint production in selected countries (US$/ha) – 2021/22 season

Countries	Seed	Fertilizer	Chemicals	Labor	Machinery	Ginning	Other	Total
Australia	407.50	777.00	545.50	1,004.00	219.00	780.00	0.00	3,733.00
Brazil	135.50	406.60	718.30	232.00	1,243.40	240.00	8.00	2,983.80
China	210.00	714.00	485.10	133.30	576.70	380.00	0.00	2,499.10
Türkiye	20.00	280.00	304.00	576.00	716.00	160.00	0.00	2,056.00
United States	212.00	180.40	173.60	116.30	611.80	259.60	0.00	1,553.70
Uzbekistan	90.00	374.30	62.40	291.50	540.00	75.00	0.00	1,433.20
India	50.70	110.30	58.00	447.80	206.80	89.00	0.00	962.60
Pakistan	43.30	192.80	116.90	226.20	133.70	47.60	0.00	760.50
World Average	81.10	231.70	180.40	357.70	288.20	149.70	7.00	1,295.80

Source: ICAC, 2025c.

Table 4. Government support for cotton production in selected countries *

Countries	2021/22 Season			2022/23 Season		
	Lint Production (000 tons)	Average support per lb of lint (US cent/lb)	Total support (Million US$)	Lint Production (000 tons)	Average support per lb of lint (US cent/lb)	Total support (Million US$)
China	5,730	3.70	467.00	5,980	18.30	2,413.00
United States**	3,815	9.50	801.00	3,150	23.60	1,641.10
India	5,220	26.20	3,018.00	5,500	24.50	2,972.00
Türkiye	833	10.10	186.00	887	14.60	285.30
Greece	305	30.40	204.50	305	28.80	193.60
Spain	52	58.10	66.40	39	72.80	62.90
Côte d'Ivoire	216	3.60	17.00	106	43.10	101.00
Mali	311	4.40	30.10	176	22.80	88.30
Burkina Faso	208	4.90	22.50	185	30.20	123.60
Chad	54	0.90	1.10	46	16.20	16.40
Benin	-	-	-	265	13.80	80.50
Total	16,742	13.00	4,813.50	16,638	21.70	7,977.70

* Includes direct payments to production, border protection, minimum support price mechanisms, input subsidies, crop insurance subsidies, and transportation subsidies.

** U.S. support includes ARC/PLC payments (6 million US$ in 2021/22 and 110 million US$ in 2022/23), which are not fully coupled to cotton production and may also apply to other commodities or idle land.

Source: ICAC, 2023.

When unit production costs are examined, Pakistan (0.33 US$/kg seed cotton) and Türkiye (0.44 US$/kg) have lower costs than the world average (0.50 US$/kg), while India, Uzbekistan, and Brazil show higher unit costs. In terms of lint cost, Türkiye (1.13 US$/kg) and Pakistan (1.06 US$/kg) are below the world average (1.40 US$/kg), whereas India and Uzbekistan have the highest costs (Table 2).

Overall, the findings indicate that competitiveness in cotton production is not determined solely by low production cost per hectare, but also by yield level, market value, and unit cost efficiency, which together influence the economic performance of cotton production across countries.

Table 3 presents the main cost components of cotton lint production in selected countries for the 2021/22 season and reveals substantial differences in cost structure among major producers. Total production cost per hectare is highest in Australia (3,733 US$/ha) and Brazil (2,983.8 US$/ha), followed by China (2,499.1 US$/ha) and Türkiye (2,056 US$/ha), all of which are above the world average of 1,295.8 US$/ha. In contrast, Pakistan (760.5 US$/ha) and India (962.6 US$/ha) have the lowest total costs among the countries examined.

The composition of costs also varies considerably across countries. In Australia, labor (1,004 US$/ha), fertilizer (777 US$/ha), and ginning (780 US$/ha) are the largest cost items, while in Brazil the highest share belongs to machinery costs (1,243.4 US$/ha) and chemicals (718.3 US$/ha). In China, fertilizer (714 US$/ha) and machinery-related costs (576.7 US$/ha) constitute major components of total cost (Table 3). In Türkiye, the main cost items are machinery (716 US$/ha), labor (576 US$/ha), and chemicals (304 US$/ha), whereas seed cost remains relatively low compared to other countries. In the United States, production costs are more balanced, with machinery (611.8 US$/ha) representing the largest component, followed by ginning and seed costs. In India and Pakistan, labor constitutes a significant share of total cost, reflecting the labor-intensive nature of cotton production in these countries (Table 3).

Overall, the results indicate that differences in total production cost among countries are largely driven by variations in labor intensity, mechanization level, input use (fertilizer and chemicals), and ginning expenses, which in turn influence the competitiveness of cotton production at the global level. In contrast, countries relying primarily on low labor costs may face increasing challenges due to rising input prices and productivity limitations. This finding suggests that technological efficiency and value-added production are becoming more important than traditional cost advantages in global cotton competition (Tausif et al., 2018; Ridley and Devadoss, 2023).

Support policies for cotton production worldwide

Cotton production is supported by various government interventions in many countries due to high production costs and exposure to price volatility. These supports include direct payments, input subsidies, insurance programs, and market protection measures aimed at stabilizing producer income (Voora et al., 2023). According to ICAC (2023), total global support provided to cotton producers reached approximately 8 billion US$ in the 2022/23 season, representing a 66% increase compared to the previous season. In the same period, about 68% of world cotton production benefited from direct or indirect government support.

Table 4 shows that the level of support differs considerably among countries. In the 2022/23 season, India provided the highest total support to cotton producers with about 2.97 billion US$, followed by China with 2.41 billion US$ and the United States with 1.64 billion US$. In China, a large share of support is provided through the target price subsidy program implemented mainly in the Xinjiang region, while import quotas and high tariffs are also used to protect the domestic market (ICAC, 2023). In the United States, support is largely provided through income-based programs such as Price Loss Coverage (PLC), Agricultural Risk Coverage (ARC), and the Stacked Income Protection Plan (STAX), rather than direct price support.

Türkiye provided approximately 285 million US$ in support to cotton producers in the same season, corresponding to about 14.6 US cents per pound of lint. These supports mainly consist of premium payments, input subsidies such as fuel and fertilizer support, and limited payments for organic production. In addition, support policies in Türkiye are linked to the use of certified seed, which is intended to improve productivity and quality (ICAC, 2023; Ken and Semerci, 2024; Official Gazette, 2024b).

In the European Union, support levels are more limited overall, but cotton-producing countries such as Greece and Spain receive direct payments under the Common Agricultural Policy. In 2022/23, support amounted to about 193 million US$ in Greece and 63 million US$ in Spain, with relatively high support per pound due to lower production volumes (ICAC, 2023).

Another important finding is that the level of support tends to move inversely with cotton prices. Although the Cotlook A Index was 101.62 cents/lb in 2022/23, which is above the long-term average, prices declined compared to the previous season, and many countries increased support payments in response. This indicates that government interventions play a stabilizing role in the global cotton market, particularly during periods of price decline (ICAC, 2023).

Differences in support mechanisms among countries reflect broader agricultural and trade policy priorities. While some countries prioritize producer income stabilization and domestic market protection, others focus on export competitiveness and supply security. These policy differences may distort international competition and influence global cotton prices, particularly during periods of market volatility. Consequently, the global cotton market is shaped not only by production and consumption dynamics but also by strategic government interventions implemented by major producing economies.

Current status of cotton production in Türkiye

Table 5 shows the development of cotton supply, use, trade, stocks, and prices in Türkiye between 2000/01 and 2022/23. The harvested area declined from 685 thousand hectares in 2000/01 to 359 thousand hectares in 2020/21, but partially recovered in recent seasons. Despite the decrease in area, yield increased significantly from 1,285 kg/ha to around 1800 kg/ha, which helped maintain production levels.

Table 5. Cotton supply, use, trade, stocks, and price developments in Türkiye

Seasons	2000/01	2005/06	2010/11	2015/16	2020/21	2021/22	2022/23
Harvested Area (000 ha)	685	600	481	434	359	480	485
Yield (kg/ha)	1,285	1,333	1,699	1,700	1,827	1,735	1,829
Supply (000 tons)							
Production	880	800	817	738	656	833	887
Imports	381	762	729	977	1,193	1,240	946
Beginning Stocks	300	452	328	818	1,171	1,216	1,271
Total Supply	1,561	2,014	1,874	2,533	3,020	3,289	3,104
Use (000 tons)							
Consumption	1,250	1,500	1,300	1,598	1,670	1,890	1,700
Exports	19	47	32	99	134	128	189
Total Use	1,269	1,547	1,332	1,697	1,804	2,018	1,889
Ending Stocks	292	467	542	836	1,216	1,271	1,215
Trade Balance (Physical)	-362	-715	-698	-878	-1,059	-1,112	-757
Stock / Use Ratio (%)	23	30	41	49	67	63	64
Stock / Mill Use Ratio (%)	23	31	42	52	73	67	71
Aegean Cotton Price (41 Color, US cents/lb)*	57.00**	62.77**	160.65**	72.40	85.92	131.41	96.34
Aegean Cotton Price (41 Color, US$/kg)*	0.67**	1.38**	3.54**	1.59	1.89	2.89	2.12
Aegean Cotton Price (41 Color, TL/kg)*	1.07**	1.90**	5.45**	4.67	14.93	38.49	41.50

* Source: Izmir Commodity Exchange, 2025 (Aegean Cotton Prices, Grade 41 Color)

** Source: Özüdoğru, 2021 (Standard Aegean Cotton prices for 2000/01, 2005/06, 2010/11 seasons)

Source: ICAC, 2025a.

Table 6. Cotton production statistics by provinces in Türkiye (2024)

Provinces	Sown Area (da)	Seed Cotton Production (tons)	Lint Production (tons)	Cottonseed Production (tons)	Seed Cotton Yield (kg/da)	Lint Yield (kg/da)	Cottonseed Yield (kg/da)
Şanlıurfa	1,960,797	922,012	341,137	553,207	470	174	282
Diyarbakır	778,565	388,470	143,731	233,082	499	185	299
Aydın	557,724	246,546	91,222	147,926	442	164	265
Hatay	342,044	175,145	64,805	105,088	512	189	307
İzmir	327,024	159,528	59,027	95,716	488	180	293
Manisa	146,791	81,684	30,223	49,011	556	206	334
Adana	133,514	63,173	23,375	37,904	473	175	284
Denizli	121,230	58,617	21,689	35,170	484	179	290
Mardin	59,049	30,473	11,276	18,283	516	191	310
Others	242,534	117,352	43,425	70,413	484	179	290
Türkiye	4,669,272	2,243,000	829,910	1,345,800	480	178	288

Source: TURKSTAT, 2025.

Production fluctuated between 650–900 thousand tons, while imports increased considerably over time, reaching more than 1 million tons in several seasons. This resulted in a persistent negative trade balance, indicating that domestic production is insufficient to meet consumption demand. Total consumption rose steadily, exceeding 1.8 million tons in recent years, reflecting the strong demand from the textile industry (Table 5).

Stock levels increased over the period, and the stock-to-use ratio rose from 23% to over 60%, indicating higher

dependence on imports and stock accumulation. Cotton prices showed significant volatility, with sharp increases in 2010/11 and 2021/22, followed by a decline in 2022/23, consistent with global price movements. Overall, the results indicate that Türkiye remains a net cotton importer with high consumption demand, increasing productivity, and strong sensitivity to price fluctuations (Table 5).

The increasing dependence on cotton imports despite improvements in productivity indicates a structural imbalance between domestic agricultural production and industrial raw material demand in Türkiye. The rapid expansion of the textile industry has increased cotton demand faster than domestic production capacity. In addition, rising irrigation costs, competition with alternative crops, labor constraints, and climate-related risks may reduce producers' willingness to maintain cotton cultivation. This situation highlights the importance of long-term production planning and stable support policies to ensure domestic supply sustainability.

Table 6 presents cotton production statistics by provinces in Türkiye for 2024. Total sown area reached approximately 4.67 million decares, with 2.24 million tons of seed cotton, about 830 thousand tons of lint, and 1.35 million tons of cottonseed production. The national average yield was 480 kg/da for seed cotton, 178 kg/da for lint, and 288 kg/da for cottonseed.

Production is highly concentrated in a few provinces. Şanlıurfa ranks first, accounting for about 41.99% of the total cultivated area and over 41.11% of total seed cotton production. Diyarbakır (17.32%) and Aydın (10.99%) follow, and these three provinces together produce roughly three-quarters of Türkiye's total cotton output (Table 6).

In terms of yield, Manisa (556 kg/da) has the highest seed cotton productivity, followed by Mardin (516 kg/da) and Hatay (512 kg/da). Similar patterns are observed for lint and cottonseed yields, indicating notable regional differences in production efficiency across provinces (Table 6).

Table 7. Support coefficients and payment amounts for seed cotton production in Türkiye (2025)

Type of Support	Unit	Support Coefficient	Payment Amount
Basic support	TL/da	2.25	549.00
Planned production support*	TL/da	2.25	549.00
Production improvement supports			
Certified seed support**	TL/da	1.00	244.00
Organic farming support (individual)	TL/da	0.40	97.60
Organic farming support (producer group)	TL/da	0.20	48.80
Good agricultural practices (individual)***	TL/da	0.40	97.60
Good agricultural practices (producer group)***	TL/da	0.20	48.80
Solid organic–organomineral fertilizer support	TL/da	0.21	51.24
Biological and biotechnical control support	TL/da	–	1,305.00
Licensed storage support****	–	–	–
Deficiency payment support*****	–	–	–
Rural development supports			
Farm Accountancy Data Network participation support	TL/farm	–	1,500.00
Agricultural extension and consultancy support******	TL/person	–	294,000.00

*Use of domestically produced certified seed and production in designated basins is required.

**Applies to certified seed developed domestically by public institutes or universities.

***Excludes seed support.

****75% of storage rent is covered according to official tariff.

*****Not announced for 2025.

******Paid to authorized agricultural consultants and organizations.

Source: Official Gazette, 2024a; Official Gazette, 2024b.

Support policies for cotton production in Türkiye

Cotton production in Türkiye is supported through various policy instruments aimed at ensuring production sustainability and supply security. These supports include direct payments, input subsidies, certified seed incentives, and rural development programs. The support system has shifted from price-based intervention policies to income-oriented and production-based support mechanisms since the late 1990s (Özüdoğru, 2021).

According to the 2025 support scheme, the basic support for seed cotton production is set at 549 TL/da, based on a coefficient of 2.25. The same amount is also provided under

the planned production support program. Additional payments are given for certified seed use, organic farming, good agricultural practices, fertilizer use, and biological control. Among these, the highest payment per area is provided for biological and biotechnical control support, while certified seed support and basic payments constitute the main components of total support (Table 7).

Previous evaluations indicate that production supports in Türkiye cover only a limited share of production costs. Based on cost calculations for 2022, the combined effect of deficiency payments, fertilizer, fuel, and soil analysis supports covered about 16% of the production cost per kilogram of seed cotton (Özüdoğru, 2023).

The new support system introduced in 2024 replaced fuel and fertilizer payments with a coefficient-based basic support model, indicating a shift toward planned production, productivity improvement, and registered farming. However, the absence of a clearly defined deficiency payment for 2025 suggests uncertainty regarding future price-based support policies.

Policy uncertainty may weaken producers' long-term production decisions, particularly in sectors characterized by high input dependency and price volatility such as cotton. Predictable and multi-year support mechanisms are therefore important not only for production continuity but also for investment decisions related to irrigation systems, mechanization, and certified seed use. In this respect, stable policy frameworks may contribute significantly to improving production sustainability and reducing import dependency.

CONCLUSION

Cotton remains a strategic agricultural commodity due to its economic importance, industrial linkages, and role in rural development. The findings of this study indicate that global cotton production has remained relatively stable over the last two decades, while productivity gains have mainly been achieved through technological improvements, genetic enhancement, and more efficient resource use rather than expansion of cultivated areas. However, persistently high stock-to-use ratios reveal a structural surplus tendency in the global cotton market, shaped not only by supply and demand dynamics but also by government interventions and trade policies.

In Türkiye, declining cultivation areas and increasing domestic demand have strengthened import dependency despite improvements in yield levels. Rising input costs, climate variability, irrigation constraints, and uncertainties in support policies continue to affect production sustainability and producer decisions. Although Türkiye maintains competitive advantages in cotton quality and textile industry integration, long-term production stability requires more effective and predictable policy mechanisms.

The results also demonstrate that competitiveness in cotton production depends not only on low production costs but also on productivity, market value, technological capacity, and support policies. Countries with comprehensive and stable support systems maintain stronger positions in global cotton markets.

In this context, sustainable cotton production in Türkiye requires integrated policies that combine agricultural planning, efficient water use, technological adoption, farmer training, and stable support mechanisms. Strengthening domestic production capacity and reducing import dependency are essential for improving both producer welfare and the long-term competitiveness of the textile sector.

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