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BERNARD R. BELL FILES

Fourth Plan - Food &
Agriculture Situation
1966-67

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Bernard R. Bell Files: Fourth Plan - Food and Agriculture Situation - Correspondence

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Mr. Thomas C. Creyke

March 28, 1967

Bernard R. Bell

Seed

You will also be interested in another paragraph which I quote from the same letter. I suggest you use this judiciously.

"I regret the delay in the appendix on high yielding varieties. In view of the situation here it could not be helped. Your cable regarding seed came just as we were concluding discussions with the FAO-IBRD group. I feel they have not prepared a viable project because of cumbersome arrangements for its organization and execution. In fact, the whole concept of the approach which Crawford and I suggested in December regarding Bank support for the Indian seed industry appears to have been lost somewhere in the bureaucracy of the two agencies. I have not been able to give this matter the attention I would liked to have given it, but from what I have gathered from the FAO efforts and in view of what is happening here there is little to be hopeful about when assessing the ability of the country to get over 100,000 acres in quality seed production by 1970-71. Indeed, I am slowly coming to the view held by many Indians that the aid agencies have become so concerned that their money is well spent that they have moved to the extreme of building a massive set of safeguards, thereby losing imagination and flexibility in project preparation and execution that stretches the gestation and greatly impairs the usefulness of any effort. Seed has the joined irrigation and fertilizer as cases in point."

BBell:emcc

BANK

Mr. Thomas C. Creyke

March 28, 1967

Bernard R. Bell

Food Prospects - India

The following is quoted from a letter dated March 21, 1967 from David Hopper:

"It has been announced officially that the food prospects for this year are 76 million metric tons. I predict a further drop by perhaps two to three million tons before the final accounting in May or June. For the first time, however, the new high-yielding varieties will make a substantial contribution to output. It seems likely that high-yielding rices added close to 600,000 tons to this year's rice crop, and after an extensive tour through the Punjab I would predict that dwarf Mexican wheats may add more than one million extra tons to the expected harvest. A part of this extra wheat is accounted for by a major expansion in the availability of private irrigation facilities. A conservative estimator in the Punjab claims the number of bore wells (small pump sets producing about 12,000 gallons per hour) privately installed in his State this year has exceeded 18,000. An estimate gathered from tractor dealers in the Rajasthan would indicate that probably 10 to 15 thousand wells of this type have been installed in that State since last summer. Getting power remains a problem in many areas, but farmers seem willing to energize with small diesel engines while awaiting electrical connections. This willingness is a marked change from a few years ago and can be traced directly to the high prices for food that prevail in most Indian markets. At present prices a small well can be paid-off in a year of cropping."

For your information the total cropped area in the Punjab in recent years has normally been about 25 million acres, including a net irrigated area of approximately 7,500,000. Comparable figures for the State of Rajasthan are 35 million acres cropped and a net irrigated area of approximately 4 million acres.

BBell:emcc
BANK

From: E. S. S. S.
Amr. Enb
APO NY 09675
Dec 14, 1966

Net Actual Supply of Cereals to and from different States during 1966

<u>State</u>	(Thousand tonnes)
Andhra Pradesh	6
Assam	272
Bihar	911
Gujarat	768
Jammu & Kashmir	229
Kerala	1,181
Madhya Pradesh	538
Madras	322
Maharashtra	2,072
Mysore	605
Orissa	57
Punjab	-25
Rajasthan	544
Uttar Pradesh	619
West Bengal	1,673
Union Territories	676
Total India	10,448

Note:- The figures represent the supplies of cereals to the different States from the Central Stocks after deducting thereof the procurement on Central Govt. Account by the concerned States.

COMMUNICATIONS

1966 DEC 12 AM 9:49

TO: DIRECTOR, FBI
FROM: SAC, NEW YORK
SUBJECT: [illegible]
[illegible]

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10-28-66	0-0-0
10-29-66	0-0-0
10-30-66	0-0-0
10-31-66	0-0-0

10-31-66 (10-31-66)

Per capita per day net availability of cereals during the period 1961-63, 1964, 1965 and 1966.

Per capita per day net availability of cereals

<u>State</u>	<u>(Ounces)</u>			
	<u>Average</u> <u>1961-63</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
Andhra Pradesh	13.9	14.0	14.0	13.2
Assam	13.2	14.0	13.2	13.4
Bihar	11.9	11.7	11.9	11.0
Gujarat	11.3	14.5	13.5	10.8
Kerala	9.2	10.4	11.4	10.5
Madhya Pradesh	17.6	17.2	18.5	13.6
Madras	14.0	14.8	13.8	12.7
Maharashtra	14.9	16.1	14.7	12.0
Mysore	13.8	13.9	14.7	11.9
Orissa	17.6	19.6	19.2	14.9
Punjab	16.4	16.3	17.3	16.8
Rajasthan	15.5	12.5	16.1	13.6
Uttar Pradesh	12.3	11.0	12.7	11.3
West Bengal	15.5	16.2	15.3	14.6

- Notes: (1) While calculating per capita availability during the period 1961-63 and 1964, inter State Movement by rail and river only has been accounted for. Movement by Road has not been included as data on such movement are not available.
- (2) For the years 1965 and 1966 in which Inter-State Movement of cereals by private trade was not permitted (except from Punjab to Delhi and Himachel Pradesh). Per capita availability has been calculated after taking into account allocations and procurement made by the Central Government to different States.
- (3) Per capita availability of cereals only has been calculated as data on inter-state movement of pulses are not readily available.

General Staffing pattern in I.A. Areas

District level

	<u>Additional</u>	<u>Total</u>
Project Officer	1	1
Subject-matter Specialists	2	2

Block Level

Agricultural Extension Officer	1	2
Village Level Workers	5	15

Statement showing actual staff in position
in Intensive Agricultural Areas

<u>Name of State</u> (1)	<u>Staff in position</u>				<u>Remarks</u> (6)
	<u>District Level</u>		<u>Block Level</u>		
	<u>Project Officer</u> (2)	<u>Subject-matter spec.</u> (3)	<u>A.E.O.</u> (4)	<u>V.L.W.</u> (5)	
1. Andhra Pradesh	In position in 3 out of 10 dists.	In position	In position	In position	
2. Assam	All posts vacant	-do-	-do-	-do-	
3. Bihar	In position	Posts do not exist	-do-	-do-	
4. Gujarat	In position in 4 out of 6 distts.	Out of 12 posts 2 posts vacant	Out of 57 posts 16 posts vacant	-do-	
5. Kerala	In pos.in 2 out of 3 distts.	Out of 6 posts 4 posts vacant	Out of 43 posts 13 posts vacant	Out of 215 pos. 110 vacant	
6. Madhya Pradesh	In position	In position	Out of 89 posts 44 vacant	In position	
7. Madras	Not in position (Dy.Dir.of Agri. not yet appointed 2-3 D.A.O.s in each district)	Out of 8 posts 7 posts vacant	Some posts vacant	Some posts vacant	
8. Maharashtra	In position	Not in pos.	In position	In position	
9. Mysore	-do-	In position	● -do-	Some posts vacant	
10. Orissa	In position in 4 out of 5 dists.	-do-	-do-	In position	
11. Punjab & Haryana	All (10) pos. vacant	-do-	-do-	-do-	
12 Rajasthan	In position	All (18) posts vacant	-do-	-do-	
13. Uttar Pradesh	All (12) pos. vacant	Out of 24 posts one in position	Some posts vacant	Some posts vacant	
14. West Bengal	In position	Out of 18 posts one post vacant	Some posts vacant	Some posts vacant	

Production of Foodgrains in India - by State
(Thousand Tonnes)

<u>State</u> <u>1</u>	<u>Rice</u> <u>2</u>	<u>Wheat</u> <u>3</u>	<u>Other</u> <u>Cereals</u> <u>4</u>	<u>Total</u> <u>Cereals</u> <u>5</u>	<u>Total</u> <u>Pulses</u> <u>6</u>	<u>Total</u> <u>Foodgrains</u> <u>7</u>
<u>Andhra Pradesh</u>						
1963-64	4,294	5	2,558	6,357	298	7,155
1964-65	4,892	4	2,405	7,301	333	7,634
1965-66	4,165	3	1,982	6,150	204	6,354
<u>Assam</u>						
1963-64	1,849	3	13	1,865	36	1,901
1964-65	1,912	4	13	1,929	37	1,966
1965-66	1,847	3	16	1,866	37	1,903
<u>Bihar</u>						
1963-64	4,525	417	1,340	6,282	1,258	7,540
1964-65	4,916	418	959	6,293	1,239	7,532
1965-66	4,246	410	1,091	5,747	1,173	6,920
<u>Gujarat</u>						
1963-64	485	367	1,474	2,326	199	2,525
1964-65	470	425	1,691	2,586	230	2,816
1965-66	247	579	1,326	2,152	153	2,805
<u>Jammu & Kashmir</u>						
1963-64	253	114	236	603	22	625
1964-65	208	82	252	542	23	565
1965-66	161	82	185	428	21	449
<u>Kerala</u>						
1963-64	1,129	-	12	1,141	17	1,158
1964-65	1,122	-	11	1,133	17	1,150
1965-66	1,006	-	11	1,017	17	1,034
<u>Madhya Pradesh</u>						
1963-64	3,331	1,919	2,538	7,788	1,587	9,375
1964-65	3,485	1,981	2,912	8,378	1,831	10,209
1965-66	1,645	1,424	2,193	5,262	1,412	6,674
<u>Madras</u>						
1963-64	3,917	1	1,641	5,559	99	5,658
1964-65	4,048	Neg.	1,593	5,641	98	5,739
1965-66	3,709	1	1,448	5,158	94	5,252
<u>Maharashtra</u>						
1963-64	1,526	345	3,938	5,809	877	6,686
1964-65	1,477	413	4,059	5,949	889	6,838
1965-66	863	312	2,854	4,029	673	4,702

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Mysore</u>							
1963-64		1,394	96	2,493	3,983	324	4,307
1964-65		1,656	101	2,468	4,225	306	4,531
1965-66		1,190	54	1,773	3,017	243	3,260
<u>Orissa</u>							
1963-64		4,309	8	97	4,414	441	4,855
1964-65		4,422	7	82	4,511	435	4,946
1965-66		3,253	7	126	3,386	415	3,801
<u>Punjab (Prior to 1.11.66)</u>							
1963-64		537	2,834	1,277	4,648	1,182	5,830
1964-65		673	3,454	1,380	5,507	1,717	7,224
1965-66		542	2,750	1,446	4,738	815	5,553
<u>Rajasthan</u>							
1963-64		150	866	2,178	3,194	837	4,031
1964-65		98	1,103	2,967	4,168	1,139	5,307
1965-66		28	776	2,317	3,121	673	3,794
<u>Uttar Pradesh</u>							
1963-64		3,278	2,715	3,351	9,344	2,466	11,810
1964-65		3,323	4,118	4,133	11,574	3,715	15,289
1965-66		2,268	4,188	3,836	10,292	3,631	13,923
<u>West Bengal</u>							
1963-64		5,334	33	71	5,438	390	5,828
1964-65		5,761	28	65	5,854	406	6,260
1965-66		4,893	34	83	5,010	440	5,450
<u>Delhi</u>							
1963-64		1	33	13	47	12	59
1964-65		Neg.	39	3	42	12	54
1965-66		1	40	12	53	7	60
<u>Himachal Pradesh</u>							
1963-64		38	105	203	346	8	354
1964-65		47	113	238	398	9	407
1965-66		25	157	211	293	7	300
<u>Manipur</u>							
1963-64		109	-	-	109	-	109
1964-65		111	-	-	111	-	111
1965-66		120	-	-	120	-	120
<u>Tripura</u>							
1963-64		174	-	-	174	1	175
1964-65		201	-	-	201	1	202
1965-66		204	-	-	204	1	205

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Andaman & Nicobar Islands</u>						
1963-64	9	-	-	9	-	9
1964-65	9	-	-	9	-	9
1965-66	8	-	-	8	-	8
<u>Naga Hills -Tuensang Area</u>						
1963-64	70	-	-	70	-	70
1964-65	43	-	-	43	-	43
1965-66	43	-	-	43	-	43
<u>N.E.F.A</u>						
1963-64	38	-	-	38	-	38
1964-65	40	-	-	40	-	40
1965-66	40	-	-	40	-	40
<u>Goa, Daman & Diu</u>						
1963-64	99	-	-	99	-	99
1964-65	70	-	-	70	-	70
1965-66	60	-	-	60	-	60
<u>Pondicherry</u>						
1963-64	40	-	5	45	-	45
1964-65	50	-	3	53	-	53
1965-66	50	-	3	53	-	53
<u>Dadra & Nagar Haveli</u>						
1963-64	-	-	-	-	1	1
1964-65	-	-	-	-	1	1
1965-66	-	-	-	-	1	1
<u>Total-India</u>						
1963-64	36,889	9,861	23,438	70,188	10,055	80,243
1964-65	39,034	12,290	25,234	76,558	12,438	88,946
1965-66	30,614	10,720	20,913	62,247	10,017	72,264

Neg. = Negligible

Notes: 1. Figures for 1963-64 and 1964-65 are based on 'Partially Revised Estimates', while those for 1965-66 are based on 'Final Estimates' and are, therefore, subject to revision.

2. Data relate to agricultural year (July - June).

Statement showing allotments of fertilizers for the years
1963-64, 1964-65, 1965-66 and 1966-67 in terms of NITROGEN.

(Figures in tonnes)

S. No.	Name of the allottee	1963-64	1964-65	1965-66	1966-67 (April-Dec, '66)
<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
1.	Andhra Pradesh	80,259	75,516	80,636	138,003
2.	Assam	1,151	2,080	2,801	4,739
3.	Bihar	18,904	15,354	28,077	52,552
4.	Delhi	212	286	818	917
5.	Goa	725	681	922	1,146
6.	Gujarat	15,667	23,887	29,150	41,549
7.	Himachal Pradesh	773	1,007	2,362	389
8.	Jammu & Kashmir	930	1,794	2,676	2,572
9.	Kerala	12,595	12,081	11,064	26,855
10.	Madhya Pradesh	8,836	23,971	25,934	7,586
11.	Madras	49,360	63,447	67,177	58,360
12.	Maharashtra	49,806	50,605	50,433	101,706
13.	Manipur	82	238	537	168
14.	Mysore	29,110	28,281	33,252	33,936
15.	Orissa	3,743	7,629	15,202	17,790
16.	Pondicherry	979	538	617	803
17.	Punjab	49,744	55,782	56,914	56,830
18.	Rajasthan	8,394	10,196	7,981	15,082
19.	Uttar Pradesh	84,954	47,984	89,287	80,680
20.	West Bengal	21,666	24,351	34,294	40,449

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
21.	Coffee Board	9,367	10,925	9,988	10,351
22.	U.P.A.S.I.	8,824	8,960	9,953	10,009
23.	Rubber Board	1,803	1,540	1,948	1,588
24.	Tripura	-	-	102	60
25.	Tea(N.E.India)	23,072	19,411	19,791	14,910
26.	Andamans & Nicobar	8	9	28	-
27.	Industrial Users	1,461	2,749	3,160	823
28.	Nepal	54	229	389	441
29.	Miscellaneous	6	-	-	-
30.	Nagaland	-	15	13	-
31.	Dadar Nagar Haveli	-	-	-	535(66-67)
32.	Coromandal Fertiliser Ltd. (Andhra Pradesh)	-	-	-	20000(66-67)
33.	<u>F.C.I. Madras</u>				
	Andhra Pradesh	-	-	-	1445(66-67)
	Madras	-	-	-	797(66-67)
34.	Seeding Programme (Gujarat State)	-	-	-	4010(66-67)
35.	Bhutan	-	-	-	21(66-67)
	TOTAL	<u>482,477</u>	<u>489,545</u>	<u>585,506</u>	<u>746,491</u>

Minor irrigation includes surface water flow irrigation schemes of both storage and diversion types, located on the tributaries of rivers and streams; and groundwater schemes such as dugwells, boring & deepening of dugwells, installation of power pumpsets and tubewells, deep as well as shallow. Lift irrigation from rivers and streams is also being undertaken in an increasing measure under minor irrigation. The surface water programme under minor irrigation also includes renovation of existing minor irrigation sources in order to improve the standard of irrigation in their command, and construction of small drainage, flood protection and salt water exclusion works.

The total potential of minor irrigation work in India at the end of Second Five Year Plan was about 43 million acres (gross), including about 23 million acres from surface water scheme and 20 million acres from ground-water schemes. During the Third Five Year Plan, an outlay of about 375 crores (Rs.260 crores under G.M.F. sector, about Rs.40 crores under C.D. sector and about Rs. 75 crores under Cooperative sector - land mortgage banks) was incurred on minor irrigation works and a total area of about 13 million acres was benefited. This total area, thus benefited, included 9 million acres of new irrigation, 2 million acres of stabilisation irrigation and another about 2 million acres of area benefited by drainage embankment, flood protection, salt exclusion works, etc. The new irrigation of 9 million acres included 2.5 million acres from surface water schemes and 6.5 million acres from ~~ground~~ water schemes.

The physical progress during 3rd Plan under the groundwater schemes comprised construction of 7,12,399 additional dugwells, boring of 1,34,972 dugwells, deepening of 70,110 dugwells, installation of 3,11,764 diesel pumpsets and 332,688 electrical pumpsets, construction of 4,298 filter-points tubewells, 43,662 private tubewells and 2,516 State tubewells. The State-wise progressive total of these works at the end of the Third Five Year Plan is given in the statement enclosed.

The target fixed for the 4th Plan is to benefit an area of 17 million acres, including 12 million acres of new irrigation (3.5 million acres from surface water sources and 8.5 million acres from groundwater sources, about 2 million acres of stabilisation irrigation and 3.5 million acres of other benefits.) The financial provision proposed for the 4th Plan is 504 crores under the GMF sector, about 40 crores under the CD sector and about Rs. 175 crores under the cooperative sector-land mortgage banks.

The 4th Plan target (units) for major items are indicated in the statement enclosed.

Sl. No.	Name of State	Achievements at the end of 3rd Five Year Plan						4th Five Year Plan Targets					
		State Tube- Wells	Private Tube- Wells	Filter- point Tube Wells	Dug Wells	Electric Motor Pumpsets	Diesel Engine Pumpsets	State Tube- Wells	Private Tube- Wells	Filter- point Tube Wells	Dug Wells	Electric Motor Pumpsets	Diesel Engine Pumpsets
	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Andra Pradesh	9	27990	657	510355	57661	80000	100	5500	-	50000	75,000	50,000
2.	Assam	17	-	-	very few	180	200	-	100	-	-	5,000	2,000
3.	Bihar	1025	5269	-	213879	10435	8038	500	13750	-	40000	60,000	20,000
4.	Gujarat	639	-	-	495000	15045	122028	500	-	-	50000	30,000	50,000
5.	Jammu & Kashmir	-	-	-	very few	24	50	50	-	-	-	500	500
6.	Kerala	-	-	-	50	6957	4500	-	-	-	200	5,000	5,000
7.	Madhya Pradesh	68	-	-	703278	7309	15335	100	-	-	-	25,000	10,000
8.	Madras	23	4588	9544	955000	256098	50000	550	11800	11500	62500	225,000	20,000
9.	Maharashtra	2	-	-	752784	44014	175000	-	-	-	175000	100,000	50,000
10.	Mysore	-	-	-	182764	42288	20000	-	-	-	100000	75,000	10,000
11.	Nagaland	-	-	-	-	-	-	-	-	-	-	-	-
12.	Orissa	83	3	85	very few	834	2000	630	500	-	1000	7,500	5,000
13.	Punjab	1245	17500	-	325000	41085	15000	-	20000	-	25000	75,000	20,000
14.	Rajasthan	11	337	-	590732	6975	12000	100	80	-	6280	35,000	15,000
15.	Uttar Pradesh	8269	23990	-	1054794	9283	25000	2650	56000	-	300,000	85,000	84,500
16.	West Bengal	480	-	-	very few	614	6000	1950	3000	-	1,700	5,000	10,000
		11,871	79,677	10,285	5,788,636	498,802	535,151	7,130	110,730	11500	811,680	833,000	352,000

Tractors, power tillers and other mechanical equipment and machinery are now in increasing demand in the agricultural sector. Their contribution to higher yields through more efficient and less time-taking operations is being increasingly realised, particularly in areas under multiple cropping where the time-lag between one operation and another needs to be reduced appreciably. In irrigated areas, therefore, tractors have become extremely popular. In addition to the above, the following factors have contributed to their popularity:

- (a) increase in the cost of bullocks and their maintenance;
- (b) increasing cost of agricultural labour and its scarcity; and
- (c) consolidation of holdings in certain parts of the country.

2. It is estimated that the present population of tractors is about 56,000 of which 50,000 are operation-worthy. The limiting factor in the growth of the tractor population has been shortage of foreign exchange which has inhibited imports.

3. The total demand for wheeled tractors during the Fourth plan period is estimated at 1,50,000. The estimated growth rate from the first to the final year of the Plan may be seen from the following statement:

<u>H.P. range</u>	<u>1st Year 1966-67</u>	<u>Last Year 1970-71</u>
12-18 H.P.	6,000	12,000
20-30 H.P.	12,000	23,000
35-50 H.P.	2,000	5,000
TOTAL	<u>20,000</u>	<u>40,000</u>

4. It is also estimated that the total indigenous production will, during the Fourth Plan period, be 1,16,000 tractors, the yearwise break-up being as follows:

1966-67	11,000 Nos.
1967-68	15,000 "
1968-69	20,000 "
1969-70	30,000 "
1970-71	40,000 "

TOTAL 1,16,000 Nos.

The deficit of 34,000 is sought to be made up through imports. This will involve a foreign exchange outgo of Rs. 42.05 crores. In addition to this a further Rs. 44.00 crores would be necessary for the import of components to be fitted into indigenous tractors.

5. As regards crawler tractors the following statement would indicate the total as well as the yearwise demand during the Fourth Plan:

<u>Name of Scheme</u>	<u>Fourth Plan Requirements</u>	<u>Requirement during</u>				
		<u>1966-67</u>	<u>67-68</u>	<u>68-69</u>	<u>69-70</u>	<u>70-71</u>
Forestry	250	50	70	50	40	40
Soil Conservation	725	50	250	425	-	-
Minor Irrigation	500	120	120	100	80	80
Deep Ploughing	1200	400	300	300	200	-
Land Reclamation	500	75	75	100	125	125
Ayacut Reclamation	500	75	75	100	125	125
TOTAL:	<u>3675</u>	<u>770</u>	<u>890</u>	<u>1075</u>	<u>570</u>	<u>370</u>

6. The indigenous capacity is not likely to turn out tractors of the range required for the agricultural sector during the Fourth Plan period and it would be safe to assume the import of the entire number of 3675 crawler tractors the cost on account of which is estimated at Rs. 57.82 crores.

7. In respect of smaller holdings power tillers attend to the farm mechanisation programme. The demand would have been higher but for the cost of imported power tillers. The total demand is estimated at 2-3 lakh units of which the imports may be limited to 75,000. The cost of this would be Rs. 60 crores. The balance is likely to be made up by indigenous production. There is already a firm manufacturing power tillers and its present production is about 300 units per month. Letters of intent have also been issued to various firms for a total annual capacity of 90,000 units.

Area under foodgrain crops in India - by State
from 1963-64 to 1965-66
(Thousand Hectares)

State	Rice	Wheat	Other Cereals	Total Cereals	Pulses	Foodgrains
1	2	3	4	5	6	7
<u>Andhra Pradesh</u>						
1963-64	3,313	21	4,662	7,996	1,372	9,368
1964-65	3,460	16	4,558	8,034	1,401	9,435
1965-66	3,138	15	4,050	7,203	1,162	8,365
<u>Assam</u>						
1963-64	1,844	4	26	1,874	83	1,957
1964-65	1,904	4	28	1,936	83	2,019
1965-66	1,930	5	30	1,965	84	2,049
<u>Bihar</u>						
1963-64	5,313	681	1,607	7,601	2,225	9,826
1964-65	5,310	636	1,500	7,446	2,209	9,655
1965-66	5,248	675	1,504	7,427	2,155	9,582
<u>Gujarat</u>						
1963-64	519	416	2,967	3,902	538	4,440
1964-65	532	443	3,144	4,119	533	4,652
1965-66	507	536	3,235	4,278	416	4,693
<u>Jammu & Kashmir</u>						
1963-64	226	187	301	714	52	766
1964-65	227	179	313	719	49	768
1965-66	212	179	301	692	45	737
<u>Kerala</u>						
1963-64	805	-	13	818	44	862
1964-65	801	-	13	814	44	858
1965-66	801	-	12	813	43	857
<u>Madhya Pradesh</u>						
1963-64	4,255	3,328	4,304	11,887	3,873	15,760
1964-65	4,323	3,159	4,331	11,813	3,904	15,717
1965-66	4,123	2,567	4,144	10,834	3,452	14,286
<u>Madras</u>						
1963-64	2,619	1	2,099	4,719	417	5,136
1964-65	2,638	1	2,096	4,735	412	5,147
1965-66	2,551	1	2,033	4,585	396	4,981
<u>Maharashtra</u>						
1963-64	1,329	898	8,195	10,422	2,326	12,748
1964-65	1,366	910	8,168	10,444	2,334	12,778
1965-66	1,255	928	8,034	10,217	2,086	12,303

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Mysore</u>						
1963-64	1,029	314	4,754	6,097	1,119	7,296
1964-65	1,059	276	4,713	6,048	1,080	7,128
1965-66	1,014	259	4,318	5,591	968	6,559
<u>Orissa</u>						
1963-64	4,309	15	166	4,490	853	5,343
1964-65	4,334	14	144	4,492	836	5,328
1965-66	4,239	13	220	4,472	806	5,278
<u>Punjab</u>						
1963-64	464	12,353	1,811	4,628	2,334	6,962
1964-65	526	2,454	2,003	4,983	2,246	7,229
1965-66	535	2,311	1,970	4,816	1,623	6,439
<u>Rajasthan</u>						
1963-64	114	1,129	6,522	7,765	3,193	10,958
1964-65	106	1,184	7,273	8,563	3,228	11,791
1965-66	94	956	7,020	8,070	2,945	11,015
<u>Uttar Pradesh</u>						
1963-64	4,349	3,917	5,303	13,569	4,720	18,289
1964-65	4,449	3,965	5,303	13,717	4,594	18,311
1965-66	4,063	4,133	5,171	13,367	4,453	17,820
<u>West Bengal</u>						
1963-64	4,531	55	119	4,705	765	5,470
1964-65	4,671	41	107	4,819	787	5,606
1965-66	4,651	41	105	4,797	771	5,568
<u>Delhi</u>						
1963-64	1	33	35	69	30	99
1964-65	1	32	30	63	20	83
1965-66	1	30	32	63	14	77
<u>Himachal Pradesh</u>						
1963-64	46	144	191	381	28	409
1964-65	47	146	188	381	30	411
1965-66	44	149	189	382	28	410
<u>Manipur</u>						
1963-64	161	-	-	161	-	161
1964-65	160	-	-	160	-	160
1965-66	160	-	-	160	-	160
<u>Tripura</u>						
1963-64	184	-	-	184	2	186
1964-65	243	-	-	243	2	245
1965-66	246	-	-	246	2	248

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Goa, Daman & Diu</u>						
1963-64	52	-	-	52	-	52
1964-65	44	-	-	44	-	44
1965-66	47	-	-	47	-	47
<u>Nagaland</u>						
1963-64	73	-	-	73	-	73
1964-65	74	-	-	74	-	74
1965-66	74	-	-	74	-	74
<u>N.E.F.A</u>						
1963-64	46	-	-	46	-	46
1964-65	50	-	-	50	-	50
1965-66	50	-	-	50	-	50
<u>Pondicherry</u>						
1963-64	33	-	5	38	-	38
1964-65	32	-	4	36	-	36
1965-66	32	-	4	36	-	36
<u>Dehra Nagar Haveli</u>						
1963-64	-	-	-	-	1	1
1964-65	-	-	-	-	1	1
1965-66	-	-	-	-	1	1
<u>Andaman - Nicobar Islands</u>						
1963-64	7	-	-	7	-	7
1964-65	7	-	-	7	-	7
1965-66	7	-	-	7	-	7
<u>All-India</u>						
1963-64	35,622	13,496	43,080	92,198	24,055	116,253
1964-65	36,364	13,460	43,916	93,740	23,793	117,533
1965-66	35,022	12,798	42,372	90,192	21,450	111,642

Notes: 1. Figures for 1963-64 and 1964-65 are based on Partially Revised Estimates and those for 1965-66 on Final Estimates - all are subject to revision.

2. Other cereals include jowar, bajra, maize, ragi, small millets and barley.

3. 'Pulses' include gram, tur and other kharif and rabi pulses.

Area under important commercial crops in India --
by State from 1963-64 to 1965-66

(Thousand hectares)

State	Sugar- Sugarcane	Cotton	Groundnut	Total major Oilseeds	Jute	Mesta
1	2	3	4	5	6	7
<u>Andhra Pradesh</u>						
1963-64	128	423	940	1,508	--	90
1964-65	145	373	3,092	1,637	--	91
1965-66	119	325	1,073	1,507	--	85
<u>Assam</u>						
1963-64	28	17	--	131	135	8
1964-65	30	17	--	135	131	11
1965-66	30	17	--	143	132	10
<u>Bihar</u>						
1963-64	141	2	--	248	201	65
1964-65	166	2	5	236	171	57
1965-66	170	2	5	226	153	44
<u>Gujarat</u>						
1963-64	22	1,687	1,845	2,043	--	(a)
1964-65	35	1,739	2,046	2,257	--	(a)
1965-66	35	1,726	2,024	2,213	--	(a)
<u>Jammu & Kashmir</u>						
1963-64	3	1	--	44	--	--
1964-65	3	1	--	41	--	--
1965-66	2	1	--	40	--	--
<u>Kerala</u>						
1963-64	9	8	15	27	--	--
1964-65	9	9	15	26	--	--
1965-66	9	7	15	27	--	--
<u>Madhya Pradesh</u>						
1963-64	54	767	434	1,602	--	9
1964-65	70	905	464	1,676	--	9
1965-66	68	851	477	1,452	--	9
<u>Madras</u>						
1963-64	81	419	923	1,061	--	(a)
1964-65	83	424	929	1,062	--	(a)
1965-66	86	423	918	1,041	--	(a)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Maharashtra</u>						
1963-64	140	2,769	1,104	1,453	-	49
1964-65	148	2,822	1,071	1,413	-	51
1965-66	157	2,533	1,037	1,349	-	50
<u>Mysore</u>						
1963-64	77	1,036	879	1,025	-	24
1964-65	79	980	871	1,022	-	23
1965-66	77	937	823	957	-	22
<u>Orissa</u>						
1963-64	40	2	57	262	55	15
1964-65	40	1	55	273	51	22
1965-66	47	1	60	304	33	14
<u>Punjab</u>						
1963-64	233	690	117	463	-	(a)
1964-65	270	662	137	412	-	(a)
1965-66	359	658	136	386	-	(a)
<u>Rajasthan</u>						
1963-64	30	234	193	1,103	-	-
1964-65	43	261	198	1,076	-	-
1965-66	57	278	217	1,135	-	-
<u>Uttar Pradesh</u>						
1963-64	1,229	97	298	3,587	19	-
1964-65	1,389	69	329	3,673	19	-
1965-66	1,481	62	382	3,695	18	-
<u>West Bengal</u>						
1963-64	33	(a)	-	136	446	120
1964-65	41	(a)	-	153	457	87
1965-66	39	(a)	-	146	403	75
<u>Delhi</u>						
1963-64	3	1	-	1	-	-
1964-65	4	(a)	-	1	-	-
1965-66	6	(a)	-	1	-	-
<u>Himachal Pradesh</u>						
1963-64	2	(a)	-	5	-	-
1964-65	2	(a)	(a)	5	-	-
1965-66	2	(a)	(a)	5	-	-

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
<u>Tripura</u>						
1963-64	3	7	-	7	12	13
1964-65	3	6	-	7	10	9
1965-66	3	6	-	7	9	11
<u>Goa, Daman & Diu</u>						
1963-64	(a)	-	-	-	-	-
1964-65	(a)	-	-	-	-	-
1965-66	(a)	-	-	-	-	-
<u>Pondicherry</u>						
1963-64	1	(a)	4	4	-	-
1964-65	2	(a)	4	5	-	-
1965-66	2	(a)	4	5	-	-
<u>All-India</u>						
1963-64	2,257	8,160	6,809	14,710	868	393
1964-65	2,562	8,271	7,216	15,110	839	360
1965-66	2,749	7,827	7,171	14,639	748	320

(a) - Less than 500 hectares. - stands for nil.

/ - Includes groundnut, sesamum, castor, Rapeseed & Mustard and Linseed.

Department of Agriculture

III Distribution of improved seeds, State-wise,
under the high-yielding varieties programme.

A pamphlet about the seed supply position, in regard to the high-yielding varieties programme is enclosed. This pamphlet gives the targets and coverage during Kharif-66, State-wise, and the proposed programme during Rabi-Summer 66-67. The pamphlet also gives full information in regard to the seed supply arrangements for the high-yielding varieties programme.

After the issue of this pamphlet, steps have been taken to organize an emergency food drive in Bihar & U.P. in view of the drought conditions in Kharif-66. The revised programme under the high-yielding varieties during Rabi-Summer 66-67 in Bihar and U.P. would now be as follows:

I. <u>U.P.</u>	<u>Programme now fixed</u>	<u>earlier prog.</u>
1. Wheat	* 900,000 acres	575,000 **
2. T.N.I.	100,000 "	Nil
3. Hybrid maize	100,000 "	Nil
* includes 4 lakhs under K-68		
** includes 1.75 lakhs under K-68		

II. <u>Bihar</u>	<u>Programme now fixed</u>	<u>earlier prog.</u>
1. Taichung Native I	200,000	125,000
2. Hybrid maize	200,000	100,000

The revised programme for Rabi-Summer 66-67 would thus stand at 44.10 lakh acres as against the earlier programme of 37.10 lakh acres and the total coverage under the high-yielding varieties programme during 66-67 would now be 62.28 lakhs.



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MR. BERNARD BELL

**OFFICE OF
THE SECRETARY OF AGRICULTURE**

FROM: Les Brown

For your information.

1966 NOV -5 PM 2:20

COMMUNICATIONS
FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE

THE STORK OUTFRONS THE PLOW 1/

One of the most disturbing problems facing man today is his apparent inability to balance his numbers and his food supply. Populations growing by 3% a year double within a generation and multiply eighteenfold in a century. To an agriculturist the demographic arithmetic is frightening. Man/land ratios are dropping precipitously throughout the less-developed world as the stork outruns the plow.

Thirty years ago the less-developed regions of Asia, Africa and Latin America were all grain exporters. Collectively, they sent some 11 million tons of grain yearly to the developed regions, principally Western Europe. During the war decade of the 1940s, this flow was reversed and the less-developed world became a net importer of grain, losing a valuable source of foreign exchange earnings. Net imports of grain reached four million tons in 1950 and 13 million tons in 1959. As population growth rates in the less-developed countries accelerated further during the 1960s, the net inflow increased sharply, reaching an estimated 31 million tons in 1966. This rapidly growing food deficit is causing a sharp diminution in the world's food reserves.

Five years ago the United States had the world's two major reserves in the race between food and people. It had in its grain elevators 50 million tons of excess grain; i.e., above and beyond normal reserve requirements. In addition, a sizable fraction of its cropland was idled under farm programs. As of 1966 the surpluses of grain are gone.

1/ This article by Lester R. Brown, Staff Economist of the Department of Agriculture, is being considered for publication in the winter issue of the Columbia Journal of World Business, a new quarterly publication of the Columbia University Graduate School of Business. The author may be quoted on any of the points covered in the article but the article itself should not be referred to until it is published.

There are no excess stocks of wheat, rice or feedgrains. As recently as 1965 we had 56 million acres of idled cropland. Actions taken during 1966 to expand acreage of wheat and feedgrains will bring back into production at least half of the one remaining reserve. With these U. S. reserves fast disappearing, the less-developed countries must now provide for increased food needs from their own resources.

Supply of New Land Diminishing

Why is the less-developed world losing the capacity to feed itself? Throughout most of recorded history man was able to increase his food supply by expanding the area of land under cultivation. He matched his increase in numbers with increases in the area under the plow. This was a moving force in the colonization of new lands. As long as he had this option, maintaining an adequate food supply was relatively simple. But on a finite earth this period of land expansion ^{to} had/come to an end.

The area of land under cultivation in North America and Western Europe, ceasing to expand several decades ago, has actually declined over the past 30 years. This has not caused serious problems. Both of these regions developed an impressive production capability on the existing land area, doubling production within the past generation. The large-scale investment of capital and widespread application of technology enabled these regions to compensate for the lack of new land.

Until quite recently, most of the less-developed world was still expanding the area under cultivation to feed its rapidly growing

population. In recent years, however, country after country has furrowed the last of the "new" land readily cultivatable.

During the Fourth Plan Period ending in 1961, India plans to expand the net area sown by less than 1%, though the nation's population is expected to increase by 14%. Clearly, most of its additional food needs must be met by raising productivity per acre.

Nearly all of Asia, the Middle East and North Africa share this land hunger. Only Sub-Saharan Africa and parts of Latin America can expect to significantly expand the area under cultivation. Most of the increases in world food needs over the remaining one-third of this century must be met by increasing the productivity of land already cultivated.

But many of the less-developed countries are faced with a dilemma. Although they have run out of new land to bring under cultivation, they have not yet achieved a take-off in food output per acre. The result is growing food deficits. In order to keep food production increasing in line with demand, these countries must now begin using massive capital inputs and advanced technology.

Land and Agricultural Dependence

As long as there is an abundance of new land to cultivate, continuing population growth does not pose any serious problems for traditional agriculture. The frontier is simply pushed back a bit further. Land and labor, the key inputs, are readily available. Seed and draft animals, the principal capital inputs, are self-generated on the farm.

Next year's seed is saved from this year's crop. Technology does not change. Inputs are not needed from the rest of the economy.

An economy running out of new land to plow, however, must begin using large amounts of purchased inputs to raise the productivity of land. Under these circumstances, agricultural growth is entirely dependent on the rest of the economy for the goods and services needed to generate and sustain a take-off in yield per acre. Fertilizer, pesticides, implements, improved plant varieties and a wide array of other inputs are needed. All must come from the nonfarm sector. Required services are as essential as the physical inputs themselves. These include research, credit, transportation and marketing facilities. Gains in food production in a "fixed land" economy depend directly on the ability of the nonfarm sector to supply the necessary goods and services.

The extent of capital investment and technological change required to "make two blades of grass grow where one once grew" is not generally appreciated. Consider the variety and scale of purchased inputs in the United States. The farm inputs purchased by U.S. farmers totaled \$21.5 billion in 1965. Approximately \$9 billion of this represented feed and livestock purchases, many of them from other farmers. The remaining \$12.5 billion of purchased inputs came from outside the farm sector. The wide variety of inputs used included such things as fertilizer and lime (\$1.7 billion), petroleum products (\$1.5 billion) and equipment parts and repairs (\$525 million). A sampling of other items includes electricity, containers of all kinds, binding twine for hay bales, veterinary services and animal antibiotics. The complete list

of purchased inputs is pages long. For each of the 300 million acres they cultivate, American farmers spend \$42 annually on production requisites supplied by the nonfarm sector.

The average size of the U.S. farm is quite large, but it must not be thought that a system of small holdings is a deterrent to either the sharply expanded use of inputs or to greater agricultural output. Japan and Taiwan, with farms averaging only 2.5 and 3.1 acres respectively, have two of the world's most technologically advanced farm sectors. Consider Japan. Her farmers, with a high-rainfall rice culture and a more intensive mode of cultivation, spend even more per acre than do their American counterparts. Their per-acre expenditures for agricultural chemicals alone -- fertilizer, insecticides, fungicides and herbicides -- now exceed per-acre expenditures for all production requisites in the United States. In addition, though Japanese farmers typically operate on a small scale, they spend each year more than five dollars an acre for farm implements and power equipment. This is almost exactly the same expenditure per acre as in the United States. Whereas U. S. farmers buy one large tractor for, say, 150 acres, Japanese farmers buy a number of small garden-type tillers for the same area.

U. S. farmers last year spent \$599 million for improved seed. India, with a slightly larger area under crops, represents a potential market of comparable size. The entire less-developed world, with a cultivated area roughly five times that of the United States, represents a fantastically large market for seed alone. By 1980 most of this vast area of cropland must be planted to improved varieties if the projected

population is to be adequately fed. Few traditional varieties of food-grains are genetically capable of the rise in yields required over the next 15 years.

The demand for food in the LDC's, reflecting both population growth and modestly rising incomes, is rising 4% a year. Compounded over the next 15 years, this rate of growth will increase the demand for food by 80% between now and 1980. Grain consumption, now totaling just over 500 million tons, must climb to 900 million tons. Assuming this target, and using the rule of thumb of one pound of plant nutrients for each 10 pounds of grain, the current yearly fertilizer consumption of 7 million tons in the less-developed world must climb to 47 million tons in 1980. At \$150 per ton of fertilizer, this prospective market could well expand from the present one billion dollars a year to at least \$7 billion 15 years hence. This volume of fertilizer, averaging about one-fourth the Japanese rate of usage, would still be far from optimal.

The ability to supply this and other essential inputs rests in large part on two developments: the adoption by the developing nations of enlightened price policies and measures to encourage private foreign investment. In an area-expanding agriculture, food prices received by farmers have relatively little bearing on production levels. Once a country turns to raising output per acre, however, its farmers must be assured of a price for their products which makes the use of modern technology profitable. A farmer cannot be expected to use fertilizer if the cost of the fertilizer exceeds the value of the additional grain resulting from its use. Yet, governments in most LDC's, with political

bases in the urban areas, traditionally have a consumer-oriented food price policy. Their aim is to hold retail prices down. This generally involves keeping farm prices down, aggravating food supply problems.

The rash of take-offs in yield per acre occurring in the late thirties and early forties in the advanced industrial countries was closely associated with the adoption of farm price support policies during the depression years. Some countries have chosen to achieve the same end by subsidizing farm inputs. The Government of Pakistan, for example, has been making fertilizer available at half cost, stimulating demand to the point where it now exceeds the available supply. Farm price supports or input subsidies, or some combination of the two, can be effectively used to speed the adoption of modern technology, telescoping into years developments normally taking decades.

Once it becomes profitable to use modern technology, farmers catch on quickly, even though they may be largely illiterate. The problem then becomes supplying the inputs rather than overcoming the farmer's reluctance to use them. In India, where a price support system is now operating, the effective demand for nitrogenous fertilizer is estimated at 1.5 million tons this year. Since India produces only 400,000 tons, some \$120 million of scarce foreign exchange is being used to import 600,000 tons from abroad. Even so, a serious shortage, reportedly resulting in fertilizer riots in some localities, remains. Fertilizer riots are admittedly preferable to food riots, but nonetheless it is unfortunate that farmers are deprived of the inputs they want and the country deprived of the food it so desperately needs.

The clamor for inputs is not limited to India or to fertilizer.

It exists in nearly all those developing countries where the use of modern agricultural technology is now profitable. Unfortunately, the industrial sectors of these countries lack the resources and technology to provide the necessary yield-raising inputs on the scale needed. Nor can the gap be filled with government-to-government assistance.

We have heard many times from many sources that the world now has the know-how to banish hunger. Unfortunately, however, the know-how is concentrated in one part of the world and the hunger in another. The resources -- capital and managerial, technological and distributive -- to meet this need are largely not in the hands of government. These resources have been developed by those large industrial firms producing and distributing agricultural inputs in North America, Western Europe and Japan. The problem is how to transfer these existing resources across national boundaries to the areas where they are needed. If the developing countries had unlimited time, they could eventually develop with their own resources an industrial sector capable of supporting a modern agriculture. But populations that double within a generation leave little time. Feeding populations that are 3% larger each year, on a fixed cropland base, requires a lot of progress in a short period of time. The transition from expanding area to raising yields must be quick. The progress of centuries must be compressed into decades; that of decades into years. Time is the new and single most critical dimension of the food/population problem. This is why the developing countries must seek a massive injection of private resources from abroad.

In the past, internal policies affecting foreign private investment in the land-scarce, food-hungry countries have been heavily weighted with ideological considerations. Fortunately, this is on the wane.

People in the developing countries seem less and less willing to accept slogans and flag waving as a substitute for progress and better living conditions. An enlightened political leadership is beginning to heed the words of Berthold Brecht in the Three Penny Opera:

Now all you gentlemen who wish to lead us,
To teach us to resist from mortal sin,
Your prior obligation is to feed us:
When we've had our lunch, your preaching can begin.

The technology, capital and management and marketing know-how to overcome the energy-sapping food shortages in the developing countries exist. The problem these countries face is how to gain access to it. Some countries, particularly Mexico, Taiwan and Israel -- all three of them agricultural success stories -- have successfully tapped this international resource.

Production Plus Distribution

Production of the needed farm inputs solves only part of the problem. They must be distributed in an efficient, timely manner.

Too many leaders in the developing countries feel that government agencies can distribute farm inputs more efficiently than can private industry. Although governmental bureaucracies are not very adept at producing farm inputs, the record indicates they are even less adept at distributing them. Horror stories about seed arriving months after planting time and fertilizer not arriving at all are commonplace throughout the less-developed world. Private distribution systems reward the distributor for a successful distribution and sales effort and penalize him for failing to deliver the product in time for use. Government distribution agencies seem not to notice.

The distribution of agricultural inputs is incredibly complex compared with that of most industrial raw materials. The small-scale distribution systems with high markups characterizing most developing countries will not serve the needs of a modern agriculture. Modern mass-distribution methods of the kind used in the advanced countries must be introduced.

The concept of servicing customers seems not yet to have caught on in most developing countries. Firms distributing inputs in the more advanced countries use customer servicing as a competitive tool. In the fertilizer business, for example, the quality of soil-testing services and advice on fertilizer usage provided to farmers is often a more important competitive tool than pricing. Advice meted out must be reliable. Next year's sales depend on it.

The lack of customer servicing in the LDC's is perhaps most obvious in the case of farm equipment. Governments in many developing countries import farm tractors and equipment directly, but fail to assume the responsibility for providing the spare parts and skilled maintenance men needed to keep equipment operational. The weaknesses of such an approach are evident in the abandoned farm equipment, particularly tractors, dotting the countryside.

The R and E Contribution

The extraordinarily farsighted research and extension concept developed in U. S. agriculture during the latter part of the last century is the counterpart, and perhaps forerunner, of modern industry's research and development effort. During the earlier part of this century nearly all of the agricultural research in the United States was govern-

ment research, conducted by the Department of Agriculture and the State Experiment Stations. The Federal-State Cooperative Extension Service was the institution responsible for getting the results of this research to farmers.

This picture has altered dramatically since World War II. As of 1966 private industry is doing the major share of the agricultural research. Industry, through its highly trained sales and service force, is also now doing much of the extension of technology from the research plot to the farm, a job once belonging almost exclusively to the Extension Service. The innovative character of U. S. agriculture in the postwar period is due in good measure to the large-scale entry of industry into agricultural research and extension. At no time has the U. S. Government burdened itself with the production and distribution of inputs.

Today government and industry are effectively teamed, producing one of the most progressive and productive farm sectors in the world. Government contributes importantly with its price support programs where they are needed, ensuring a minimum price to the farmer for his product. On the basis of this, the farmer and the lending institutions are willing to invest in both short-term production capital and long-term improvements. Government supports basic research and industry translates this into a bewildering array of new and advanced inputs, many of which did not exist 10 years ago.

To the extent that developing countries can tap this research and extension capability through investment from abroad in their farm supply industries, they can move much faster.

As Taxpayers or Stockholders?

In recent years, at a time when the need for additional resources in the "have-not" countries is growing, the actual flow of government-sponsored assistance from the advanced industrial countries has leveled off. Government aid as a share of gross national product of the donor countries has, in several important instances, declined sharply. Legislators, reflecting the mood of taxpayers, are reluctant to approve the expansion of funds for aid. These taxpayers, most of whom are stockholders either directly in the market or indirectly in the form of insurance and pension funds, seem not at all hesitant about having the firms in which they share ownership to some degree invest in the LDC's. Stockholders apparently feel that their capital will be used more effectively if subjected to the discipline of a profit-and-loss statement. The transfer of resources through private investment may over the longer run result in a much healthier relationship between the "haves" and "have-nots". It is no longer a donor-receiver relationship. Investment agreements are entered into by both parties with the expectation of eventual benefit.

Given the present tenor of things, this may be the only way to get the much-needed expansion in the flow of resources from the haves to the have-nots. This expanded flow need not aggravate balance-of-payment problems in the advanced countries. Large industrial firms in all of the more advanced countries are currently investing heavily abroad, but mostly in other advanced countries. The times call for the redirection of at least a small share of this capital to the developing countries, particularly in the industries supporting agriculture. 3/ Such a

redirection could effectively supplement the meager and decidedly inadequate resources of the developing countries.

The world must prepare to feed, by 1980, an additional one billion people. Fully four-fifths of this one billion will be added in the food-short developing countries. Expanding the food supply sufficiently may seem an awesome, almost impossible task, considering that the current 3 billion are so poorly fed. It is. But we have no alternative but to seek a solution. If the developing countries fail to generate an agricultural yield take-off, the future will not be worth contemplating.

The know-how and the wherewithal to make the take-off in land productivity possible resides within the advanced economies of Western Europe, Japan and North America -- most of it in those firms which today provide the billions of dollars in purchased inputs used each year by the farmers in these regions.

A new approach to the problem of hunger is clearly required. This is reflected in the new food aid legislation now before the Congress. The key word in this legislative proposal, designed to replace the expiring Food for Peace Program, is "self-help." On July 21, Secretary of Agriculture, Orville Freeman, enunciated one aspect of the new U. S. world food policy before a meeting of the 20-nation Organization for Economic Cooperation and Development: 4/

"In response to the growing need for agricultural inputs, we are making available sharply increased quantities of these items under our aid program.... Over the longer term the aid-recipient countries must develop their own agricultural supplier industries. To fail to do so will simply result in a shifting of dependence on aid in the form of food to aid in the form of agricultural inputs, creating an impossible burden for the advanced countries. We must assist the developing countries in creating the investment climate needed to attract capital and the accompanying managerial, technical and marketing know-how."

The Secretary's comments reflect a growing consensus among those working closely with development problems in general and agriculture in particular. As a nation we must now exercise the same imagination and resourcefulness which brought us to our current position of world economic and technological leadership. We must devise more effective ways of linking food producing know-how and resources at home with needs abroad. The challenge has never been greater. Or the stakes higher.

NOTES

This paper draws heavily on two studies by the author: Man, Land and Food and Increasing World Food Output, both published by the Department of Agriculture.

- 1/ Farm Income Situation, Economic Research Service, U. S. Dept. of Agriculture, July 1966
- 2/ Lester R. Brown, The Japanese Agricultural Economy, U. S. Dept. of Agriculture, June 1961
- 3/ Foreign Aid Through Private Initiative, report of the Advisory Committee on Private Enterprise in Foreign Aid, Arthur K. Watson, Chairman, Agency for International Development, Washington, D. C., July 30, 1965
- 4/ Orville L. Freeman, Secretary of Agriculture, "The Unfolding World Food Crisis," statement at the Fifth Annual High-Level Meeting of the OECD (Organization for Economic Cooperation and Development) Development Assistance Committee, Washington, D. C., July 21, 1966

IN DIA

GENERAL NOTE

Three documents are referred to in the attached summary schedule. These are:

- A) "Re-orientation of Programmes of Agricultural Production". Ministry of Food and Agriculture, White Paper, November 1965.
- B) "Agricultural Development" : Problems and Perspective" April 1965.

N.B. Document A has more hallmarks of Joint Decision : Doc. B seems to be a revised and published version of Ministry Memorandum made available confidentially to Mission during its work in India.

- C) Ministry of Food and Agriculture. Note on Special Intensive Programme for Foodgrains. Mimeographed and presumably not published. This is the programme strongly (but fairly) criticised by Minhas and Srinivasan in "Yojana".

N.B. Yet to be examined are such material as discussions between Bank and G.O.I. and other G.O.I. statements of possible relevance (e.g. Prime Ministerial statements in New Delhi). It will be evident that dependence on Documents A and B may be misleading as guides to the "organizational will" of the G.O.I. as a whole to give full support to the agricultural programme, even where "decisions" of the Government have been announced.

The three columns in the schedule are explained in the heading in each case.

As an approach, should our discussions continue in New Delhi, I suggest a four-pronged approach:

- a) Ensure we have full understanding of events since March 1965, including, especially, the character of the current crises.
- b) Check especially the character of those "decisions" which appear to be revisions of the Fourth Plan (e.g. Fertilisers and Intensive Programmes).
- c) Gain a full appreciation of the external implications of these "decisions", including those specifically for 1966-67.

N.B. Para. 23 of Doc. A. calls for special notice and early enquiry. "It is tentatively estimated that the requirements of credit for meeting the requirements of foreign exchange under these three groups* will be an equivalent of Rs. 1.114 crores for the Fourth Plan period". This is an important statement, but is useless for analysis in its present form. /* (i) fertilizers, pesticides, drilling rigs, (ii) raw materials for increased Indian production of these items, and (iii) plant and machinery for building-up production capacity./

- d) Establish the nature of any future Mission(s) from the Bank in relation to agricultural policy as a whole or specific proposals within it.

J.G.Crawford (Consultant)
February 6, 1966

SUMMARY SCHEDULE

Column I - General Conclusion of Report

I. General

(a) Recognition of need for accelerated rate of growth in agriculture (e.g. well above past 3.0% calculated for foodgrains) and, in particular, that higher rate of growth in productivity per acre, rather than increase in land area under crop, is necessary for this purpose. Some skepticism about achieving the stated target rate of growth (5.4%), although not without hope that a quite high rate could be achieved by end of Fourth Plan.

(b) Recognition that accelerated and sustained rate of growth requires a balance of short and longer-term measures.

(c) Need for more concrete definition than achieved in past plans of "top priority" for agriculture.

Column II - Latest Indication G.O.I. Policy (A, B & C refer to Documents listed in covering note)

Already high target (foodgrain) for 1970-1971 being raised rather than lowered. (A, para. 3; B, paras. 1 and 5).

Recognized in more consistent public statement than hereto available. (See Doc. A, para. 5 and Doc. B generally).

Doc. B, paras. 1.49-51, is rather more explicit than earlier published documents. (See also A, paras. 10-11)

Column III - Remarks

"Optimum" seems based on increasing hope that "priority" for agriculture will become a reality and, in particular, on promise of increased output associated with intensive use of new high yielding varieties of rice, wheat and other grains. (See Doc. C). Recognized that greater amounts of fertilizer required (see A, para. 12) and rather too readily assumed that necessary production and/or imports will materialize. Also, considerable evidence of too hasty assumption that proper way to use new varieties of rice and wheat is to allocate additional fertilizer in large quantities to concentrated areas at expense, if need be, of existing varieties.

This improved public statement is not to be confused with clear and binding Government decisions or programmes not yet apparent in respect of all component parts of programme. (Presumably a final statement would be integrated into Fourth Plan?). Yet, the more explicit statements now issuing from Ministry of Food and Agriculture will help educate public opinion in the realities.

The real test will come in the allocation of foreign exchange for essential materials and in decisions designed to encourage private enterprise to manufacture fertilizers, pesticides, etc.

(d) While foodgrain supply has a natural primacy in emphasis, policies for agricultural expansion must also cover protein foods, export products and import replacing items.

(e) Since targets are set in terms of trend lines, need, through buffer stocks and import policies, to recognize annual variations likely in production of foodgrains.

II. Incentives

(a) Price policy - recognizes dilemma of urban vs. farm interest, but argues for floor price system which will "induce farmers to invest in inputs of fertilizer, good seeds and so forth". Argues that price system can be an inducement, even within existing "constraints" and contends compulsory acquisition not a substitute for policy of expanding production.

Both Documents A and B emphasise "Subsidiary" foods in a way not nearly so strongly done in the past (see A, paras. 4 and 43-49): B, paras. 6.17, 5.6-9 and Ch. VIII.

If Ministry of Food and Agriculture could get "together" with Planning Commission and Finance, it would be useful to draw up balance of payments implications over 5 year period, perhaps showing lessening "dependence" and "greater contribution to" external balance as result of priority for agriculture.

Problems of storage must assume increasing importance in Bank discussions with the Government of India.

Doc. A (para. 32) confirms policy along lines noted in Report. Doc. B, Ch. VII, is the best published coverage yet seen from the Ministry of Food and Agriculture, but adds nothing to what was known at time of writing Mission Report. The possible exception to this is the treatment of subsidies in paras. 7.1 to 7.3 and the stress on social incentives (7.11-12).

Para. 32 of Doc. A is a rather too summary reference. Perhaps this is understandable at a time when shortages are so grave as to render further refinements of price policy and any hopes of developing buffer stocks somewhat irrelevant for the time being. While in any discussions with G.O.I. in near future short-term measures must be given strong emphasis, the longer-term elements in price and buffer stock policy ought not to be excluded.

III. Inputs

Fertilizers: Very great emphasis was placed in our report on fertilizer programmes - production import and usage. Argument was advanced for according reality to "priority" for fertilizer supplies (see para. 130 of Report). Also argued for "freeing" the channels of distribution of fertilizers.

(1) Most encouraging recognition by G.O.I. of importance of this item. See increase in largest for supplies elsewhere noted (A, para. 13) : evidence of short-term efforts to enlarge import supplies (e.g. U.S. "loan"), and some evidence of willingness to be less rigid in matter of private enterprise (production and

Open to doubt whether supplies, at least during next three or four years, will match the demand. This raises serious and difficult questions of allocation or rationing within India and no less difficult policy questions for India, the Bank and Consortium in the matter of imported supplies

distribution).

Enthusiasm for fertilizers is reflected in the optimistic adoption of programmes for using high yielding crops which, however, also require greatly increased fertilizer supplies. (A, paras. 6-9, 13 and 40-42; B, para. 2.7, 2.14, 4.1-15; and Doc. C, which is wholly devoted to the new "intensive" programme).

(2) Irrigation: This not uncontroversial subject was treated at some length in the report, with strong leanings to smaller scale shorter-term projects, to more intensive use of water supplies, to more research in water and soil management and to linking land consolidate and irrigation development (see paras. 343 - 345 for summary).

In much the strongest statements yet, by the Ministry of Food & Agriculture, Documents B (Ch. III) and A (paras. 33-39) state a policy reasonably consistent with the report. Notable are some actual short-term financial provisions to set-up minor irrigation programmes (A. 37-39). It is well to note the explicit recognition of high marginal productivity of assumed water (see Doc. C), so clearly brought out by Dr. Hopper in the Report. This is a major premise of the intensive cropping programme which, however, calls for assured supplies of quality seed (new varieties) and large applications of fertilizer per acre.

in the period prior to achieving adequate domestic production.

There is need for a restatement of the arithmetic of "need" and prospective supplies and a reconsideration of the issues now posed by the official adoption of high yielding, high fertilizer using, crops. This programme, although clearly and explicitly set out, has not been accompanied by the necessary analysis of accompanying problems - especially in relation to short supplies of fertilizer. Moreover, it is open to criticism of the kind put forward by Minhas in the "Yojana" article of January 26, 1966. While the short-term problems will be serious, there can be no let-up either in pressure on the G.O.I. to establish adequate fertilizer production capacity within India.

Not clear from either Doc. A or Doc. B whether the Fourth Plan will be suitably amended or whether the foreign exchange implications have been sorted out (see note Column II on (5) Other). It is strongly suggested that Bank staff give no less attention to this latter aspect than to the problems of supplies of fertilizers, pesticides, etc. Bank staff might well study the link between irrigation and the elsewhere mentioned new intensive cropping programme. (When the Mission returns to India, it could utilize Dr. Hopper's services on this topic and, on the not unrelated questions of adaptive research and extension). In their anxiety to give priority to intensive use of water, recent G.O.I. statements perhaps overlook the difficulties ahead in the use of water where "command areas" are still too large, etc.

(3) Pesticides: The Report recognized the difficulties, but also stressed the need for developing plant disease and pest controls.

Documents A (paras. 14-16) and B (paras. 4.30 - 37) give due and improved emphasis to the need for national policy.

The latest statements (A, B and C) still leave an impression of inadequacy in certain respects, e.g. foreign exchange implications, scope for intensive research and experiment in rodent control methods. On the other hand, a greater willingness to ride "somewhat roughshod" if need be over the difficulties of fragmented holdings in the interests of control of disease and pests is evident. On both foreign exchange and technical questions there is room for more work by Bank staff - perhaps in consultation with U.S. agencies.

(4) Seeds: In our Report a good deal of emphasis (and criticism) was addressed to the problem of assuring continued supplies of proven quality seed.

Both Documents A, paras. 17-21, and B, paras. 2.20, 4.16-29, give considerable attention to this problem - although principally with reference to the new high yielding varieties.

Our Report remains relevant despite the encouraging steps forward announced in Doc. A. There is need for very firm central (New Delhi) direction here. The proposed step-up in the use of high yielding varieties is especially dependent on proper seed reproduction programme. Would strongly suggest Bank consult Rockefeller Foundation people who are known for experience and strong views on this subject. Several suggestions in Doc. B call for examination. Again, the foreign exchange implications need careful analysis - there is no sign of this evident in my (hurried) reading of the document.

(5) Other: We did not give very much space in our Report to items like tractor power, improved implements and essential supplies of material like cement. We noted the scope, but made no attempt (within limits of time) to develop the argument.

Both Docs. A and B give more scope to these matters than our Report. (See A, para. 22 and B, 2.18-22, and 4.38-44). Doc. B is useful and rather encouraging in the appearance of more lively interest in these matters in the Ministry.

There are probably implications for foreign exchange and programmes and technical research and assistance, which call for more examination than given in the Report.

(6) Land Reclamation: The Report hardly gave major emphasis to land reclamation of "Soil conservation" (a wider term than the same words in Australia and U.S.A). But both are important, especially in the conservative use of scarce inputs like water and fertilizer.

Doc. B (Ch. III) gives a good deal of attention to land development and conservation, but this is not reflected in A.

The ideas in Doc. B are worth study as part of longer-term plans. They may be relevant to foreign and/or loan projects and, if so, our Report would need supplementing by appropriate enquiries.

IV. Farm Credit

Our Report had (necessarily) a good deal to say about farm credit - both production and developmental. We expressed doubts about the adequacy of production credit in volume and in terms of institutional arrangements. We noted especially the apparent inadequacy, too, of medium to longer-term credit, especially having regard to the needs of tubewell irrigation, land conservation and improved farm practices.

Doc. A, paras. 24-26, and Doc. B, paras. 6.1- 10, both refer to the subject and recognize the room for improvement.

While both Docs. A and B hopefully note the arrival of new institutions, neither document carries full conviction that the programme will be adequate to future needs. It cannot be said too strongly that any programme agreed between India, Bank and Consortium ought to recognize that inadequate credit can bring failure to an otherwise strong agricultural policy.

V. Research and Extension

The key to the approach in the Report was not that progress is impossible without further research, or that improved extension alone is needed. Rather, it was that "Research is necessary to reduce or remove existing technological powers to agricultural expansion, while Extension should serve as the means between research (knowledge) and its application on the farm". The Report gave encouragement to reorganize moves (in research) known to be afoot, noted research "gaps" of importance (e.g. entomological work, soils and water management), and argues for a substantial reform in the extension structure. The Report noted the key phenomenon - evidence that the farmer was able and willing to listen to good farm management advice.

Section IV of Doc. A (paras. 27-31) and paras. 7, 19 and 36 of Doc. B, confirm action taken by G.O.I. to rationalize research institutions, paras. 6, 15 and 17 of B are also useful. There is recognition of the need to raise the status and performance of V.L.W's and "special programmes are being organized". Some new ideas, appealing to farmers' pride in achievement, are put forward too.

Progress is evident, but the reorganization of extension will prove (and is proving) slower and more difficult than in respect of research. In further discussions with G.O.I. a good deal of further attention to this subject will be justified.

VI. Institutional Programme

(1) Agrarian Reform: The Report took a modest stand on this subject, looking less to the earlier promised large-scale "revolution" and more to the purchase provisions of non-resumable land and to security of tenure and fair rents.

Doc. A is silent on the subject. Doc. B (paras. 1.45, 2.24, 3.37-38 and 6.25-29) has a little to say, some of it directly bearing on the issues raised in the Report.

Even in terms of short-term (one Plan period) needs, there is room for action under the heading of agrarian reform. This topic tends to fall between Departments and the question of administrative responsibility needs clearly to be raised. Further discussion could be built on Doc. B, paras. 6.25-29.

(2) Co-operatives: A good deal was said in the Report about co-operatives - principally in relation to farm credit and distribution of fertilizers and other farm supplies. The approach was completely pragmatic and in these terms sought (a) to raise the efficiency of the co-ops, and (b) to allow room for competition in their economic junctions.

Doc. A (para. 24) seems to accept the pragmatic approach - at least in respect of credit and marketing functions. Doc. B (paras. 6.1-10) is a larger version of the single para. 24 of Doc. A.

Evident that more open-minded policies are evolving. The trend needs to be further encouraged.

(3) Community Development: Here, too, the Report was pragmatic and, in relation to agricultural programmes, recognized the scope for highly relevant and practical local government activities.

It would seem that the G.O.I. has now transferred Community Development to Ministry of Food and Agriculture. No doubt, some of the useful ideas in Doc. B, paras. 6.11-17, will be developed.

Room for further discussion and encouragement of ideas which will strengthen local activities in relation to agriculture.

VIII. Administration

The Report devoted a good deal of attention to this subject and especially to the "organized will" to carry out the plan for agriculture. Several suggestions were made.

Section VIII (paras. 50-53) of Doc. A reflects the Minister's ideas on strengthening agricultural administration, both in the Center and in the States. A good deal of Doc. B (e.g. Ch. VI) is devoted to the topic.

What appears to be happening is encouraging. Its effectiveness will be aided by the general recognition that priority to agriculture must be made to mean something. However, further comment would be unwarranted until discussions take place with "new" Ministry in New Delhi. It is, however, worth noting two things: (a) the announcement of an "Annual Plan for 1966-67" (Doc. A, paras. 55-65), and (b) the evident need still for clearer definition of relationships between the Ministry of Food and

Agriculture and the Planning Commission. The former item (Annual Plan) is a welcome step: it reduces the danger of undue generality inherent in the necessarily highly aggregative approach of a Five Year Plan. It could also facilitate co-ordination with other elements, especially, for example, foreign exchange allocations and industrial programmes.

Agricultural Production in the Fourth Five Year Plan Strategy and Programme

6.01. August 1965

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APPENDIX

Foreign Exchange Requirements for Agricultural Sector—Fourth Plan

The details of foreign exchange requirements for Agricultural Sector (excluding fisheries) for the Fourth Plan period, are given below :

			(Rs. crores)	
I. A. Chemical Fertilizers—				
Direct imports	Nitrogen	432.25		579.8 Behn *
	P ₂ O ₅	84.69		
	K ₂ O	99.00		
Raw materials	Sulphur	61.69		
	Rock-phosphate	98.88		
TOTAL			776.51	
B. Equipment for fertilizer factories			136.40	
II. A. Plant Protection—				
Pesticides in finished form		34.80		
	Raw materials for pesticides	10.95		
	Plant protection equipment (gasoline engines, etc.)	3.84		
	Aerial unit	2.61		
TOTAL			52.20	
B. Equipment for pesticide factories			4.50	
III. Agricultural Machinery and Equipment—				
Agricultural machinery		102.60		203.95 (G.OI) *
	Seed testing equipment	0.26		
	Minor irrigation equipment	3.60		
	Soil and water conservation equipment	1.04		
TOTAL			107.50	
IV. Animal Husbandry & Dairying—				
Milk powder		18.00		
	Dairy equipment	3.70		
	Poultry equipment	0.42		
TOTAL			22.12	
V. Other Programmes—				
Agricultural research, training & education		4.36		
	Agricultural extension	0.37		
	Animal husbandry	5.92		
	Forestry schemes	1.68		
	Agricultural marketing	0.29		
	Cotton and tobacco development	1.00		
	Equipment for Central mechanised farms	0.88		
TOTAL			14.50	
GRAND TOTAL			Rs. 1,114 crores	Rs 1362 crores

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