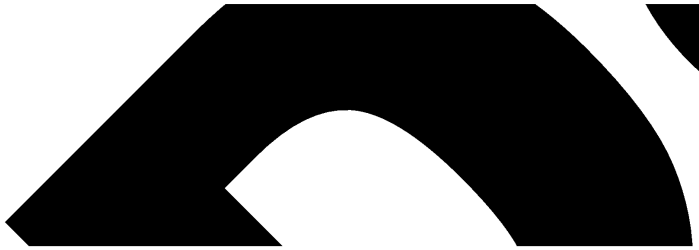


Sanitized Copy Approved for Release 2010/04/12 : CIA-RDP85T00875R00170002

review completed

CIA/OER/IM 71-195

Dup/Secy

Confidential

DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

India: The Green Revolution And Industrial Crop Production

Confidential
ER IM 71-195
October 1971

Copy No. 61

WARNING

This document contains information affecting the national defense of the United States, within the meaning of Title 18, sections 793 and 794, of the US Code, as amended. Its transmission or revelation of its contents to or receipt by an unauthorized person is prohibited by law.

Sanitized Copy Approved for Release 2010/04/12 : CIA-RDP85T00875R001700020049-5

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
October 1971

INTELLIGENCE MEMORANDUM

INDIA: THE GREEN REVOLUTION AND INDUSTRIAL CROP PRODUCTION

Introduction

1. Since the 1964/65 crop year, India's cotton and jute production has declined and oilseed production has stagnated.(1) The resulting shortages and higher raw material prices have slowed industrial growth and contributed to generally rising prices throughout the economy. New Delhi's drive toward self-sufficiency in foodgrains apparently has diverted some better irrigated land away from these industrial crops. This memorandum reviews recent government policies on industrial crops and foodgrains, and analyzes the impact on industrial growth and the balance of payments. It also assesses short-term production prospects for industrial crops.(2)

Discussion

Production Trends

2. Despite four consecutive years of favorable weather, India's industrial crop production has been disappointing. Cotton and jute production have both declined and oilseed production in 1970/71 was equal to 1964/65 output, the pre-drought bumper crop. The area planted to cotton and jute also declined, and yields fell also. Oilseed yields declined

1. The crop year begins on 1 July of the first year and ends on 30 June of the following year. The major Indian oilseeds are peanuts, sesame, rape and mustard, linseed, and castor seeds. Peanuts account for about half of oilseed acreage and two-thirds of production.

25X1

Note: This memorandum was prepared by the Office of Economic Research and coordinated within the Directorate of Intelligence.

as acreage increased slightly (see Table 1). Yields of these crops in India remain among the lowest in the world.(3)

3. In contrast, India's foodgrain production (rice, wheat, coarse grains, and pulses) reached a record of almost 108 million metric tons in the crop year ending 30 June 1971, 21% higher than the 1964/65 bumper crop. These increases were achieved by a combination of increased acreage (6%) and higher yields (14%).

Influence of Government Agricultural Policy

4. The diverse trends in foodgrains and industrial crops coincided with government efforts to achieve foodgrain self-sufficiency. During the 1950s and early 1960s, New Delhi kept foodgrain prices relatively low and heavily emphasized industrial development. The food crisis in the mid-1960s, resulting from a combination of prolonged investment neglect in agriculture and severe droughts in 1965 and 1966, brought a sharp change in government policy. Beginning in 1966, taxes on agriculture were reduced, modern agricultural inputs were made available either free or at subsidized prices, foodgrain procurement prices were raised, and investment in agriculture and irrigation was stepped up. In addition, efforts were increased to develop and adapt high-yielding variety (HYV) seeds to Indian conditions. Package programs of modern inputs were made available in selected districts and farmers were encouraged and instructed in their use.(4)

5. These government efforts were concentrated on foodgrains, however, and industrial crops were generally neglected. Such crops were included only to a limited extent in New Delhi's efforts to develop new HYV seeds and to popularize them. Moreover, government policies in some states actually discourage industrial crop production. For example, Andhra Pradesh levies penalties on cultivators who use irrigation water for growing peanuts in areas included in paddy programs; and, in Bihar, irrigation water for jute costs more than it does for rice.

6. To accelerate expanding irrigation the government designated certain major projects already under construction to be completed rapidly and gave increased attention to minor irrigation projects that could be completed quickly. New Delhi continued to drill public tubewells and, more importantly, encouraged private tubewell construction with credits and

---

3. Sugarcane is excluded from this memorandum because its performance has not paralleled that of the other three major industrial crops. With government encouragement, sugarcane production and yields have been on the rise.

25X1

Table 1

India:
Production and Acreage of Foodgrains, Cotton, Jute, and Oilseeds

	1964/65	1970/71	Change (Percent)
	Production		
Foodgrains (million metric tons)	89.4	107.8	21
Wheat	12.3	23.4	90
Rice	39.3	42.4	8
Other	37.8	42.0	11
Cotton (million bales)	6.0	5.4	-10
Jute (million bales)	7.7	6.0	-22
Oilseeds (million metric tons)	8.6	8.6	--
	Million Acres		
Foodgrains	291.9	310.0	6
Of which:			
Wheat	33.2	42.0	27
Rice	90.5	93.9	4
Cotton	20.4	19.1	-6
Jute	3.0	2.5	-17
Oilseeds	37.7	38.1	1

CONFIDENTIAL

equipment such as drills and pumpsets. The government also embarked on an ambitious program to provide electric power for irrigation. The policy of encouraging private initiative was important in spreading irrigation to about 3 million acres annually during 1966-69, compared with an average of 2 million acres annually during 1951-65. Nevertheless, in line with New Delhi's foodgrain policies, it was mainly in the wheat-growing areas that farmers received the most encouragement and incentives to add irrigation.

7. The government's procurement price policies have favored foodgrains over industrial crops. Since the mid-1960s, New Delhi has offered farmers a guarantee to purchase all the foodgrains offered at a specific procurement price that is announced at the start of the harvest season. Each year the government has fixed this price high enough to ensure farmers a good profit. The government also fixes support prices for cotton and jute, but these generally are far below market prices. Because the government does not stockpile industrial crops, there are no procurement prices. There is no support price for oilseeds.

8. While foodgrain prices have been relatively stable, most industrial crop prices have fluctuated sharply. Wheat and rice prices, after increasing sharply during the mid-1960s, have registered only minor fluctuations (see Table 2). The price of cotton, on the other hand, has risen steadily in response to increasing domestic shortages. Even so, higher cotton prices have not yet been a sufficient incentive to expand acreage or increase yields. It is likely that wheat is still more profitable than cotton in some areas, despite the increases in cotton prices. Farmers also may fear that a sharp decline in cotton prices would accompany a crop increase, given the government's low support price. Jute prices have displayed wide annual variations in response to similar fluctuations in crop size, and the price of peanuts – the major oilseed – also has fluctuated.

9. The prospects of higher profits, strong government encouragement to use the package of new inputs that improved foodgrain yields, and opportunities for double cropping that is not possible with cotton resulted in, apparently, some shifting of land from cotton to wheat. Such a shift probably occurred in India's northern states, including the important wheat-growing area of the Punjab (see the map). Over 80% of the cotton-growing area in these states was irrigated in 1966/67, making possible the profitable switch to the new HYV wheat seeds. Cotton acreage in these states declined steadily from 2.4 million acres in 1967/68 to an estimated 2.1 million acres in 1970/71. At the same time, wheat acreage in these states increased by more than 7 million acres.

10. Government procurement policies may have similarly induced some jute farmers to switch to rice. Jute is produced mainly in West Bengal, Bihar, and Assam, all important rice-producing states. The erratic trends

Table 2

India:
Indexes of Wholesale Prices
of Selected Commodities

1966/67 = 100

Crop Year	Wheat	Rice	Cotton	Jute	Oilseeds a/
1966/67	100	100	100	100	100
1967/68	120	118	112	71	88
1968/69	115	116	122	106	79
1969/70	121	116	135	92	106
1970/71	117	119	165	93	114

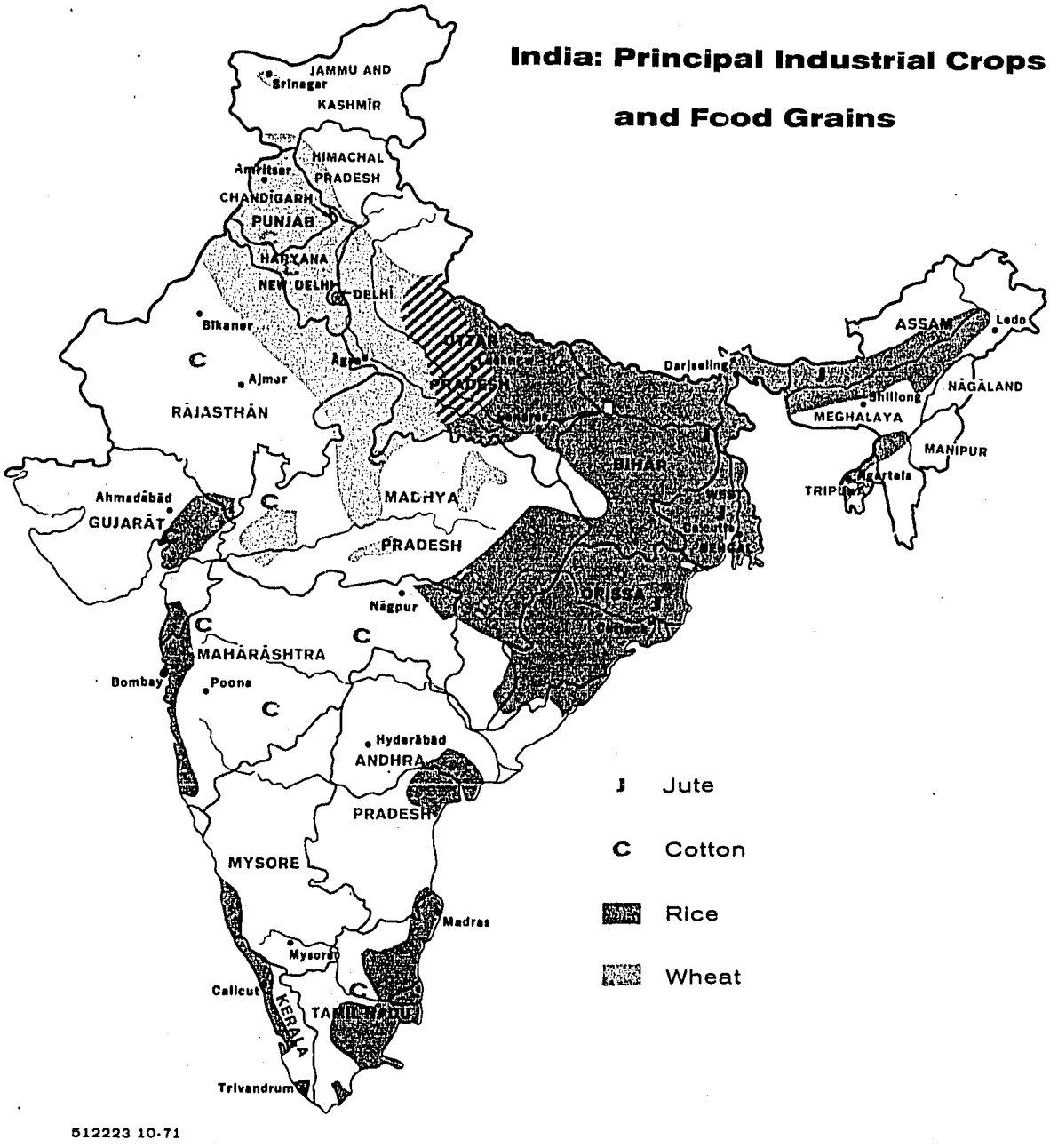
a. Peanuts only.

in jute prices and the relative stability of rice prices, coinciding with the release of HYV rice seeds that are suitable for sowing at the same time as jute, may account for some of the recent decline in jute acreage and increase in rice acreage.

11. Oilseeds are grown throughout India and compete for land with a variety of other crops. It is likely that production has been influenced by forces similar to those that affected cotton. In Gujarat, for example, the recent decline in peanut acreage reportedly reflects a shifting of land to foodgrains. In any event, the relative lack of government support most certainly has contributed to the stagnant production and declining yields of oilseeds.

Impact on the Economy

12. The slowdown in production of cotton, jute, and oilseeds has caused serious shortages of raw materials for some of India's major industries and has resulted in significant price rises, a squeeze on industrial profits leading to business failures, shortages of consumer goods, and loss of exports. Raw material shortages contributed to the failure of industrial



production, which increased an average of only 5% during fiscal years 1969 and 1970[5] to meet a planned 9% growth rate.[6]

13. In particular, the cotton textile industry has stagnated since recovering from the 1966-67 industrial recession. The low supply of domestic cotton, combined with restrictive government policies, including limiting imports of long-staple cotton needed by the larger textile factories, has sharply raised raw cotton prices since 1966. The larger cotton mills have not modernized and their total output has been on the decline since the mid-1950s. This has led to a serious erosion of India's position as one of the world's principal exporters of cotton textiles as well as to domestic shortages of cotton textiles. New Delhi's deliberate expansion of smaller textile mills increased requirements for short-staple cotton, which is normally exported. Output of textiles has failed to meet domestic demand, and per capita availability of cotton cloth in India has declined.[7]

14. The erratic domestic jute supply -- combined with limits on raw jute imports, export taxes, and restriction on investments in jute manufacturing -- has resulted in a sharp decline in India's share of the world jute market. Fluctuations in the price and supply of jute manufactures has induced foreign consumers to shift to other supply sources and to using synthetic substitutes. Such fluctuations also caused disruptions in the expanding internal market for jute manufactures.

15. The price of oilseeds and their products has risen about 50% since mid-1968 and is one of the factors contributing to the overall increase of prices in the Indian economy. The rise in oilseed prices reflects not only lagging domestic production, but also increased domestic demand for edible oils as incomes have risen, expansion of the manufacturing capacity for **vanaspati** (hydrogenated vegetable oil), and government restrictions on imports of soybean oil for the **vanaspati** industry and on credit for trade in oilseeds. Oil imports, though small compared with total consumption, have increased from 37,000 tons in 1964 to an estimated 150,000 tons during 1971. Imports of oil substitutes such as tallow have also increased and exports of certain oilseed products have been restricted. Nevertheless, per capita consumption of edible oils is still at about the 1963/64 level.

16. The slowdown in industrial crop production has not, however, seriously affected India's balance of payments, mainly because of government import restrictions. Despite domestic shortages, imports of

---

5. The fiscal year begins on 1 April of the stated year.

25X1

edible oils, cotton, and jute have declined since 1967/68 (see Table 3). Moreover, a significant share of the vegetable oil and cotton imports has consisted of US PL 480 goods on concessionary terms. Imports of PL 480 vegetable oils and tallow, for example, accounted for about three-fourths of India's total imports of these commodities during 1965-70. India also has received about 2.5 million bales of PL 480 cotton, valued at $350 million.

17. Import restrictions have compensated to a great extent for the loss of export income from these commodities in raw and processed form.[8] Between 1965/66 and 1969/70, exports of these commodities declined by 26%. In addition to supply problems, such as in the instance of cotton, some of the decline in export revenues was due to adverse world market conditions, particularly for some jute products. In any event, these exports accounted for only 24% of India's total exports in 1969/70 compared with 34% in 1964/65.

Prospects

18. With all of India's arable land already under cultivation, accelerated production of industrial crops can be achieved only by a reverse shift of land from foodgrains or improved yields. Clearly, the latter is the more promising option, as New Delhi is not likely to reduce significantly its incentive programs for foodgrains. The key to higher yields, however, will be adequate irrigation and the development of more productive techniques including HYV seeds. In announcing the government's budget in May 1971, the Minister of Finance designated higher yields for cotton, jute, and oilseeds as a primary goal.

19. Oilseed production has been constrained by both the shortage of irrigated land and the lack of improved varieties. Irrigation is available to only about 5% of oilseed acreage. Government package programs for peanut cultivation -- combining demonstrations of new methods with subsidies for the necessary inputs – have been in operation since 1963/64, but so far they cover only 15% of the peanut area. Apparently, yields have not improved even in these areas, because of lack of irrigation and improved seeds. In south India, there has been some progress in popularizing peanuts as a second crop, made possible by a shorter growing season for the new rice varieties. The government is also introducing and popularizing oilseeds new to India, such as soybeans and sunflower seeds. The US AID program is assisting with research and processing equipment for soybeans, and the

---

8. India imports long-staple cotton and exports short-staple and poor-quality cotton. Processed fats and oils are imported to supplement those produced domestically. Some of the oilcakes and meal produced while processing the domestic oilseeds are exported.

Table 3

India:
Selected Imports and Exports

Million US $

	1965/66	1966/67	1967/68	1968/69	1969/70
Imports					
Raw cotton	97.0	75.3	110.6	120.2	110.4
Raw jute	11.7	27.4	15.7	12.4	1.4
Animal and vegetable oils and fats	32.3	19.7	45.9	25.7	39.5
Total	*141.0*	*122.4*	*172.2*	*158.3*	*151.3*
Exports					
Raw cotton	23.4	15.7	19.7	14.8	19.6
Cotton fabric	116.5	84.9	87.1	94.0	92.9
Oil cakes and meal	72.8	66.7	60.7	66.0	55.3
Jute manufactures	383.9	332.6	312.1	290.6	275.5
Total	*596.6*	*499.9*	*479.6*	*465.4*	*443.3*

two crops could have considerable impact on the total oilseed supply by 1973. In the past year the government has also stepped up efforts to reduce losses in oil extraction.

20. Improved seeds and practices also are available that could raise cotton yields by up to 40% in irrigated areas, but programs to promote their effective use have been lacking. Both private and government programs have been announced from time to time but with little results. An ambitious three-year development effort to raise production by about 50% in three years was announced in August 1971 but adequate funds may not be available to carry it out. Responsibility for such programs rests with the Cotton Committee of the Indian Council of Agricultural Research. The Committee has failed to coordinate research, education, and extension work effectively. Less than 20% of the cotton acreage is irrigated and, without irrigation, farmers are reluctant to adopt the new package because losses could exceed gains if rainfall were inadequate. A new high-yielding variety, Hybrid-4, was first produced in Gujarat three years ago and has spread to other states. This variety alone is supposed to increase cotton production 10% by 1973/74. Also, long-staple varieties and varieties with shorter growing periods are being developed, but the scope of this new technology is limited and largely confined to irrigated cotton areas in the south and west. Limited irrigation will continue to be a major constraint on yields, and, only if the price of cotton is stabilized at a high level for a sufficient period will farmers have an incentive to develop their own irrigation sources.

21. Although increased efforts have been made to persuade jute farmers to adopt practices that can raise yields 50%, grower acceptance has been slow. The reasons are similar to those for cotton, but aggravated in the case of jute by a shorter planting season, a greater sensitivity to moisture conditions at planting time, and greater uncertainty about market prices. The government has been considering taking over the trading in jute in an attempt to stabilize prices, but has not yet acted.

Conclusions

22. Production of cotton, jute, and oilseeds has lagged seriously in the past four years of favorable agricultural weather for two major reasons -- limited availability of irrigated land and inadequate government support. As yet, there has been no push on industrial crops comparable to the agricultural strategy of promoting a green revolution in foodgrain production. Investment programs aimed at increasing agricultural production and improving irrigation, the efforts of research scientists to breed new varieties and to improve agronomic practices, administrative measures aimed

at assisting farmers, and supplies of credit and maintenance of high farm prices have all favored foodgrains. As foodgrain production became more profitable, the total acreage devoted to industrial crops declined, with wheat displacing cotton, newly developed HYV millets and other minor grains encroaching on traditional oilseeds areas, and jute farmers shifting to rice. Yields of these industrial crops have declined since 1966/67, most likely because the switch to foodgrains occurred on irrigated lands that are more productive.

23. Shortages of oilseeds, cotton, and jute have had a serious impact on India's economy. Shortages of raw materials have contributed to the slow growth in industrial production, exports of traditional commodities have declined, and short supplies of consumer goods have brought rising prices. A serious impact on the balance of payments has been avoided only by stringent import controls, which result in greater domestic shortages.

24. New Delhi is now giving more attention to industrial crops, but prospects for rapid improvement are not promising. Government resources are limited and industrial crops must compete with a continuing priority for foodgrains. Moreover, lacking adequate irrigation to make improved seeds profitable, farmers are resisting adopting new varieties of cotton and jute. A breakthrough in cotton and jute could be achieved in a few years if farmers are given sufficient incentives to develop their own tubewells or other sources of irrigation water and to increase their use of improved seeds and other modern inputs.