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NATURAL RUBBER AND SYNTHETIC RUBBER IN THE DEVELOPING COUNTRIES

BRAZIL[1/]

by

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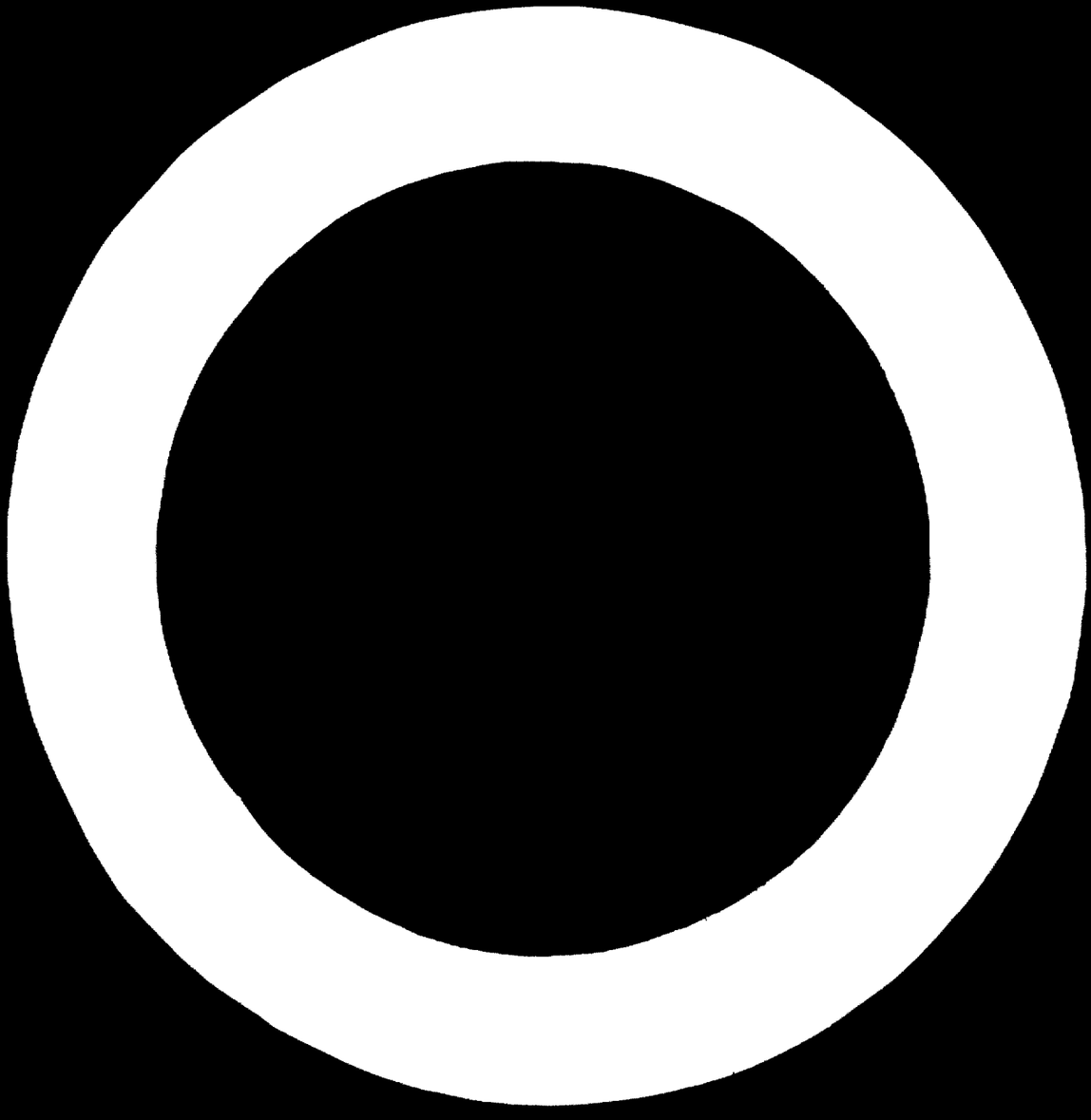


THE WAY WE FEEL TO CONTRIBUTE WITH SOME WORK FOR THIS MEETING, IS TO PRESENT A PICTURE OF NATURAL AND SYNTHETIC RUBBER IN BRAZIL.

IT IS WELL-KNOWN BY ALL PRODUCING COUNTRIES BRAZIL'S SITUATION AS FAR AS ITS CONTRIBUTION WITH 24,000 TONS OF WILD AND PLANTATION RUBBER PER YEAR. WITH OUR SBR AND POLYBUDATIENE PLANTS WORKING FULL SPEED TO SUPPLY THE LOCAL DEMAND, BRAZIL HAS GROWN A GREAT DEAL TO THE POINT TO REACH, LAST YEAR, 156.000 TONS, CONSUMPTION OF TOTAL ELASTOMERS OUT OF WHICH 39.700 WERE NATURAL RUBBER, IMPORTING THE GAP OF 22.000 TO FILL UP THE INTERNAL NECESSITY. THE QUESTION IS. HOW CAN WE RESOLVE OUR PROBLEM FORECASTING THE CONSUMPTION TOWARD 1980. OBVIOUSLY, AS FAR AS THE NATURAL RUBBER IS CONCERNED, 90% IS WILD RUBBER AND ONLY 10% IS PLANTATION. THE ONLY WAY TO HAVE INCREASED THIS FIGURE IS INCREASING THE 10% SHARES, WHICH OF COURSE, FACES THE BIGGEST AND UNSOLVED PROBLEM OF "DOTHIDELLA ULEI". DURING THE LAST CONFERENCE HELD IN BRAZIL, IN THE YEAR OF 67 IN SÃO PAULO, A PROGRAM WAS PRESENTED WHICH COULD BE REVIEWED AT PAGE 117 APPENDIX 12, OF THAT SUMMARY OF PROCEEDINGS.

IT IS IMPORTANT TO TELL TO THE RUBBER EXPERTS, THAT OUR 10% PRODUCTION IS REPRESENTED BY PLANTATION IN SEVERAL AREAS, SUITABLE TO THE BROWING OF HEVEA BRAZILIENSE, HOWEVER, ALL THE AREA, IN SPITE OF ALL THE PRO CHARACTERISTIC, IS FACING THE ATTACK OF DOTHIDELLA AND THE "MANDAROVA", ANOTHER KILLER OF HEVEA TREES.

IN THE AMAZON AREA, PIRELLI STARTED THEIR PLANTATION FACING THE ATTACK OF DOTHIDELLA ULEI. COSME FERREIRA IS ANOTHER WELL-KNOWN PRODUCER IS THAT AREA, WITH THE SAME PROBLEM. IN PARÁ WE HAVE ABOUT 350 HECTARES BELONGING TO MR. RUBENS LIMA. MR. LIMA WAS THE LUCKIEST ONE AND ALL HIS PLANTATION WERE NOT AFFECTED, SO FAR.

THE STATE OF ACRE, WHICH IS RESPONSIBLE FOR 40% OF OUR WILD RUBBER, HAS SOME REGULAR PLANTATION BUT WITHOUT ANY SUCCESS. RONDONIA IS FAILING ALSO. MATO GROSSO IN THE WEST OF BRAZIL, HAS ABOUT 500.000 PLANTED TREES DURING THE YEAR OF 1956/1969 AND NOW HAS

OVER 2.500.000 CLONES OF FX 25. LAST YEAR, A TREMENDOUS INFECTION OF DOTHIDELLA ULEI TRANSFORMED THE PROSPEROUS PLANTATION IN A DISASTER. THE BAHIA AREA SEEMS TO BE THE BEST ONE, HAVING AROUND 9.000.000 TREES PLANTED. SÃO PAULO HAS SOME EXPERIMENTAL AREAS WITH SEEDS BROUGHT FROM LIBERIA, HOWEVER ALL ATTACKED BY DOTHIDELLA ULEI.

AFTER ALL THIS HARD EXPERIENCE, THE BRAZILIAN GOVERNMENT ESTABLISHED THREE OFFICIAL PLANTING AREAS:

PARÁ
BAHIA
SÃO PAULO

KNOWING THAT THE SPORES OF MICROCYLUS ULEI REQUIRE HIGH HUMICITY DURING THE PERIOD OF 6/8 HOURS, ON ACCOUNT TO PROLIFERATE AND CONTAMINATE THE LEAVES, THOSE CHOSEN AREA WERE THE MOST SUITABLE ONE.

THE STUDY AND FORECAST MADE IN 1960 GAVE A SIMILAR DEMAND FIGURE FOR 1970 (AROUND 5.500.000 TONS, WHICH NATURAL RUBBER CONTRIBUTED WITH A SHARE OF 50% - 2.500.000 TONS).

THE REALITY HAVE SHOWN US A CONSUMPTION OF 2.915 IN 1970, TOTALLING 7.493 TONS, THEREFORE THE DEMAND HAS OVERPASSED THE FORECAST MADE 10 YEARS AGO. WE MADE THIS REMARK BECAUSE WE WILL MAKE A COMMENT OF THE REPORT PRESENTED BY THE AGRICULTURAL COMMODITY PROJECTION 1970-1980, RECENTLY PUBLISHED BY THE COMMODITY AND TRADE DIVISION OF THE FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS. UNDER THIS REPORT IT IS FORECASTED A DEMAND FOR ALL ELASTOMERS BASED IN THE GENERAL INCOME AND POPULATION GROUWTH. THE ELASTOMER DEMAND BOR 1980 - 15,8 TO 16,4 MILLION TONS., FOLLOWING THE PAST EXPERIENCE WE SHOULD EXPECT MORE. THE CLASSIFICATION OF THE SYNTHETIC IN TWO GROUPS, LEAVING THE NATURAL RUBBER AND POLYSOPRENE IN THE SECOND GROUP SEEMS VERY WISE AND ACCEPTABLE. THE SIZE OF THE TWO MENTIONED GROUPS WOULD SE DETERMINED ON TECHNICAL GROUNDS AND IT IS BELIEVED THAT THE

AREA OF COMPETITION BETWEEN THEM, ON PRICE ALONE, WOULD BE RELATIVELY SMALL. THIS COMMENT DOES NOT FIT TO OUR REQUIREMENT BECAUSE THE NATURAL RUBBER IN BRAZIL IS US$ 1,45/KG AGAINST 0,65 OF SBR. HOW CAN NATURAL RUBBER COMPETE UNDER THIS CIRCUMSTANCES? THE SAME PAPER ASSUMES THAT BRAZIL WILL HAVE A CONSUMPTION OF 224.000 TONS. WHICH SEEMS PRITY CLOSE TO THE REALITY.

DURING THE PERIOD OF 1960/1971 THE AVERAGE INCREASE OF THE ANNUAL CONSUMPTION OF NEW ELASTOMERS IN BRAZIL WAS AROUND 73% AND THE CONSUMPTION OF THE SYNTHETIC ELASTOMERS WENT UP TO AN AVERAGE OF 17% PER YEAR. THE CRUDE RUBBER KEPT THE SAME LEVEL.

SBR IS THE MOST IMPORTANT SYNTHETIC TYPE AS FAR AS THE CONSUMPTION IS CONCERNED. THE PROPORTION VARIES FROM 72% TO 79% DURING THE DECADE 1960/1971 (OVER THE WORLD AVERAGE WHICH IS 67%) AND EQUIVALENT FACTOR FOUND IN THE UNITED STATES DURING 1964/1968. THE POLYBUTADIENE ELASTOMER SHOWS UP AS THE SECOND SYNTHETIC TYPE OF MAJOR CONSUMPTION. THE BIGGEST INCREASE WAS DURING THE 1963 PER YEAR. AT THE MOMENT, THE YEAR CONSUMPTION IS 11.200 TONS. BUTYL RUBBER HAD IN 1964. THE ECOND PLACE AS FAR AS THE CONSUMPTION IS CONCERNED, BEING USED FOR AUTO TUBES.

THE CHARTS I, II, III PRESENT SOME STATISTIC INFORMATION REGARDING THE PRODUCTION AND CONSUMPTION OF ELASTOMERS IN BRAZIL, DURING THE LATES YEARS.

THE CONSUMPTION OF ELASTOMERS IN OUR COUNTRY REGARDING THE PRODUCT TYPE, I SHOULD SAY, IS IN A STEADY LINE. IN 1970 THE HEAVY INDUSTRY HAD A MARKET SHARE OF 63% OF THE TOTAL CONSUMPTION AND THE TIRE INDUSTRIES PARTICIPATED WITH 77% OF THAT SHARE. IF WE LOOK ON THE CHART IV WE SEE THE DISTRIBUTION.

FORECAST OF ELASTOMERS CONSUMPTION IN BRAZIL

THE FORECAST IS SHOWN ON CHART V. THE ELASTOMERS DEMAND OF ALL TYPES IS FORECASTED ROUGHLY FOR 1980 WITH 286.000 TONS/YEAR AND THE SYNTHETIC ELASTOMERS WOULD SHOW A CONSUMPTION OF 195.000 TONS/ /YEAR IN THE SAME YEAR.

THE PERCENTAGE OF SYNTHETIC ELASTOMERS IS FORECASTED FOR 1976 IN 73% AND 75% FOR 1980. THE SYNTHETIC TYPES, THAT WILL BE IN A BETTER CONSUMPTION POSITION, ARE THE POLYBUTADIENE AND THE POLYSOPRENE. WE FORECASTED FOR 1977 AND 1980 A BETTER PENETRATION OF THE STEREOTYPES REPLACING THE NATURAL RUBBER POSITION.

WE CAN FORECAST ALSO FOR 1976/1980 THE FOLLOWING CONSUMPTION BREAKDOWN:

	1976 %	1980 %
SBR	70,00	67,00
POLYSOBUTADIENE AND POLYSOPRENE	15,00	18,00
BUTYL	7,00	6,50
CHLOROPRENE	3,50	3,50
NITRILE	1,00	1,00
OTHERS	4,50	4,00

COMMENTS ABOUT THE DEMANDS AND PROJECTS OF SYNTHETIC ELASTOMERS IN BRAZIL

OUR ACTUAL CAPACITY INSTALLED OF SBR IS 78.000 TONS/YEAR, INCLUDING 3.000 TONS OF LATEX OF SBR. THE PLANS TO INCREASE THE CAPACITY OF 110.000 TONS/YEAR IS ALREADY APPROVED BY THE PETROBRÁS FOR THE YEAR OF 1975, SO IT IS EASY TO UNDERSTAND THAT THE BRAZILIAN MARKET WILL FULLY SUPPLY OF THIS TYPE OF ELASTOMERS IN 1977 IF WE TAKE A LOOK ON CHART V. SBR SUPPLY AFTER 1978, WILL BE NECESSARY TO INCREASE AGAIN THE INSTALLED CAPACITY TO FULFIL THE 1980 DEMAND OF 130,000 TONS.

REGARDING THE POLYSUTADIENE ELASTOMER, IT IS FORECASTED AN EXCESS OF 7.000 TONS/YEAR IN 1976 AND A DEFICIT OF 7.500 TONS IN 1980.

REGARDING THE BUTYL RUBBER DUE TO THE FORECASTED DEMAND, IT IS POSSIBLE THAT THIS TYPE OF ELASTOMER WOULD HAVE APPROVED A PROJECT FOR PRODUCTION INSTALLATION IN BRAZIL.

PRODUCTION - IMPORT - EXPORT - CONSUMPTION OF ELASTOMERS IN BRAZIL

AR	PRODUCTION				IMPORT			EXPORT	CONSUMPTION							
	NATURAL	SYNTHETIC	TOTAL	RECLAIM	NATURAL	SYNTHETIC	TOTAL	SYNTHETIC	NATURAL	%	SYNTHETIC	%	RECLAIM	%	TOTAL
60	23 462	-	23 462	10 416	24 331	17 417	41 748	-	44 550	62	16 611	23	10 278	15	71 439
61	22 736	-	22 736	10 606	20 039	23 436	43 475	-	39 313	56	20 775	30	10 212	14	70 300
62	21 741	15 990	37 731	11 432	19 602	17 654	37 257	-	40 733	50	29 218	36	12 232	14	82 291
63	20 206	29 959	50 165	13 770	20 979	9 215	30 194	1 454	36 058	43	34 372	41	13 770	16	84 200
64	28 323	32 496	60 819	12 572	10 028	14 048	24 076	5 101	32 729	38	40 907	47	12 665	15	86 301
65	29 291	38 691	67 982	9 964	1 854	9 828	11 682	7 049	26 554	36	37 859	51	9 752	13	74 165
66	24 317	54 216	78 563	11 930	11 595	11 275	22 870	11 055(1)	30 852	33	51 408	54	12 323	13	94 583
67	21 404	51 540	73 034	14 493	4 763	11 210	15 973	6 493(2)	32 133	31	57 024	55	14 474	14	103 631
68	22 558	58 856	81 814	18 868	12 891	17 933	30 824	1 317	38 156	30	70 542	56	18 181	14	126 839
69	23 950	61 671	85 621	18 643	10 231	14 137	24 368	4 492	35 071	28	71 121	57	18 128	15	124 320
70	24 976	75 459	100 435	20 920	11 224	15 644	26 868	3 739	36 739	26	85 354	59	20 602	15	142 695
71	24 043(3)	71 540(3)	95 583(3)	22 176(3)	22 469(4)	25 605(4)	48 074(4)	14(4)	39 696(3)	26	93 893(3)	61	22 249(3)	13	155 837(

NB: PLEASE DISREGARD FIGURES IN PARENTHESIS

CHART II

SYNTHETIC ELASTOMER PRODUCTION

YEAR	SBR	POLIBUTADIENE
		TONS
1962	15 990	-
1963	29 959	-
1964	32 496	-
1965	35 606	2 985
1966	47 864	6 352
1967	44 043	7 497
1968	50 050	8 806
1969	51 507	10 164
1970	64 137	10 936
1971	65 201	6 339

CHART III

CONSUMPTION EVOLUTION AND DISTRIBUTION PER TYPE OF SYNTHETIC ELASTOMERS

YEAR	S B R		POLYBUTADIENE		CHLOROPRENE		NITRILE		BUTYL		OTHERS		TOTAL TONS
	TONS.	%	TONS.	%	TONS.	%	TONS.	%	TONS.	%	TONS.	%	
1960	12 756	77	-	-	353	2	270	2	2 154	13	1 078	6	16 611
1961	15 955	77	-	-	588	3	487	2	3 186	15	548	3	20 775
1962	22 168	76	-	-	924	3	431	1	3 238	11	2 457	8	29 218
1963	27 253	79	1 356	4	920	3	576	2	3 603	10	657	2	34 365
1964	30 295	74	4 425	11	1 112	3	364	1	3 018	7	1 592	4	40 906
1965	29 039	77	3 959	10	810	2	389	1	2 806	7	856	3	37 859
1966	37 473	73	6 527	13	1 690	3	809	2	4 859	9	50	-	51 408
1967	42 285	74	7 704	14	1 519	3	450	1	3 500	6	1 566	2	57 024
1968	52 348	74	8 742	12	2 055	3	655	1	5 605	8	1 137	2	70 542
1969	51 066	72	8 357	12	2 462	3	805	1	5 280	7	3 150	5	71 120
1970	64 507	76	10 720	13	2 808	3	947	1	5 760	6	612	1	85 354
1971	67 800	72	11 150	12	3 410	4	982	1	6 850	7	3 701	4	93 893

CHART IV

DISTRIBUTION OF ELASTOMERS CONSUMPTION IN BRAZIL BY PRODUCT LINE

ELASTOMER TYPE	HEAVY INDUSTRY																		LIGHT INDUSTRY (MECH GOODS)		TOTAL
	AUTO TIRES		AUTO TUBES		CAMEL BACK		CABLES		HOSES		BELTS		BICYCLE TIRES		BICYCLE TUBES		OTHERS				
	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS	%	TONS
NAT. RUBBER	26 555	90,7	85	0,3	1 074	3,4	20	0,1	38	0,1	782	2,7	271	1,0	111	0,3	359	1,2	5 556	16	34 831
NAT. LATEX	26	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 882	99	1 908
SYNTH. ELASTOMERS	37 478	70,5	4 645	8,7	9 129	17,2	474	0,9	482	0,9	401	0,8	239	0,5	192	0,4	111	0,2	30 068	36	83 219
SYNTH. LATEX	672	97,5	-	-	-	-	-	-	4	0,6	13	19,0	-	-	-	-	-	-	1 446	68	2 135
RECLAIM	4 551	67,5	-	-	968	14,4	-	-	21	0,3	32	0,5	782	11,6	-	-	387	5,7	13 861	67	20 602
TOTAL	69 282	77,0	4 730	5,3	11 171	12,4	494	0,6	545	0,6	1 208	1,4	1 292	1,4	303	0,3	857	1,0	52 813	37	142 695

CHART V

ELASTOMERS	1972	1973	1974	1975	1976	1977	1978	1979	1980
1. SYNTHETICS									
SBR	73 000	78 000	84 000	89 000	95 000	104 000	110 000	121 000	130 000
STEREO TYPES	13 100	14 200	16 500	17 500	20 400	22 200	25 600	30 200	35 000
BUTYL	7 100	7 600	8 200	9 100	9 500	9 000	9 600	10 800	12 000
CHLOROPRENE	3 600	3 800	4 100	4 400	4 700	5 200	5 600	6 200	6 800
NITRILE	1 000	1 100	1 200	1 300	1 400	1 500	1 600	1 800	2 000
OTHERS	5 200	4 300	4 000	3 700	5 000	6 100	7 600	8 000	9 200
SUB-TOTAL	102 000	109 000	118 000	125 000	136 000	148 000	160 000	178 000	195 000
2. NATURALS	41 000	44 000	45 000	49 000	51 000	54 000	55 000	52 000	51 000
3. RECLAIM	23 000	25 000	27 000	29 000	31 000	33 000	35 000	37 000	40 000
TOTAL	166 000	178 000	190 000	203 000	218 000	235 000	250 000	267 000	286 000

CHART VI

DEMAND X AVAILABILITY OF SYNTHETIC ELASTOMERS

ELASTOMERS	AVAILA-BILITY 1976/80	DEMAND		BALANCE	
		1976	1980	+ 1976	- 1980
S B R	110 000	95 000	130 000	+ 15 000	-20 000
STEREOTYPES	27 500	20 400	35 000	+ 7 100	- 7 500
BUTYL	-	9 500	12 000	- 9 500	-12 000
CHLOROPRENE	-	4 700	6 800	- 4 700	- 6 800
NITRILE	-	1 400	2 000	- 1 400	- 2 000
OTHERS	-	5 000	9 200	- 5 000	- 9 200
T O T A L	137 500	136 000	195 000	+ 500	-57 500

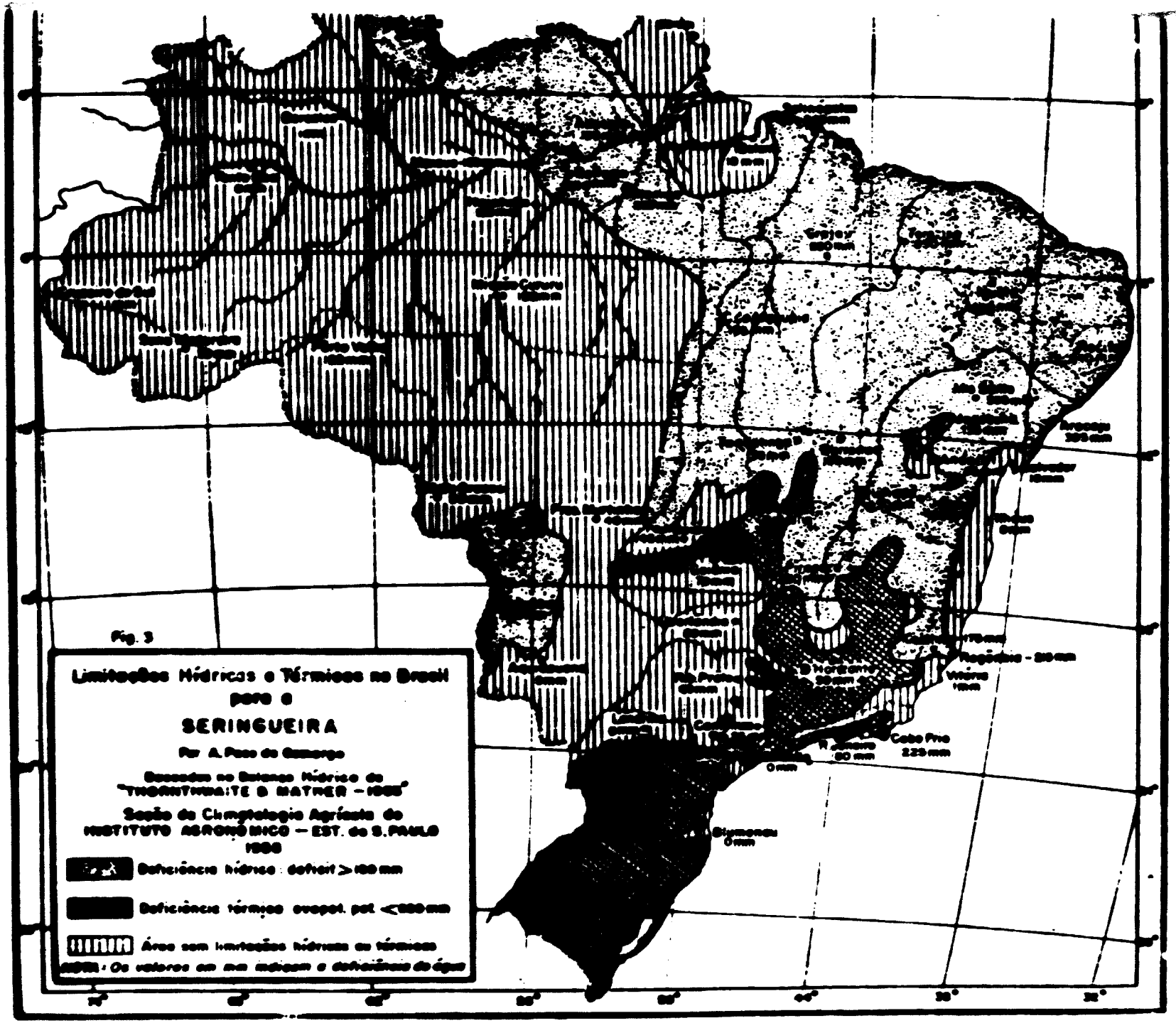
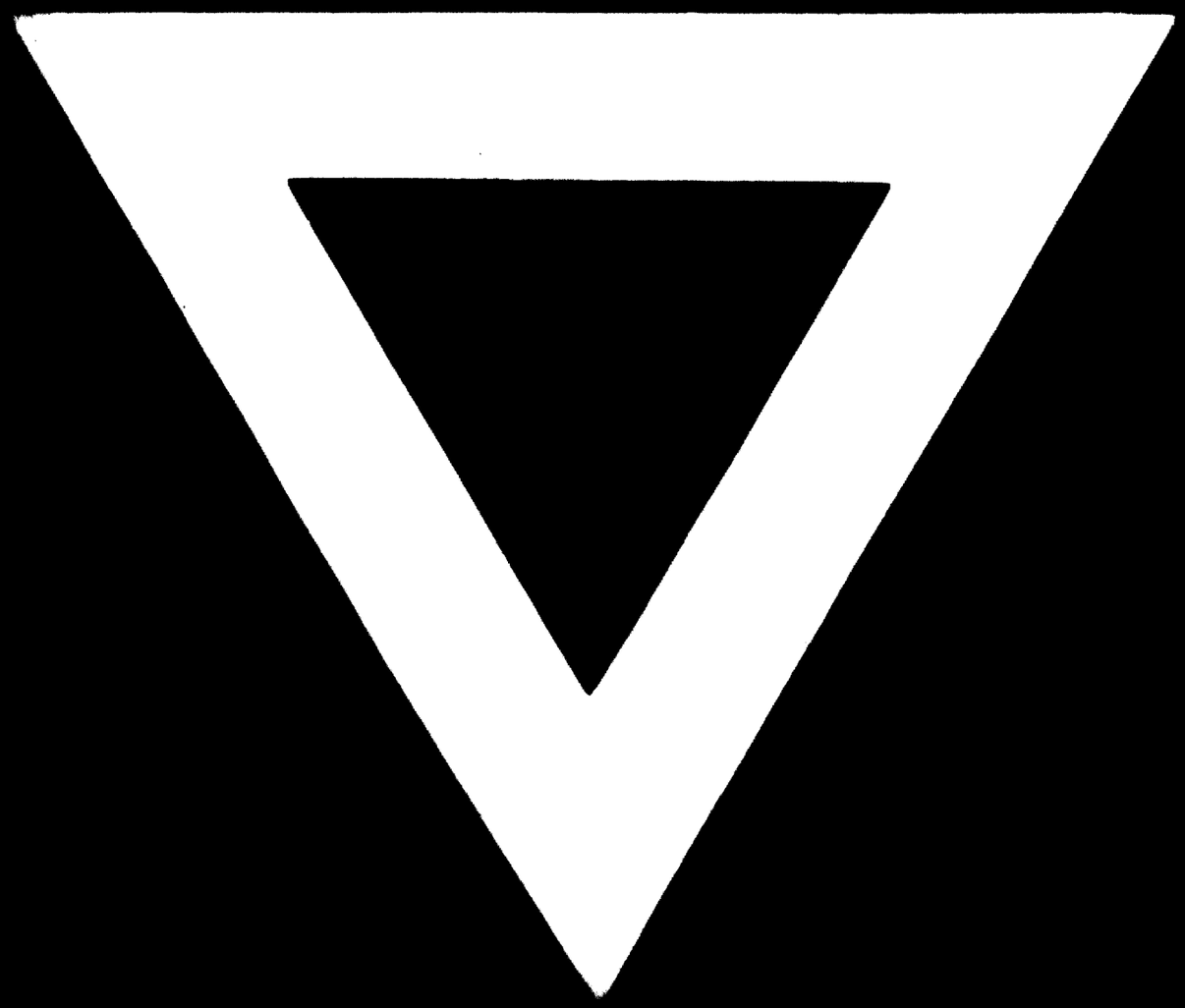


Fig. 3
Limitações Hídricas e Térmicas no Brasil
para o
SERINGUEIRA
Por A. Paes de Camargo
Baseados no Balanço Hídrico de
"THORNTHWAITE & MATHER – 1955"
Seção de Climatologia Agrícola do
INSTITUTO AGRONÔMICO – EST. de S. PAULO
1968
Deficiência hídrica: defict > 150 mm
Deficiência térmica: evapot. pot. < 550 mm
Área sem limitações hídricas ou térmicas
NOTA: Os valores em mm indicam a deficiência de água
Rio de Janeiro
60 mm
Cabo Frio
220 mm
Paranaguá
0 mm
Florianópolis
0 mm



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