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Prepared by:

Weyland Beeghly

U.S. Embassy, New Delhi

Drafted by:

A. Govindan

Report Highlights:

A lack of legislation to protect improved varieties continues to hobble the Indian seed industry and limit farmer yields. Efforts to introduce transgenic seed have met with considerable resistance from those concerned about the new technology and the role of multi-national corporations. India imported \$5.1 million of seeds in 1996/97, 28 percent from the U.S. However, India remains a net exporter of seed (\$12.5 million), much of it handled by foreign firms for third country markets.

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Summary

In India, commercial trade of planting seeds is extremely limited as most farmers save a portion of their harvest for use as seed for the next year's crop. Heavy reliance on this traditional method of seed propagation has led to general deterioration of seed quality. The absence of improved seed varieties can be attributed in large part to the lack of national legislation on plant variety protection. In the absence of such legislation, the private sector has very little incentive to invest the resources needed to develop or make available new and improved seed varieties, and as a consequence the productivity of Indian agriculture continues to be limited. Frequent political changes and concerns regarding protection of farmers' rights and bio-diversity have stalled legislation on Plant Variety Protection. The government is reportedly in the process of enacting a revised version of this Legislation to fulfill its commitment to the GATT agreement, including Trade Related Intellectual Property Rights (TRIPS). There is considerable misinformation in India regarding genetically modified seeds, and a small but vocal group have adopted a Luddite approach toward this new and promising technology. Indian seed imports during 1996/97 (April/March) totaled 851 metric tons, valued at \$5.1 million, whereas exports totaled 5,200 tons, valued at \$12.5 million. The United States is a major supplier of seeds to India as well as a major importer of Indian seeds.

Marketing

Market Development Opportunities

Despite a potentially massive market, commercial trade in seeds is relatively limited. Most farmers store a part of their harvested crop to meet their next year's seed requirements or exchange seed with other farmers. Domestic, commercial seed trade is estimated at around 1.0 million tons. Most commercial seed (700,000 tons) is produced and distributed by public sector seed companies and consists of mostly cereals, pulses and oilseeds. Private seed companies account for only about a third of commercial seed sales. Private commercial trade consists of mostly hybrid sorghum, corn, sunflower and vegetable seeds. In 1988, the government introduced a new Seed Policy, which partially liberalized seed imports. The new policy enhanced import opportunities for vegetable, flower and fruit seeds/planting materials, as this segment of the industry is not as highly regulated as others. Recent efforts to develop India's food processing sector have provided further impetus for imports as investors endeavor to develop varieties with desired processing attributes.

For major field crops, where government research institutes and public sector seed companies have a vested interest, the existing seed policy discourages repetitive bulk imports of seeds. Imports of wheat and rice seed for planting are discouraged. Indian seed companies with technical or financial collaboration with foreign companies, are permitted to import planting seeds for coarse grains, oilseeds and pulses in bulk. However, the foreign supplier must agree to supply the parental line and technology to Indian counterparts within two years of

the first imports. In the absence of any varietal protection legislation, most foreign seed companies are reluctant to enter into this type of an agreement, thus depriving India of access to much of the world's best germ plasm.

Marketing Channels and Facilities

Public sector seed companies (e.g., the National Seeds Corporation and more than a dozen State Seed Corporations) generally market seeds through their own sales outlets, as well as through cooperatives and private dealers registered with these corporations. Some state seed corporations sell directly to their respective state agricultural departments, which in turn distribute seeds to farmers under various crop development programs at mostly subsidized rates. Major private seed companies, which deal primarily in hybrids, market through their own network of dealers or commission agents, who often handle other agricultural inputs as well. There is a strong bias in favor of public sector seed corporations in government tenders to obtain seed for subsidized distribution to farmers.

Competitor Activities

Given the restrictions on imports of field crop seeds and the limited volume of seed imports, most activities in this sector are investment rather than trade related. The government follows a rather liberal policy with regard to foreign investment in the seed industry, which is considered to be a high priority sector. The Reserve Bank of India can accord automatic approval to all proposals wherein the foreign investment in equity capital is no more than 51 percent. Proposals involving foreign investment in excess of 51 percent are subject to approval by the Foreign Investment Promotion Board. Since 1991, some 25 approvals have been granted for foreign investment in the seed sector. Seed companies from countries such as Australia, Israel, Canada, New Zealand, the United Kingdom, the Netherlands and the United States have taken advantage of India's low labor costs and varied agro-climatic conditions to produce seeds for both the local market and third country markets. Nevertheless, the lack of varietal protection severely limits the transfer of superior seed lines to India for multiplication.

Outlook

Provided the Indian government moves to enact varietal protection legislation, there is enormous potential for US seed exports to India, particularly for corn, sunflower, soybeans, cotton, forage sorghum and vegetable crops. With the government's focus on larger exports, especially of value-added agricultural products, India is encouraging vegetable and fruit production. Vegetable seeds of interest to India are tomato, onion, peas, baby corn/sweet corn.

The introduction of genetically modified seeds is mired in controversy. There is general agreement within the Indian agricultural community that another Green Revolution is necessary if Indian food production is to keep

pace with rising demand, and there is general recognition that biotechnology offers the only realistic means to meeting that aim. The Indian Bio-Technology Department under the Ministry of Science & Technology, which has overall responsibility for the coordination of biotech research, extension and administration, believes there is no significant opposition to biotechnology within the government. Indian scientists are presently engaged in the development and testing of genetically modified varieties of cotton, rapeseed, etc. However, India has a vocal environmental lobby, an energetic press, and numerous opposition parties which in some instances have served to generate a great deal of public concern and misinformation about biotech patents, and anxiety bordering on paranoia about the prospect of multinational seed companies introducing genetically modified seeds.

Policy

General Agricultural Policy

Agricultural production has grown at an average annual rate of around 3.5 percent over the last five years, outpacing annual population growth of about 1.9 percent. The agriculture sector employs nearly two-thirds of India's population of 970 million and accounts for approximately 28 percent of GDP. Agriculture accounts 20 percent in India's total exports. Investment in agriculture continues to be limited. Average yields of most crops are low due to low input use and inferior seed quality, though there are pockets of high production, especially in areas with a good irrigation.

The major goal of India's agricultural policy continues to be self-sufficiency (although this principle is less strictly adhered to than in the past) and the provision of adequate food supplies at affordable prices to low-income consumers. The government sets minimum support prices for major crops, but substantial government intervention exists only in the case of the wheat and rice markets. Farmers receive fertilizer, electricity and irrigation at subsidized rates. There have been attempts to cut back fertilizer subsidies for budgetary reasons, but fertilizers, particularly nitrogenous fertilizers, continue to be highly subsidized.

Despite some liberalization, market access for foreign agricultural products remains very limited, as India continues to employ non-tariff barriers and high customs duties on most food products. The five-year export-import policy (1997-2002) presented in March 1997, and subsequent amendments to this policy, provide access for about 230 agricultural products - mainly those produced and exported from India or items which have virtually no local demand. Under its WTO commitments, India has pledged to remove all quantitative restrictions by March 2003. New demand and price incentives created by the food processing industry have enticed Indian farmers to produce some higher quality and higher-value products. This has created a great deal of interest in obtaining superior cultivars of both temperate and tropical fruits and vegetable species, to help raise product quality to international standards.

Plant Health

Imports of seeds and planting materials are permitted in accordance with the provisions of the Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989. An import permit and phytosanitary certificate with additional declarations, if necessary, as prescribed by the Plant Protection Advisor to the Government of India, is required. After arrival of the imported seeds, quarantine checks are undertaken, which may include visual inspection, laboratory inspection, and grow-out tests. If samples drawn from an imported consignment pass the prescribed checks, they are released for entry. Importers frequently complain that India imposes quarantine controls that are far more stringent in some respects than international standards. Quarantine testing facilities are inadequate in some ports.

Seed Certification

Under the Indian Seed Act of 1966, seed certification is voluntary. The Seeds Act allows the sale of “truthfully labeled” seeds, which permit private seed companies to market their seeds under a brand name without going through the process of seed certification. Most seeds currently marketed by private seed companies fall into the category of truthfully labeled seeds.

Varietal Approval

The Indian Council of Agricultural Research (ICAR) under the Ministry of Agriculture serves as the national coordinating and supporting agency for plant variety development, testing and approval. Promising major crop varieties developed by the agricultural universities, ICAR institutions and private seed companies are subject to “All India Coordinated Trials” to test their performance under various agro-climatic conditions. Results of these trials are presented at annual workshops attended by scientists and plant breeders. During the workshops, recommendations are developed and presented to the Variety Release Sub-Committee of the Central Seed Committee which, in turn, makes final recommendations to the Ministry of Agriculture on which varieties should be released and notified. Imported varieties must go through the full testing process to become eligible for notification and certification.

Tariff Changes

The import duty on planting seeds was reduced to zero on March 1, 1992.

Intellectual Property Rights

In an attempt to meet its commitment to various provisions of the GATT agreement, including Trade Related Intellectual Property Rights (TRIPS), the Indian Government drafted a Plant Variety Protection Legislation several years ago. However, frequent political changes and concerns regarding protection of farmers’ rights and bio-diversity have stalled enactment. The government is reportedly planning to table a revised version of the legislation entitled “Plant Variety Protection and Farmers’ Rights Act” during the winter session of Parliament. Various provisions of the proposed legislation were discussed in IN7109. Government and private sources claim that the proposed legislation is in conformity with the International Union for Protection of New Varieties and Plants (UPOV) convention of 1978, which should enable India to become a member of UPOV Convention of 1978.

Non-Tariff Barriers

Restrictions on imports and exports of germ plasm, prohibitive quarantine laws, and lengthy and complicated varietal notification and registration procedures are some of the non-tariff barriers applied to seed imports. Among the most burdensome is the requirement that parental lines of hybrids used in joint ventures with foreign partners must be deposited with the Indian gene bank. The deposit of hybrid parental lines in a country that does not have a PVP legislation in place is not considered to be reasonable by most foreign seed companies.

Trade

India is not a large seed trader, although following the implementation of the New Policy on Seed Development in 1988 the volume has grown. Imports are mostly confined to vegetable, flower and fruit seeds for which import restrictions are very few. Total imports during 1996/97 (April/March), the latest year for which trade data are available, were 851 tons, valued at \$5.1 million, compared to 456 tons, valued at \$5.5 million in 1995/96. Major suppliers in 1996/97 were the U.S. (with a market share of 28 percent in value terms), the Netherlands, Japan and Korea.

India also exports small but increasing quantities of seed, mostly vegetable and flower seeds, which are mostly custom grown in India by foreign seed companies for export to third country markets. Exports during 1996/97 (April/March) were 5,200 tons, valued at \$12.5 million, compared to 9,500 tons, valued at \$12.2 million exported in 1995/96 and 6,300 tons, valued at \$7.9 million in 1994/95. The U.S. was the largest importer of Indian vegetable seeds (mostly tomato seeds) accounting for 33 percent of total Indian exports in value terms, followed by France, Pakistan, the Netherlands, Japan and Malaysia.

	India: Seed Exports, 1996/97 (April/March)		
		Quantity	Value
		Kg	\$
12091100	Sugarbeet		
	Pakistan	8,000	10,147
12092900	Other Forage		
	Taipei	224,500	58,313
	Germany	500	1,268
	Honduras	118	111
	Pakistan	13,300	5,288
	South Africa	9,500	1,966
	UK	250	207
	USA	17,000	20,776
	Total	265,168	87,929
12093000	Herbaceous plants		
	Bahrain	10	6
	Germany	42	1,571
	Indonesia	320	4,477
	Italy	29,470	568,482
	Netherlands	2,543	17,174
	Saudi Arabia	700	4,108
	UK	30	1,002
	USA	2,923	71,119
	Total	36,038	667,938
12099101	Cabbage		
	China	80	644
	Germany	900	13,246
	Pakistan	27,278	23,480
	UAE	15,600	6,234
	Total	43,858	43,604
12099102	Cauliflower		
	Bangladesh	155	1,453
	Netherlands	320	5,665
	USA	808	9,497
	Total	1,283	16,614
12099104	Pea		
	Pakistan	91,410	29,796
12099105	Radish		
	Bangladesh	145,452	122,987

	USA	25	67
	Total	145,477	123,054
12099106	Pomegranate		
	Hong Kong	200	490
	Kuwait	400	635
	Malaysia	1,170	2,154
	Nigeria	70	222
	Pakistan	3,850	5,295
	Philippines	96	417
	Singapore	57	112
	Switzerland	200	270
	UK	250	874
	USA	2,512	5,689
	Total	8,805	16,160
12099107	Tomato		
	Denmark	220	54,969
	Egypt	60	11,922
	France	1,969	1,790,889
	Germany	22	848
	Italy	1,860	131,902
	Japan	6,800	272,699
	Kenya	1,700	19,526
	Netherlands	2,266	372,666
	Quater	265	1,492
	USA	17,953	2,188,782
	Total	33,115	4,845,695
12099108	Tamarind		
	Australia	3,000	1,947
	Bangladesh	63,500	4,860
	Egypt	122,000	69,833
	France	479,600	134,471
	Germany	159,000	50,510
	Italy	39,000	14,084
	Japan	960,000	209,379
	Kuwait	270	1,492
	Nepal	8,500	901
	Netherlands	40,000	22,778
	Pakistan	186,255	46,224
	Singapore	11,195	7,359

	Sri Lanka	40,000	9,162
	Switzerland	200,000	7,520
	UK	43,440	33,675
	USA	60,000	11,622
	Total	2,415,760	625,816
12099109	Other Vegetable		
	Australia	18,231	18,432
	Bahrain	540	3,368
	Bangladesh	142,272	136,016
	Canada	41	861
	China	1,600	19,563
	Cyprus	118	502
	France	6,862	62,827
	Germany	5,514	43,075
	Ghana	1,065	1,030
	Indonesia	230	3,282
	Italy	32,453	250,296
	Japan	10,815	178,572
	Jordan	23,005	30,714
	Kenya	5,000	18,803
	Korea	4,697	25,806
	Kuwait	210	975
	Malaysia	40	404
	Mauritius	2,075	5,059
	Netherlands	1,897	20,087
	Oman	1,565	8,744
	Pakistan	786,129	861,681
	Quater	1,790	7,686
	Saudi Arabia	7,000	9,752
	Sri Lanka	10,000	3,082
	Thailand	150	2,197
	UAE	3,602	18,571
	UK	2,750	1,298
	USA	40,883	623,497
	Vietnam	680	386
	Total	1,111,214	2,356,566
12099901	Fruit seeds		
	Bangladesh	2,525	7,410
	Germany	100	986

	Japan	4,614	114,646
	Singapore	15	152
	Thailand	13	24
	UAE	50	180
	UK	41	447
	USA	11,311	543,022
	Total	18,669	666,868
12099909	Other		
	Australia	262	2,991
	Bahrain	1,260	2,095
	Belgium	200	2,095
	Brazil	36,000	44,530
	Taipei	152,000	91,022
	Cyprus	400	1,612
	Egypt	109,320	77,041
	France	766	26,776
	Germany	104,125	22,843
	Greece	36,005	41,247
	Hong Kong	146	39,303
	Indonesia	39,000	259,832
	Israel	10	1,006
	Italy	18,160	330,511
	Japan	5,085	185,398
	Kenya	15,000	15,265
	Kuwait	200	2,214
	Malaysia	150,500	646,339
	Netherlands	71,365	73,379
	New Zealand	140	3,219
	Oman	2,435	19,535
	Pakistan	129,737	156,195
	Poland	158	11,639
	Quater	1,807	11,511
	Saudi Arabia	3,980	12,380
	Singapore	59,318	164,539
	South Africa	2,000	10,954
	Spain	7,002	8,527
	Switzerland	10	174
	Thailand	5,105	8,480
	Tunisia	20,000	6,382

	UAE	9	480
	UK	18,863	12,902
	USA	31,450	701,940
	Yemen	8,000	5,843
	Total	1,029,818	3,000,199
	Total Seeds	5,208,615	12,490,386

	India: Seed Imports, 1996/97 (April/March)		
		Quantity	Value
		Kg	\$
12091100	Sugarbeet		
	Egypt	110,000	98,722
12092100	Alfalfa		
	Japan	29	1,803
12092200	Clover		
	Egypt	528,000	466,134
12092900	Other Forage		
	Japan	600	6,551
	USA	4	113
	Total	604	6,663
12093000	Herbaceous plants		
	Denmark	2,111	6,734
	France	25	7,914
	Germany	17	3,541
	Italy	80	7,118
	Japan	91	11,681
	Netherlands	242	6,050
	USA	100	8,640
	Total	2,666	51,678
12099101	Cabbage		
	Japan	2,359	99,418
	Korea RP	1	141
	Netherlands	6,933	380,447
	USA	1,724	17,719
	Total	11,017	497,725
12099102	Cauliflower		
	France	2,304	31,848
	Japan	190	38,282
	Nepal	127	609
	Total	2,621	70,739
12099105	Onion		
	Netherlands	43	237
	UAE	15	188
	USA	2,250	67,432
	Total	2,308	67,856
12099106	Radish		

	Japan	800	3,830
	Korea RP.	5,000	21,661
	Nepal	21,801	23,978
	Total	27,601	49,469
12099106	Pomegranate		
	Iran	4,020	1,153
12099107	Tomato		
	Germany	4	356
	Italy	220	38,252
	Japan	600	58,455
	USA	722	91,870
	Total	1,546	188,933
12099109	Other Vegetable		
	China	800	13,268
	Denmark	10,350	105,457
	France	5,934	94,365
	Germany	6,030	59,843
	Hong Kong	47	515
	Italy	1,800	10,475
	Japan	17,953	348,133
	Korea RP.	11,523	454,925
	Netherlands	21,685	660,967
	Thailand	500	20,942
	USA	71,829	1,246,692
	Total	148,451	3,015,583
12099901	Fruits		
	USA	620	17,158
12099909	Other seeds		
	Australia	10	2,495
	Canada	8	223
	Denmark	1,070	8,212
	France	775	12,652
	Germany	22	11,709
	Japan	4,328	213,800
	Korea RP.	869	177,307
	Mexico	1,000	15,162
	Netherlands	1,134	98,302
	Switzerland	100	3,181
	UK	998	17,023

	USA	1,590	37,837
	Total	11,904	597,901
	All Seeds	851,387	5,131,515