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REPORT

ON

NORTHERN PORTUGAL AGRICULTURAL LIMESTONE

DISTRIBUTION PROGRAM

1981

PREPARED FOR: US. Department of Agriculture
Office of International Cooper-
ation and Development
and
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Development
and
PROCALFER Coordinating Committee
Ministry of Agriculture, Portugal

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I - INTRODUCTION

The consultant was requested to provide technical assistance to the Ministry of Agriculture, Portugal, and the industry in the implementation of the limestone distribution program for Regions 1, 2, 3 and 4. This technical assistance follows that given during February and March, 1981 (see Report on Northern Portugal Agricultural Limestone Distribution Program, Spring, 1981, Lauth, April 3, 1981) and during June and July, 1981 (see Report on Northern Portugal Agricultural Limestone Distribution Program, Spring, 1981, Lauth, July 6, 1981).

Specifically, the consultant was requested to: 1) review and analyze current operations and plans for production, warehousing, transportation, distribution and pricing with limestone producers, PROCALFER Coordinating Group, and unions of cooperatives; 2) recommend modifications and actions to achieve planned goals (Fall, 1981 - 45,000 tons; Spring, 1982 - 115,300 tons; Fall, 1982 - 103,700 tons); 3) develop delivered prices, including truck costs, rail costs, warehouse and handling costs; uniform farm prices; and variable subsidy amounts; 4) provide on-the-job training to MAP transportation employee and/or employee with Codical with distribution responsibilities; and 5) develop recommendations and assist in implementing a recordkeeping system for the amount of limestone delivered to local cooperatives, by origin and destination (monthly); the amount and location of limestone purchased by farmers (monthly); and warehousing, transportation and local handling costs (quarterly).

This report reviews the limestone distribution program of 1981, develops prospects for the 1982 program, presents recommendations for changes in 1982 and subsequent years, and reviews the training provided the MAP distribution specialist.

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II - REVIEW OF THE 1981 LIMESTONE DISTRIBUTION PROGRAM

1. Quantity Distributed.^{1/} It is expected that about 52,000 tons of agricultural limestone will be distributed to the four northern regions (Region 1,2,3 and 4) during 1981. This compares to an estimated total of 20,000 tons delivered to these regions in 1980.^{2/}

The amount distributed falls well short of the 1981 MAP goal of 95,000 tons established in November, 1980 ^{3/}, but well above the 18,000 ton goal provided by the Regional Services. ^{4/}

The 52,500 tonnage total includes an estimated 16,077 tons ^{5/} distributed outside the subsidy program, of which 6,576 tons were distributed by Quimigal in January, February and March, before the subsidy program was underway. ^{6/} The balance of 9,501 tons was shipped during the subsidy program to local cooperatives and individual farmers. It is likely that most of this amount was shipped to points in close proximity of the limestone plants where low transport costs effected a delivered price less than the subsidized uniform delivered price. There apparently were some shipments to longer distant points where the delivered price exceeded the subsidized uniform delivered price but were made because of the unaccessability of a local cooperative or one served by one of the 4 unions.

- ^{1/} 1981 shipments are based on shipments through November 1 with estimates for November and December provided by the unions.
- ^{2/} Records of the 3 known producers supplying these regions indicate 1980 sales as follows: SITROL - 3817 tons; SOLCALINA - 1229 tons; and CIMPOR - 17,817 tons for the total sales of 22,863 tons. It is estimated that between 85 and 90% of these total sales went to the 4 northern regions.
- ^{3/} Agricultural Limestone Distribution Study for Northern Portugal, Feb., 1981, Lauth, Snitzler, Tosterud, Pg. 122.
- ^{4/} Soil Correction, Ferlilization and Forage Program, First Part, July, 1981, Table 7-1.
- ^{5/} Based on discussions with CIMPOR, SITROL and SOLCALINA on Aug. 19, and September 1, 1981.
- ^{6/} Quimigal's exclusive contract with Cimpor to market agricultural limestone was cancelled March 31, 1981. This enabled the Unions to contract with Cimpor for limestone under the subsidy program. The first shipments from Cimpor under the subsidy program began in April, 1981.

The tonnage of limestone distributed under the subsidy program which began in March is expected to be 36,458 tons. Attachment No.1 shows the monthly distribution by union and by producer. Shipments to Ucanorte (Reg. 1) comprised 63.88% of the total, followed by Agroscoop (Reg. 3 and 4) with 14.14%, Corcoop (Reg.2) with 12.84%, and Unicentro (Reg. 3 and 4) with 9,14%. Sitrol was the largest supplier, shipping 69% while Cimpor shipped 31%. Monthly shipments during the year did not show great variation, The peak months were May, November and June (5,111;4650; and 4050 tons, respectively) while the low months were October and March (2324 and 2406 tons, respectively).

These tonnages, i.e., the 36,458 tons distributed under the subsidy program, are the amounts delivered to local cooperatives by the four unions. Conversations with ^{7/} each Union indicated that there will be little, if any, inventory at the local cooperative at year's end. All shipments will have been delivered to the farmer and either applied or held by the farmers.

2. Limestone Production.^{1/} Sitrol (69%) and Cimpor (31%) provided all the limestone sold under the subsidy program. No limestone was purchased from Solcalina as the Unions considered its FOB plant price (1030 esc./ton) too high and were concerned about its financial condition.^{8/} The three plants produced and shipped agricultural limestone in 1981 in the following quantities to the 4 northern regions:

	<u>Under the Subsidy Program</u>	<u>Outside the Subsidy Program</u>	<u>Total</u>
SITROL	25,156	3,001	28,157
CIMPOR	11,302	8,932	20,234
SOLCALINA	<u>0</u>	<u>4,144</u>	<u>4,144</u>
TOTAL	36,458	16,077	52,535

^{7/} Field trip by the consultant and Eng^o Victor Oliveira to each Union and each Regional Service, Nov. 3-7, 1981.

^{8/} Average debt service on the 2 year old plant totals 474 esc./ton assuming a 90,000 ton yearly production (memo of J.L.Pinheiro, AID, dated Sept. 10, 1981).

The 1981 estimated production capacity of SitroI and Cimpor ranges from a low of 50,000 tons to a high of 70,000 tons. (See attachment 2). It is the consultant's judgement that these two plants could have produced between 60,000 and 70,000 tons in 1981, and some increase in Solcalina's production could have been used, if the demand pressures were greater.

3. Limestone Distribution System and Transportation. The limestone distribution system is tied in to the government subsidy system and the structure set up to operate and administer the subsidy. The subsidy system for limestone in the North has been structured around local cooperatives and their Unions of Cooperatives. It was thought that operating the subsidy through local cooperatives would provide sufficient coverage and allow the private sector to make all the arrangements for purchasing, transporting, warehousing, distributing etc. Since most local cooperatives belong to one of the 4 regional Unions of Cooperatives the operation of the program (purchase, transport, distribution, warehousing) was given to each Union for their Cooperatives (generally corresponding to each Region) with policy direction, coordination and allocation, disbursement and accounting for subsidy funds coming from a central semi-government board, named CODICAL, comprised of the President of each Union and a MAP representative.

Thus local cooperatives place orders for limestone with its Union,^{10/} the Union purchases the limestone and arranges for transport either to the local cooperative or direct to the farmer. All bills for purchase, transport and administration are paid by the Unions who receive reimbursement from subsidy funds for the difference between the total delivered price, including administrative expenses, and the price paid by the local cooperative.^{11/}

^{10/} Corcoop, operating in Region 2, will accept orders direct from the farmers. Other Unions require the farmer to place orders through a local cooperative.

^{11/} The price paid by the local cooperative is the uniform subsidized farmer price less a margin for local cooperative handling. In 1981 this margin was 5 esc./sack for limestone in plastic bags and 7.5 esc./sack for limestone in paper bags.

The distribution system used by the Unions in 1981 was one of shipping direct by truck from the plants to numerous, widely scattered, local cooperatives or to farmers. Orders were placed with the plant when requests were received from the local cooperatives. Local cooperatives ordered on the basis of direct farmer requests or on their estimate of farmer demand, subject to their storage capability. The Unions did not add to local cooperative orders an amount to build up inventory as they lacked regional warehouse space. ^{12/}

The distribution system used is typical of one handling low volume and, as is the case here, where an industry is in its first year with increased volume uncertain. The Unions recognize the need for shipments, including rail shipments, to strategically located distribution warehouses and for expansion of local warehouse space for accumulation of inventory to meet the high seasonal demands and for handling larger volumes efficiently.

While plans ^{13/} were made for construction of regional warehouses and expansion of local cooperative space, there was no construction underway or completed in 1981. ^{14/}

^{12/} The Unions would only add to local cooperative orders when it was necessary to obtain a full truck load.

^{13/} See Report on Northern Portugal Agricultural Limestone Distribution Program, July 6, 1981, pg.11-13.

^{14/} There are some exceptions. The local cooperatives at Viseu and at Cantanhede have warehouses under construction to handle farm production supplies, including limestone. Agroscoop has almost completed the construction of a new Union warehouse of 2400 m² near Viseu (Mundão).

4. Local Delivery System. As stated, the subsidized purchase and distribution system delivers limestone only to local cooperatives, or, in some areas, direct to the farmers but only when the farmer orders through the local cooperative. Any farmer can purchase subsidized limestone from local cooperatives whether he is a member of the cooperative or not.^{15/} All of the Unions state that they will deliver, upon request, limestone under the subsidy program to any local cooperative regardless of whether such cooperative is a member of the Union.^{16/}

The accessibility of all farmers to a local cooperative, either in terms of time and distance or road conditions or availability of an adequate vehicle is an area where not enough information is known. The consultant is aware that, at least in the case of one Union (Agroscoop), their local cooperatives will deliver to farmers from the local cooperative at a charge. This practice is likely not extensive and limited in service offered. If there are farmers who do not have adequate access to a local cooperative the system needs to be adapted to meet their needs to provide equity and allow any neglected demand to be met.

5. Supply and Demand Situation. The supply system, i.e., the production, transportation, and distribution of limestone as well as the subsidy structure, could have delivered more limestone in 1981 if the demand was greater, particularly to Regions 3 and 4. How much more is uncertain. Production capacity is estimated at 60,000 to 70,000 tons, for 1981, with more available if the SOL-CALINA plant was used. Discussions with the Unions indicated that the trucking system and the direct

^{15/} Each farmer is required to present a soil analysis statement obtained through the Regional Services before the local cooperative can sell him subsidized limestone.

^{16/} Statements have been made by some Regional Services that this does not always happen. However it would seem good business practice for the Union.

distribution system for Regions 2, 3 and 4 could have handled twice the volume.^{17/} Setting up the mechanism for the subsidy was a constraint in the first several months of the program but seemed to be working smoothly during the balance of the year. The lack of subsidy funds in September, October and November ^{18/} caused a slow down in purchases at a time when demand was increasing for Autumn application. There was likely some demand not met because of farmers inaccessibility to a local cooperative. The lack of IFADAP credit for Union advance purchases in June, July, August and September contributed to a lower Autumn supply but was offset to some extent by Union purchases without low interest credit. ^{19/}.

In sum the 1981 production, truck transport and direct distribution system was likely capable of delivering between 60,000 and 80,000 tons. To that extent demand fell short of supply in 1981.

On the demand side, relative to the estimated regional needs established by MAP, the following table shows the response of each Region:

<u>REGION</u>	<u>TONS DELIVERED</u> <u>IN 1981,20/</u>	<u>%</u>	<u>No. of Hectares</u> <u>needed to receive</u> <u>Limestone in 1981-21/</u>	<u>%</u>
1	23,289	63.8	7,800	39.6
2	4,681	12.8	1,900	9.7
3	4,950	13.6	6,660	33.9
4	<u>3,538</u>	<u>9.7</u>	<u>3,300</u>	<u>16.8</u>
	36,458	100	19,660	100

Using this measure it appears that low demand in Region 3 and 4 created the low tonnages shipped, rather than supply difficulties.

^{17/} Based on discussions with each Union, June 24-26, 1981 and November 3-7, 1981.

^{18/} The subsidy funds deposited to Codical's account (20,000 contos) was depleted by the end of August. Purchases continued by the Unions without subsidy payment.

^{19/} Low interest credit (9.5%) was approved by the government on April 29, 1981 for the purchase of limestone. Approval for the use of this credit by the Unions was approved in June, 1981 and announced on June 26, 1981 in Porto. However IFADAP did not have its procedures and regulations ready until November, 1981.

20/ Calculated by consultant from Monthly Subsidy Forms by destinations shipped to in Regions 3 and 4 by Unicentro and Agroscoop. Unicentro's shipments to Region 3 and 4 were 82% and 18%, respectively. Agroscoop's shipments to Region 3 and 4 were 43% and 57%. respectively. Annual percentage based on shipments through September.

21/ Agricultural Limestone Distribution Study for Northern Portugal, Lauth, Snitzler, Tosterud, February 1981, Table 27.

6. Costs, Prices and Subsidy. The subsidized price to the farmer for limestone was announced for 1981 as 1200 esc./ton for regular limestone in plastic bags.^{22/} This uniform price was calculated from estimated delivered prices ^{23/} from one plant (Sitrol) to representative regional destinations, weighted to each Union by expected tonnage distribution of 5000 tons, to arrive at a weighted average delivered price of 1886.2 Esc./ton. Using a 700 ton average subsidy resulted in a uniform price to the farmer of 1200 Esc./ton.^{24/} Farmer prices for dolomitic limestone was set at 1300 Esc./ton. When Cimpor became a supplier in April the uniform farm price was set at 1100 Esc./ton for that product because its product was shipped only in paper bags and was generally considered of lower quality.^{25/}

Plant prices, FOB, to the Unions in Esc./ton, were as follows:

	<u>SITROL</u>	<u>CIMPOR</u>	<u>SOLCALINA</u>
Regular	820	600	1030 ^{<u>27/</u>}
Dolomitic	910 ^{<u>26/</u>}	-	-

22/ Announced February 27, 1981.

23/ Purchase price and estimated transport, unloading, local cooperative handling and Union administrative expenses.

24/ Report on Northern Portugal Agricultural Limestone Distribution Program, Lauth, April 3, 1981, Attachments 4 and 5.

25/ For calculation of the price difference see page 8, Report on Northern Portugal Agricultural Limestone Distribution Program, Lauth, July 6, 1981.

26/ Increased to 1140 Esc./ton in August, 1981.

27/ Effective in late March, 1981. The previous price was 1260 Esc/ton

Transportation charges for trucking were set under the subsidy program at a fixed ton/kilometer factor. While the consultant has not had the opportunity to review actual trucking charges paid, it is his opinion that there is not much variance between the two. This opinion is based on the close relation between the consultant's costs factor ^{28/} and the factors used by the Union as well as discussions with the Unions. The factors used were 3.744 Esc./ton/km in March, April and May and 3.87 Esc./ton/km for the rest of the year. Because of the high charge for short distances, the cost of trucking for distances of 90 kilometers or less is calculated at 350 Esc/ton.

Administrative expenses were not directly charged to the subsidy funds until June. In June and for the rest of the year administrative expenses were charged as follows:

- Fixed Administrative expense for employee engaged in purchasing ordering and arranging for transportation, scheduling deliveries, record-keeping, invoicing, program analysis, etc. ---20,000 Esc/month
- Variable Administrative Expense for postage, billing, telephone, correspondence, typing, clerical, etc. ----- 20 Esc/ton
- Expense for attendance at meetings of Codical or other meetings connected with limestone distribution ----- 11 Esc/Km traveled

Interest expenses were charged each month beginning in June. IFADAP had agreed that this 9.5% credit would be available to the Unions for purchase of limestone prior to the normal season application time. This would enable the Unions to purchase limestone in the "off-season" and either store it or give it to the farmer, without receiving payment from the farmer until 3 or 4 months after it was purchased by the Unions. The cost of this credit is then charged

28/ See Table 35, Agricultural Limestone Distribution Study for Northern Portugal, Lauth, Snitzler, Tosterud, Feb. 1981; attachments 2 and 5, Report on Northern Portugal Agricultural Limestone Distribution Program, Lauth, April, 1981; and Page 16, Report on Northern Portugal Agricultural Limestone Distribution Program, Lauth, July, 1981.

against the limestone subsidy funds at a rate of 38 Esc./ton per month.^{29/} While IFADAP credit for this purpose has not been available to the Unions,^{30/} the charge was made to cover the use of their funds for advance purchases.^{31/} Whether or not the Unions provided credit to the farmers during the Autumn application season is unknown to the consultant. If so, the interest expense for farmer credit was paid out of limestone subsidy funds.

Prices paid by the local cooperatives during 1981 were as follows:

Regular limestone, in plastic bags	---- 55 Esc/sac ; 1100 Esc/ton
Regular limestone, in paper bags	---- 47.5 Esc/sac ; 950 Esc/ton
Dolomitic limestone	---- 60 Esc/sac ; 1200 Esc/ton

Attachment 3 shows the monthly average costs per ton of limestone shipped under the subsidy program through September, 1981. Some of the significant points about the 1981 program from this data are:

1. Delivered costs to local cooperatives.

<u>UNION</u>	<u>PLANT PRICE</u>	<u>TRANSPORTATION</u>	<u>DELIVERED COST</u>
Ucanorte	762.12	995.75	1757.87
Unicentro	740.18	675.36	1415.54
Agroscoop	119.30	983.85	1763.15
Corcoop	735.83	1158.98	1921.81

The plant prices reflect the distribution of the two plants to the 4 Regions. Corcoop purchased relatively more Cimpor limestone than the others while Agroscoop purchased relatively more Sitrol limestone than the others. Corcoop's purchase of more Cimpor limestone than Sitrol helped to minimize its delivered price because of lower plant price and lower transport cost. Ucanorte and Agroscoop could lower their delivered prices with more purchase of Cimpor limestone.

^{29/} Based on the farmer price of 1200 Esc/ton and assuming an average 4 month repayment time by the farmers (1200 X 0,95 : 3)

^{30/} As of November 23, 1981

^{31/} A point could also be made by the Unions that this charge was additionally necessary to help offset the use of Union funds for purchase of limestone for the time subsidy funds were unavailable.

The transportation costs reflect the distance differences from the plants among the regions. In only one case - Unicentro - is the transportation cost less than the origin price.

The weighted average delivered cost is 1760.25 Esc/ton which compares to the estimate of 1886 Esc/ton used to arrive at the uniform farm price of 1200 Esc/ton.

2. Administrative Costs.

These costs were added to delivered costs beginning in June. Interest expense is included. The cost per ton of this expense varies widely from a low of 63.86 Esc/ton to a high of 703.20 Esc/ton (more than the purchase price) because of the fixed administrative expense of 20,000 Esc per month regardless of tonnage handled.

3. Subsidy Costs.

The weighted average subsidy costs, with administrative costs, since June are:

Ucanorte	745.36
Unicentro	613.07
Agroscoop	961.20
Corcoop	1005

The weighted average is 789.19. As tonnages are increased this average should decline as costs per ton of administrative costs will be less distorted by low tonnages. Subsidy funds have been based on 850 Esc/ton since June.

7. Credit. Credit lines were authorized by the government through IFADAP for the purchase of limestone (9.5%), the construction of warehouses for limestone (12%) and the construction or expansion of limestone plants (13.75%). This credit was approved by the government on April 29, 1981, but guidelines, regulations and the necessary forms were not available until November, 1981. Thus in 1981 credit was not available for limestone purchases, warehouses or plant construction, although some applications for warehouses and plants may have been submitted before year's end and some credit to the farmer for purchase

may have been provided in December, 1981.

8. Codical and Records, Reports. Codical operated in 1981 as an unofficial board as the necessary legal papers formalizing its organization, structure, duties and responsibilities were not finalized. Meetings were held at the call of the chairman (President of Uncanorte) to review problems and costs and to approve subsidy fund disbursement to each Union. Reports of tonnage shipped and costs were slow in being sent to the Coordinating Group but improved towards the end of the year. Eng^o Victor Oliveira was employed 32/ by MAP to work as a technical professional in limestone purchasing, transportation and distribution for the Coordinating Group and Codical.

32/ September 1, 1981.

III - PROSPECTS FOR THE 1982 LIMESTONE DISTRIBUTION PROGRAM

1. Distribution and Transportation System. Given that there will be no regional warehouses ready for use in 1982 and very little expansion in local warehouse space, the major constraint in 1982 to supply more limestone to meet increased demand will be the continued use of the direct plant to local cooperative, by truck, distribution system. This type of system has its volume limitations because of the coordination necessary to schedule shipments to numerous widely scattered local retail outlets, no means of building inventory during off-peak months and no use of volume rail shipments because of numerous low volume individual shipments.

While the consultants ^{33/} recommended the use of temporary space for use as regional warehouses in 1981 and 1982 as a transition to a higher volume bulk/bag and permanent regional warehouse distribution system such space has not been available and new construction has not gone forward because of low volume and lack of low interest credit. Thus the current plan of the Unions is to push the direct system to its limits in 1982 and gradually go to bulk/bag system beginning in 1983 - at least for the high volume areas. 1982 will then be a year of increasing volume with the direct distribution system and the construction of one or two bulk/bag warehouses and several permanent regional warehouses and expansion of local cooperative warehouse space.

It is difficult to judge the volume limitations of a direct plant to local cooperative truck system. In 1981, at 52,000 tons, there were no problems in getting trucks. The Unions believe the direct system can handle twice the 1981 volume with no major problems - or about 100,000 tons - particularly if close coordination between farmer pick-up and local cooperative shipment arrival can be achieved. They believe sufficient trucks are available to handle 100,000 tons.

33/ Agricultural Limestone Distribution Study for Northern Portugal,
Feb., 1981, Lauth, Snitzler, Tosterud.

Other than the volume limitations of the system which is going to have to be used in 1982, such a system can dampen demand by not always being able to supply limestone immediately in the quantity wanted and not having a "show-case" available at the local level. Demand pressure, on the other hand, will stimulate the needed investment in warehouses and production plants for 1983 and beyond.

Turning to 1983, Ucanorte is planning a 10,000 m2 warehouse in Maia (near Porto) for limestone and fertilizer. Construction is to be done in phases over several years to achieve the following volume for limestone (in tons):

	<u>In Sacks</u>	<u>In Bulk</u>	<u>Total</u>
1982	(36,000)	0	(36,000)
1983	6,000	48,000	54,000
1984	5,000	65,200	70,200
1985	4,000	87,260	91,260
1986	3,000	106,512	109,512
1987	2,000	129,444	131,414
1988	1,000	142,555	143,555
1989	0	157,910	157,910
1990		165,800	165,800

A rail siding is to be built to the warehouse where both bulk truck and bulk rail can be received. Bulk truck would be used for inbound limestone until the Douro River bridge ^{34/} is rebuilt to permit the use of 50-60 ton bulk rail cars. The bagging machine at Sitrol's present plant would be sold to Ucanorte in 1983 as Sitrol is scheduled to become mainly a bulk shipper. Ucanorte has requested a 20% subsidy and IFADAP credit for this warehouse. ^{35/}

Other planned construction for 1983 is a regional warehouse at Guarda or Mangualde by Agroscoop and a regional warehouse at Coimbra by Unicentro.

^{34/} Scheduled for 1983

^{35/} The planned 10,000 m2 for limestone and fertilizer is part of a large planned warehouse to handle Ucanorte's farm products as well.

Based on the MAP goals of 380,000 tons of limestone needed to be applied to Northern Portugal farms by 1985/1986 - a conservative goal considering that it is based on application to only 50% of the corn hectares in Regions 1,2,3 and 4 and 50% of the pastures in Region 2 and 4 - and given the actual 1981 experience and the 1982 distribution constraints, the consultant suggests changes to the application goals as follows:

	<u>MAP</u> <u>GOAL</u>	<u>REG. SER.</u> <u>GOAL</u>	<u>SUGGESTED</u> <u>GOAL</u>
1981	95,000	18,000	52,500 (Actual)
1982	219,000	53,000	90,000
1983	266,000	98,000	150,000
1984	302,000	168,000	250,000
1985	340,000	241,000	350,000
1986	380,000	-	380,000

Note: These are application goals. Production needs to exceed the application tonnage to accumulate inventory. The revised goals do not reflect the application rate of 5 tons the first year, 5 tons the second year and one ton each year thereafter as used in the yearly extension of the original MAP goals.

2. Limestone Production. Production capacity for 1982 is estimated at ranging between 156,000 tons and 240,000 tons (see Attachment 2). The higher estimate is obtainable by using maximum production from the Solcalina plant, the construction of a new plant by Corcoop by mid-year, and maximum production from Cimpor and Sitrol. Without using the Solcalina plant and without the operation of the new Corcoop plant, the production capacity for 1982 ranges between 66,000 tons and 90,000 tons.

Given the distribution system constraint of about 100,000 tons in 1982 the current production capacity is sufficient for 1982 provided some shortfall can be made up by using the Solcalina plant and some production from the new Corcoop plant. ^{36/}

^{36/} Corcoop applied for IFADAP credit in November, 1981 and should be operating in late 1982.

In 1982 construction needs to begin to increase production capacity to meet the established goal of 380,000 tons applied to farms in Regions 1,2,3, and 4 by 1985/6. Without expansion the highest production possible would be of 210,000 tons, including the Solcalina plant.

The Corcoop plant is planned for construction and operation in 1982 if IFADAP credit can be obtained. It is to be located at Campeã about 17 Kilometers from Vila-Real and will draw from two quarries, neither of which contain dolomitic limestone deposits. The area to be served will be Region 2, the Northern part of Region 3 and 4 and the western part of Region 1. The Corcoop Union organization was set up to produce limestone only for its member local cooperatives who are principally located in Region 2, but also some Corcoop locals are members of Ucanorte in Region 1 and Agroscoop in Regions 3 and 4. Coordination of the distribution of Corcoop limestone to Ucanorte and Agroscoop cooperatives and distribution by Ucanorte and Agroscoop will need to be achieved by Codical.^{37/} Construction of a new plant to produce dolomitic limestone is being considered by Corcoop for 1984/85 in the Castro Vicente or Vimiosa area.

The Sitrol plant at Rio Maior produced about 28,000 tons of agricultural limestone in 1981. Other limestone produced at the plant for the glass, animal feed, ceramic, construction, steel, paper and highway construction industries totaled 65,000 tons - for a total limestone production of about 93,000 tons. The agricultural limestone was produced in bags while the rest was shipped in bulk trucks. The restriction on the amount of agricultural limestone produced in 1981 was the absence of an automatic bagging machine which was obtained and operating by October 1981. Estimated 1982 production of agricultural limestone is 50,000 tons with 75,000 of other limestone for a total limestone production of 125,000 tons.

^{37/} While established to operate as a limestone producer, Corcoop began its operation in March 1981 as a distributor of limestone, under the limestone subsidy program, to any local cooperative in Region 2 as there was no other Union available in Region 2. When Corcoop becomes a producer of limestone there may be some question about propriety of having a Union who is both a producer and a distributor on the Board of Codical.

The Sitrol plant is the only producer of dolomitic limestone, producing in 1981 about 16% of total production. The soil tests completed in Northern Portugal reveal that about half the fields with low PH soils would benefit from magnesium.^{38/} Any expansion of limestone production should include expansion of the Sitrol plant to take advantage of its ability to draw from dolomitic quarries.^{39/}

Sitrol management has developed plans for expansion and an economic analysis of the costs. These are to be submitted to IFADAP for plant credit approval and the Coordinating Group for technical approval as soon as discussions are held with IFADAP to determine the necessary forms and data required under the IFADAP credit regulations ^{40/}. Generally, plans are to construct a new plant of 150,000 ton capacity at an industrial park within a few kilometers of the existing plant in two phases. Phase I will be the construction of a breaker-plant located between the two quarries (one calcium and the other dolomite) where limestone rock will be trucked and broken down to small rocks which will be trucked to the existing plant for final processing and bagging ^{41/} or bulk. Bagged limestone would be shipped initially until bulk shipments are gradually increased for Porto and possibly Mangualde or Guarda. Bulk shipments would be made by bulk tank truck (20 tons) to Santarém where direct transfer to rail bulk tank cars would take place. ^{42/} The capacity of this opera-

38/ Agricultural Limestone Distribution Study for Northern Portugal, February 1981, Lauth, Snitzler, Tosterud, page 20.

39/ One of the two Sitrol quarries is located in the largest dolomitic limestone deposit in Portugal (the southern half of the Serra dos Candeeiros). The only other potential source for dolomitic limestone to serve Northern Portugal is near Castro Vicente in the far Northeast.

40/ The consultant reviewed these plans on a visit to the Sitrol plant on November 13, 1981. The consultant referred Sitrol management to an IFADAP official for an explanation of the procedures required for plant credit, and explained the planned construction and system to the Chairman of the Coordinating Group on November 16, 1981.

41/ A high speed automatic machine of 60/80 tons per hour is planned.

42/ As volume increases small silos may be constructed along side the railroad tracks at Santarém for holding until transfer is made to rail cars.

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tion would be between 75,000 and 100,000 tons. The estimated cost is 100,000 contos. This expansion is necessary to be accomplished in 1982 to (1) increase agricultural limestone production for 1983; (2) accomodate the planned bulk/bag distribution warehouse at Porto in 1983; and (3) to provide for the increased use of dolomitic limestone needed in the Northern Portugal.

Preliminary price estimates for 100,000 tons in 1983/1984 have been computed as 1187 Esc./ton in sacks at the plant (compared to a 1981 price of 820 Esc./ton and a 1982 price of 980 Esc./ton) and 927 Esc./ton for bulk at the plant. The cost difference between bag and bulk is estimated at 330 Esc/ton for cost of the bagging machine and its operation. Truck cost to the railhead at Santarém is estimated at about 260 Esc./ton.

If demand increases, Phase 2 of Sitrol's planned expansion envisions building a new plant at a proposed industrial park to be located a few kilometers South of Rio Maior. Broken down limestone rock would then be shipped direct to this plant and shipped out by rail from a siding to be built from Santarém to the industrial park. The existing plant would then be used only for Sitrol's other limestone production.^{43/} The capacity of this operation would be 150,000 tons and the cost is estimated at 110,000 contos for a total project cost of Phase 1 and Phase 2 of about 210,000 contos.

Assuming construction of the first phase of Sitrol's expansion is completed during 1982 and Corcoop's plant is in operation, the 1983 maximum production capacity would be 175,000 tons (Cimpor-40,000; Sitrol-75,000; Corcoop-60,000), without production from Solcalina. In order to be assured of the revised goal of 150,000 tons to be applied in 1983, production capacity ^{44/} should approach 200,000 tons in order to build inventory and prepare for higher goals in 1984 and 1985. Additionally, some portion of the Sitrol's production is likely

43/ While there would be two separate plants (one for agricultural limestone and one for limestone for other purposes) the quarry operation and the "breaking operation" as well as the local trucks involved for movement between these facilities would be jointly used for both plants. Thus common and joint costs would be shared by both products.

44/ Cimpor's equipment is aged and may develop problems. Because of the aged equipment and that Cimpor is principally a cement producer with little interest in producing agricultural limestone, Cimpor pro-

duction should not be counted on beyond 1983. Note, however, that Cimpor production is critical in 1982.

to be siphoned off to the South depending upon the findings of a study of the South's limestone production, transportation and distribution needs and the demand of Southern agriculture.

Thus the needs for 1983, 1984 and 1985 require production capacity beyond that available in 1982. There are two responses to this additional need: (1) Use the existing facility at Solcalina; or (2) finance and construct a new plant. The consultant recommends that the solution be the use of the existing facility of Solcalina. It is a modern plant - only 2 years old - of modern equipment, capable currently of producing between 90,000 and 100,000 tons of agricultural limestone, in plastic bags or in bulk. Of all the three present plants it has the transportation location advantage of being considerably closer to the major consuming areas of Central and Northern Portugal. It would seem considerably preferable to work out a solution to use this facility rather than build a new one of similar size.

The fundamental problem of the Solcalina plant is its high debt which is causing its high FOB plant price and endangering its ability to stay in business. To finance the plant, Solcalina owners borrowed from a commercial bank 175 million escudos at an interest rate of 22% repayable in 5 years. Assuming a 90,000 ton production this has created an average debt service of 474 Esc/ton.

The government could provide a solution to this problem by re-financing the Solcalina plant through the IFADAP line of credit for limestone plants at 13.5% interest.^{45/} To achieve this would require

^{45/} In situations where credit is applied for through IFADAP for new plants or plant expansion or plant re-financing it may be argued that the amount of the credit is restricted to the part of the plant producing agricultural limestone (possibly based on the percentage of agricultural limestone production). The consultant would recommend that such credit not be so restricted as the prime beneficiary - agriculture - gains in the long run even though it may be subsidizing other industry in the short term to gain the long term benefit.

an interpretation of the IFADAP law for plant construction or expansion. It would seem more preferable and cheaper for the government to provide for refinancing than to finance a new 120,000 ton capacity plant.

Depending on volume achieved in 1982 and 1983 and the expected demand consideration should be given to increasing production capacity in 1983 or 1984 by construction of a new plant of 60,000 tons at Condeixa, near Coimbra, through IFADAP credit. 1983/1984 production capacity would then be:

SITROL	75,000 - 150,000
SOLCALINA	90,000 - 120,000
CORCOOP	60,000
CONDEIXA	60,000
	<hr/>
	285,000 - 390,000

This range of production capacity would then be able to meet the 1985/1986 goals. Any siphoning off to the South from Sitrol could be made by expansion of Solcalina production and construction of a new plant near Castro Vicente (which would replace dolomitic lost from Sitrol).

3. Local Delivery System. The flaw in the local delivery system which may need to be corrected for 1982 and beyond is the possibility that all farmers in the North do not have adequate access to a local cooperative for subsidized limestone. Location of all local cooperatives can be obtained from the Institute for Agricultural Cooperatives. Once this information is obtained probable problem areas can be identified and given to the Regional Services to check out locally. Once the areas have been firmly identified a solution can be worked out with Codical, the Unions and the local cooperatives. One suggested solution would be to arrange for trucking to the farm by the local cooperative with reimbursement by the Union to the local cooperative from subsidy funds for the cost of trucking. In this way the out-of-the-way farmer would still pay the uniform farm price and the margin for the particular local cooperative would be increased to cover the local trucking costs.

The consultant recommended a demonstration study for the Spring, 1982 to define the various methods by which bulk limestone could be delivered from local cooperatives to farms in the North (Report of July 6, 1981). Since bulk limestone may not be delivered to regional warehouses until the Porto operations begins in 1983 it may be well to hold this study off until the Spring of 1983. At that time actual demonstration shipments could be made from the Porto warehouse to explore the different ways that limestone could be delivered in bulk to farms.

Very little information exists from the 1981 program as to the amount of limestone actually applied, when applied, where applied, how applied (equipment used), and most importantly, on what crops applied. This information needs to be obtained at the farm level and can best be obtained when extension personnel visit farmers. The Procalfer Coordinator of each Regional Service should be requested to work with the Regional Service to establish a reporting system for this type of information, to be reported to the Procalfer Coordinating Group.

4. Costs, Prices and Subsidy. To accurately estimate delivered farm price and subsidy payments for 1982 the data contained in Attachment 3 needs to be completed and a more complete analysis made than what the consultant had time to do through September. The report system has been set up for Eng^o Victor Oliveira to receive the necessary monthly forms ^{46/} so that analysis and information can be provided to the Coordinating Group and Codical. This analysis and information is necessary so that Victor Oliveira can provide technical assistance to Codical and the Coordinating Group to: (1) evaluate the program; (2) identify problems and causes; (3) develop plans for the next season and year; (4) determine the amount of subsidy funds and changes in the average subsidy and/or changes in the uniform farm price, and technically approve credit applications from IFADAP for limestone purchase and plant or warehouse construction.

^{46/} This point needs follow-up to assure expeditions reporting. Also the reports should be re-designed to permit better readability and uniform reporting. The MAP representative on Codical should be the one to see that this is done.

The reporting forms should be available by the end of January, 1982 for the complete year. At that time Victor Oliveira should make his analysis with recommendations to the Coordinating Group and Codical by early or mid-February. Principally the analysis would include the recommended amount per ton upon which to base 1982 subsidy funds.

The consultant's preliminary analysis through September shows the average subsidy for all Unions, with high administrative costs per ton because of low tonnages, to be 789,19 Esc./ton, compared to the basis of 850 Esc/ton established in June, 1981. This figure should decline in October, November and December and in 1982 as administrative costs per ton decline. Of course, what must be considered for 1982 are expected FOB plant price increases (Sitrol's announced intention is to raise its price to 980 Esc/ton) and increases in the price of trucking.

With respect to specific cost items, the consultant makes the following comments:

- (1). The cost of trucking is an estimated charge based on 3.87 Esc/ton/Km with the exception that shipments of 90 Km or less are charged at a flat rate of 350 Esc/ton. Discussions with the Unions in early November, 1981, indicated that in most cases this factor was covering trucking charges ^{47/} The consultant agrees with the need to report estimated truck charges rather than actual paid charges in order to allow for negotiation incentives ^{48/}, but at the same time, recommends a review of actual charges to establish a base for the estimates. A judgement can then be made on what the factor should be, which will cover actual truck charges but allow sufficient margin for negotiation. This review should be conducted by Eng^o Victor Oliveira as soon as possible

^{47/} Corcoop stated that their trucking charges are likely to exceed the amount based on the 3.87 Esc. factor as their major contract with the trucker carrying about 80% of their shipments had recently been raised from 900 Esc/ton to 1000 Esc/ton

^{48/} This would not apply to rail shipments as rail charges are relatively fixed by the government. Charges actually paid on rail shipments should be made to the transportation account.

to determine whether any change in the factor is needed for 1982. In this review Eng^o Victor Oliveira should analyze each Union's actual transport cost to consider whether separate factors should be established for each Union, rather than the present universal factor.

- (2) The fixed administrative expense (20,000 Esc/month) regardless of tonnage handled should be closely monitored for the next several months. If tonnage remains low for some Unions it would not be justifiable to maintain this employee on the subsidy account. The yearly salary of 280,000 Esc. ^{49/}(\$4400) for a professional employee handling purchasing, warehousing, transportation and distribution is certainly not high if the employee is working full time at this job, and handling large tonnages.

The MAP representative to Codical should monitor this fixed administrative expense, as well as all administrative expenses being charged by the Unions to the subsidy account.

- (3) The interest expense (38 Esc/ton per month) charged to the subsidy funds since June, 1981 was based on an IFADAP loan of 9,5% to the Unions to enable the Union to buy limestone in the "off-season" (June, July, August, September) and either store it or give it to the farmer, without receiving payment from the farmer until 3 or 4 months after it was purchased by the Unions. Thus the credit obtained was not farmer credit but rather credit to the Union for advance purchase and, thus was considered a legitimate charge of interest expense chargeable by the Union to the limestone subsidy funds. Since the charge was based on repayment in the average of 4 months each monthly charge carries forward 4 months. It was not intended, then, that this interest charge was: (1) to cover farmer credit; and (2) to be used year-round, but rather to be charged, if loans were obtained, during "off-season" months of June, July, August, September and December, January, February and March.

49/ Based on a 14 month payment which is the usual practice in Portugal.

As it happened during the "off-season" the Unions did advance purchase but were unable to get the IFADAP credit. Thus they charged the subsidy funds with 38 Esc/ton per month for use of their own funds. It would seem that this is a legitimate charge through September.

The question is then raised about what, if any, charge for interest expense should be made in October and following months. In the Consultant's opinion the 38 Esc/ton interest expense does not apply in October or November for the purpose of reimbursing the Union for interest expense on advance purchases. It would apply in December and through March if the Unions receive an IFADAP loan for advance purchases during this time.

The availability of farmer credit, i.e., the farmer is the beneficiary of a 9.5 loan through IFADAP so that he can receive limestone without payment until some time later, was announced by the Minister of Agriculture on November 13, 1981. Although the consultant is not aware of the details of how this credit will work, it is clear that the Unions will administer much of the program by obtaining the IFADAP loan,^{50/} extending the loan to local cooperatives who will grant the credit to the farmer and some time later collect the product price and interest due from the farmer.

Any interest expense incurred by the Union (or any administrative expense) in the administration of the farmer credit program, as differentiated from approved advance purchase credit, should not be charged against the limestone subsidy funds.

^{50/} The purchase price may be loaned directly to the limestone plant with the Union receiving the difference between the purchase price and the farmer price.

5. Codical. Formalization of this semi-government board is needed to help clarify the roles of the Government and the Unions in the program and specify the duties of Codical members.

As stated in his July 7, 1981 report it is the consultant's view that Codical should be a policy, major decision, coordinating Board for the limestone purchase and distribution program. These functions should include the allocation, disbursement, and accounting for subsidy funds, be the central point for records, gather necessary data on the program, calculate uniform farm prices, recommend the subsidy amount, determine the variable subsidies, determine the allocation among Unions, reallocate supplies when surplusses or shortages exist and generally coordinate among the Unions the limestone purchase, transportation, warehouse and distribution program.

The MAP representative on Codical is the Minister of Agriculture's representative to assure that the government's financial interest in the program is protected, the program is operated efficiently and that all farmers benefit from the program. He should require the necessary information and data from each Union to prepare analyses of particular problems or policy areas. The analyses he requires can be obtained through the technical services of Eng^o Victor Oliveira.

6. Southern Portugal - Region 5,6 and 7. The Regional Services have established goals for limestone application in the Southern Regions of 5,6 and 7 as follows:

	<u>REGION 5</u>	<u>REGION 6</u>	<u>REGION 7</u>	<u>TOTAL</u>
1981	2,000	1,000	15,000	18,000
1982	3,000	44,000	19,000	66,000
1983	6,000	86,000	27,000	119,000
1984	10,000	128,000	30,000	168,000
1985	10,000	172,000	35,000	217,000

The Regional Services goal of 217,000 tons of limestone to be applied in the South by 1985 compares to the Regional Services goal of 241,000 tons to be applied in the four Northern Regions by 1985.

If these goals are to be met a study should be underway immediately to determine the number of limestone plants needed, the size of such plants, the type of distribution system needed and the structure for operating a subsidy program, if needed, for the South. The study would have to consider the current plant location and planned plant construction, warehouse plans, distribution system and subsidy structure of the North. Considering implementation time to achieve coordinated production, transportation, warehousing, distribution and subsidy administration, the study would need to be conducted in the Spring of 1982 for beginning the program in the Fall of 1983 - by which time, according to the Regional Services plans, 119,000 tons needs to be applied (for the year 1983).^{51/}

Beyond these established Regional Services goals for the South, additional pressures are mounting for the development of a program for limestone in the South. First, the program has been in effect for a year in the North whereby 36,000 tons of limestone were delivered to Northern farmers at a subsidized price. 1982 estimates are for about 90,000 tons and in 1983, 150,000 tons, to be under the subsidy program in the North. Secondly, IFADAP subsidized credit is being made available for construction of limestone plants and warehouses to facilitate the distribution system in the North. While the same subsidized credit is technically available for the Southern region, realistically it is not being provided because of the lack of a design system for the South as to the size and location of plants and warehouses. Thirdly, commitments are currently being made for subsidized credit for plants and warehouses in the North which may be used in the Southern system. For example, the Sitrol plant, the southern most plant of the northern region, is being considered for expansion to 150,000 ton capacity to serve the North. It may be that this plant, with its economies of scale, may be able to more economically serve a portion of the Southern Region than a smaller plant

^{51/} The consultant understands that, unlike the northern regions, the largest application of limestone in the South will take place in the Fall, particularly in Region 6.

located in the South closer to the consuming area.

Thus, in the consultant's judgement, a study developing the Southern design of a plant, warehouse, transport and distribution system should be conducted before private, independent decisions are made for the South, resulting in a less efficient and integrated system.

Before a production, transportation, warehouse and distribution system can be designed for the Southern Regions it is necessary to:

- (1) conduct a survey of limestone deposits in the Southern Region;
- (2) conduct a survey of existing agricultural limestone producers, identifying their location, production capacity and potential production capacity;
- (3) conduct a survey of existing plants which could produce agricultural limestone (such as marble plants), and identify their location, and potential production capacity;
- (4) establish the need for limestone for agriculture in the Southern Regions as to tonnage needed (5 years) and on what crops and where.
- (5) conduct an engineering study of limestone plants to determine the costs per ton at various levels of production. This type of cost data, unavailable to the consultants in the Northern Study, is critical to determination of the most economical size of plants and number of plants considering transport and distribution costs. The consultants in the Northern Study were able to develop transport/distribution cost curve, but not the production cost curve.

IV - TRAINING PROVIDED MAP TRANSPORTATION AND DISTRIBUTION SPECIALIST

Engº Victor Oliveira began work with the PROCALFER Coordinating Group on September 1, 1981 as a transportation and distribution specialist for the limestone program.

The consultant worked closely with Engº Oliveira during his visit (October 19, 1981 through November 24, 1981). All of the consultant's previous reports were reviewed by the consultant with Engº Oliveira, with particular attention to how transport costs, transport rates, and warehouse costs were developed.

The consultant also spent a week traveling with Engº Oliveira to each of the 4 Unions of Cooperatives and each Regional Services.

While the consultant did not have time to develop a separate detailed Work Plan for Engº Oliveira there are many items in this report which will demand his time and the consultant has discussed several items with him.

Additionally, the suggested activities outlined in the consultant's July 7 report (Pages 24-27) can still be used as a guideline for Engº Victor Oliveira's activities. The training for Engº Oliveira in the U.S. is still strongly recommended, possibly during the Summer of 1982.

In my opinion Engº Oliveira has developed well in a short time and will prove to be a valuable asset in the limestone program, and in the longer term, a valued employee of MAP working in the area of agricultural marketing, distribution and transportation.

V - RECOMMENDATIONS AND SUMMARY

The background and rationale for the recommendations offered is included in the preceding pages. Recommendations are designated by "R".

1. 52,000 tons of agricultural limestone is expected to be shipped during 1981, compared to 20,000 tons in 1980. Approximately 30% of this tonnage was delivered to farmers in the North without benefit of the subsidy program.

2. Shipments to Region 1 (68%) far exceeded shipments to other Regions. Shipments to Region 3 comprised 13.6% of the total; Region 2 received 12.8%; and Region 4, 9.7%. Sitrol supplied 69% of the limestone while Cimpor supplied the remaining 31%.

3. The distribution system used in 1981 was one of shipping direct, upon request, from plant to local cooperatives. No regional warehouses were used or built and none were under construction at year's end. No expansion in local cooperative warehouse space took place in 1981 and very little was under construction at the end of the year.

4. Credit for limestone purchase, plant construction and limestone warehouses was not available in 1981 (except possibly in late November and December), although such credit was authorized on April 29, 1981.

5. The subsidy system set up through the Unions and local cooperatives may not have reached all farmers in 1981 because of inaccessibility to local cooperatives.

6. Supply capability (production, transportation, distribution, and subsidy structure) slightly exceeded demand in 1981, particularly in Regions 3 and 4 (see table on page 7).

7. Transportation (trucking) costs exceeded the origin price of limestone in 1981, except in the case of Unicentro. Administrative costs, including the interest expense for advance purchase by the Unions,

were added to the delivered cost of limestone beginning in June, 1981. Some of these costs are fixed per month regardless of tonnage handled so that low tonnages distort the total cost per ton.

8. The weighted average subsidy cost for the 4 Unions, with administrative costs included, was 789.19 Esc./ton through September, 1981. The average subsidy upon which subsidy funds are advanced was increased from 700 Esc./ton to 850 Esc./ton in June, 1981.

9. Codical, the semi-government board operating the limestone subsidy program for coordination, policy direction and responsible for subsidy funds, operated informally throughout the year without a formal charter and without definition of specific responsibilities and authorities.

10. The major constraint to meeting increased demand and estimated needs in 1982 will be the mandatory use of the direct plant to local cooperative distribution system. Under this type of low volume system due to the lack of regional warehouses and local cooperative warehouse space, it is estimated that supply capabilities in 1982 will be limited to 90,000 to 100,000 tons.

"R" 11. Revise the MAP limestone application goals to reflect current constraints but to achieve conservatively estimated 1985/1986 needs. Such revision is suggested as follows:

	<u>MAP</u> <u>GOAL</u>	<u>REGIONAL SERVICES</u> <u>GOAL</u>	<u>SUGGESTED</u> <u>GOAL</u>
1981	95,000	18,000	52,000 (Actual)
1982	219,000	53,000	90,000
1983	266,000	98,000	150,000
1984	302,000	168,000	250,000
1985	340,000	241,000	350,000
1986	380,000	-	380,000

12. Realistic production in 1982 is estimated at between 66,000 and 90,000 tons - enough to meet the estimated goal. Some shortfall could be provided by Solcalina and the new Corcoop plant. Demand pressures may push the production and distribution capability, providing a spur to the necessary increased investment in plants and warehouses.

"R" 13. The planned regional warehouse at Maia, near Porto, to receive by bulk and ship out in bags is critically needed to be built in 1982 to begin operation in 1983 in order to get out of the limitations of the direct distribution system. IFADAP credit and MAP subsidy is likely necessary to get this done. Like urgency is needed for 1983 operation of a similar warehouse at Mangualde or Guarda, if volume in the surrounding regions develops. 1982 should also be a year of construction of additional local cooperative warehouse space. It is recommended that the Coordinating Group, Codical and the Unions work closely with IFADAP in accomplishing this critical need.

"R" 14. To meet the goals of 1983 and beyond for agricultural limestone in Northern Portugal the following priorities in plant construction and expansion is recommended:

- (1) Construct the Corcoop plant in 1982 for some 1982 production and full operation in 1983.
- (2) Expand the Sitrol plant to 75,000 tons (Phase I of its plan) in 1982 for full operation in 1983
- (3) Refinance the Solcalina plant in 1982 for full production beginning in 1983/1984.
- (4) Continue the expansion of Sitrol's plant to 150,000 tons (Phase II) in 1983 for operation in 1984.
- (5) Depending on volume achieved in 1982 and 1983 and expected demand at that time, consider the construction of a new plant at Condeixa, in 1983 for operation in 1983/1984.

If such construction and expansion is achieved, 1983/1984 production capacity would be:

SITROL	-	75,000/150,000
SOLCALINA	-	90,000/120,000
CORCOOP	-	60,000
CONDEIXA	-	<u>60,000</u>
		285,000/390,000

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The Coordinating Group, aided by Eng^o Victor Oliveira, should work closely with the involved plant managers and IFADAP to see that adequate financing is made available so that construction can begin for operation in 1983.

"R" 15. Determine if there is a problem with farmer accessibility to local cooperatives for subsidized limestone, where the problem exists, and develop a solution. Have Regional Services check out each identified problem area locally. Once the areas have been firmly identified a solution can be worked out with Codical, the Unions and the local cooperative. Recommend that Eng^o Victor Oliveira coordinate this effort and work closely with the Procalfer Regional Coordinators.

"R" 16. The Procalfer Regional Coordinator of each Regional Service should be requested to work with the Regional Services to establish a reporting service as to the amount of limestone actually applied on farms, when applied, where applied, how applied, and most importantly, on what crops applied. This information needs to be obtained at the farm level and can best be obtained when extension personnel visit farmers.

"R" 17. Postpone the bulk demonstration study, scheduled for the Spring, 1982 to possibly the Spring, 1983 when the Porto bulk operation should be underway.

"R" 18. The MAP representative on Codical should assure expeditious receipt of the "subsidy forms" (See Attachment 3 for the kind of information currently reported on these forms) from each Union and the timely sending of these forms to Eng^o Victor Oliveira. The MAP representative, in conjunction with Eng^o Oliveira, should develop a better designed form to improve readability and for more uniform reporting. The MAP representative should also do more than pass these forms around. He should review them carefully, look for problem areas and trends, seek additional information if needed from the Unions and call upon Eng^o Victor Oliveira for technical service. The consultant wishes to emphasize here a point made previously (July 6 Report). The Unions are needed to operate the limestone purchase, transportation, warehouse and distribution program, and consequently there is a need for the Unions to earn a reasonable margin in that operation. The government is to phase out its part in the program over the next 5

years as the private sector takes over completely. Government oversight, cost accounting and data requirements should not be so demanding and finally tuned so as to restrict and limit management initiative, incentive and free enterprise.

"R" 19. Maintain the current subsidy at 850 Esc/ton until Eng^o Victor Oliveira can analyze the data for October, November and December. Analysis through September indicate that the 850 Esc./ton need not be raised, but consideration needs to be given to increase in FOB prices and trucking costs.

20. Eng^o Victor Oliveira should review actual paid trucking charges of each Union to establish a base upon which to determine the trucking factor. Also he should consider in his analysis of each Union's truck charges whether a separate regional factor should be established.

"R" 21. The MAP representative to Codical should monitor the fixed administrative expenses, as well as all administrative expenses being charged by the Union.

"R" 22. The interest expense allowed for advance purchases of limestone in June, July, August and September should be permitted. The charge should not be allowed for October and November. An evaluation should be made by the Coordinating Group in conjunction with Codical as to its application in the future (In effect subsidized credit is being paid out of subsidy funds). Care should be taken by Codical, particularly the MAP representative, that no interest expense or administrative expense of the Unions in their administration of the current farmer credit program is charged against the subsidy funds for limestone.

"R" 23. The responsibilities and authorities of Codical need to be specifically defined and spelled out in writing. Is Codical responsible to the Coordinating Group? Or does it report to the Minister of MAP or a Secretary of State? What are the responsibilities and authorities of the Coordinating Group vis-a-vis Codical vis-a-vis the Ministry with respect to policy formulation in the limestone program, deter-

mination and approval of the amount of subsidy, the uniform farm price, specific cost increases, etc? Specifically, what are the duties and responsibilities of the MAP representative to Codical? What is his relationship to the Coordinating Group? Specifically, what are the duties and responsibilities of Engº Victor Oliveira with respect to Codical? These specific duties, responsibilities and authorities should be spelled out after consultation with the Minister, appropriate Secretaries of State and the Coordinating Group. Initiation of draft papers on these points should be by the Coordinating Group.

"R" 24. Engº Victor Oliveira's appointment as a MAP transportation and distribution specialist for agricultural commodities should be changed to a permanent employee status and the current month-to-month contractual arrangement cancelled. Engº Oliveira's immediate assignment is to work on the limestone program as technical advisor to both the Coordinating Group and Codical.

"R" 25. Conduct a design study for an agricultural limestone production, transportation, warehousing and distribution system for Regions 5, 6 and 7 integrated into the system developing for Region 1,2,3 and 4 in mid-1982. This study should be done after the surveys on limestone plants, deposits and demand (needs) and the study of production plant costs. The surveys can be conducted by MAP employees, possibly Regional Services employees, under instructions and supervision of Eng. Almeida Alves and Victor Oliveira. The engineering cost study would need to be done by a U.S. consultant intimately familiar with limestone plant construction and operating costs. It is probable that there are in existence cost curves for U.S. limestone plants which would only need to be modified for machinery, labor and material costs in Portugal. For design of the production, transport and distribution system the consultants who did the Northern Portugal study are recommended.

"R" 26. Follow-up with the implementation of the Northern system and continued on-the-job training of Engº Victor Oliveira is recommended.

This could be accomplished by the consultant in conjunction with the Southern study, if approved for mid-year (May, June, July).

"R" 27. Consideration should be given to the purchase of a small computer in Codical headquarters or the Coordinating Group headquarters to automate accounting and data information and to provide quick computation of cost items. Terminals could be installed at each Union for input and output access. Possibly other parts of the Procalfer program also have need for automatic data processing and computer capability.

"R" 28. The recommendations included in this report and the accompanying background and rationale affect several parties: the Coordinating Group; Codical; the Unions; limestone plant producers ; IFADAP; and Regional Services to name the major parties affected. The understanding and cooperation of all these parties is necessary to accomplish these recommendations. As a first step it is recommended that this report be sent to at least the above named parties, their comments asked for, and when received, an evaluation be made of the recommendations offered.

"R" 29. Consideration should be given to a letter of commendation from the Minister to Sr. Albino Correia, President of Ucanorte Union and Chairman of Codical for his leadership and foresight during the difficult first year of the limestone program.

SUMMARY OF LIMESTONE SHIPMENTS TO REGIONS 1,2,3 and 4, AS OF 11/1/81 AND ESTIMATED 1981

MONTH	LIMESTONE PLANT	UCANORTE Reg. 1	AGROSCOOP Reg. 3 & 4	UNICENTRO Reg. 3 & 4	CORCOOP Reg. 2	Monthly Total	Cumulative Total
<u>MARCH 1981</u>	<u>SITROL</u>	1457 Ton	646 Ton	183 Ton	120 Ton	2.406 Ton	2.406 Ton
<u>APRIL 1981</u>	<u>SITROL</u>	1196 Ton	440 Ton	443 Ton	180 Ton	2.259 Ton	5.605 Ton
	<u>CIMPOR</u>	480 Ton 1676 Ton	220 Ton 640 Ton	60 Ton 503 Ton	200 Ton 380 Ton	940 Ton 3.199 Ton	
<u>MAY 1981</u>	<u>SITROL</u>	1830 Ton	459 Ton	229 Ton	460 Ton	2.978 Ton	10.716 Ton
	<u>CIMPOR</u>	1101 Ton 2931 Ton	157 Ton 616 Ton	170 Ton 399 Ton	705 Ton 1165 Ton	2.133 Ton 5.111 Ton	
<u>JUNE 1981</u>	<u>SITROL</u>	1665 Ton	340 Ton	10 Ton	501 Ton	2.864 Ton	14.766 Ton
	<u>CIMPOR</u>	1104 Ton 2769 Ton	0 340 Ton	82 Ton 92 Ton	348 849 Ton	1.186 Ton 4.050 Ton	
<u>JULY 1981</u>	<u>SITROL</u>	2040 Ton	257 Ton	0 Ton	381 Ton	2.678 Ton	18.576 Ton
	<u>CIMPOR</u>	981 Ton 3022 Ton	0 Ton 257 Ton	40 Ton 40 Ton	110 Ton 491 Ton	1.131 Ton 3.810 Ton	
<u>AUGUST 1981</u>	<u>SITROL</u>	2306 Ton	152 Ton	0 Ton	79 Ton	2.537 Ton	22.381 Ton
	<u>CIMPOR</u>	1113 Ton 3419 Ton	120 Ton 272 Ton	35 Ton 35 Ton	0 Ton 79 Ton	1.268 Ton 3.805 Ton	

SUMMARY OF LIMESTONE SHIPMENTS TO REGIONS 1, 2, 3 and 4, AS OF 11/1/81 AND ESTIMATED 1981

MONTH	LIMESTONE PLANT	UCANORIE Reg. 1	AGROSCOOP Reg. 3 & 4	UNICENTRO Reg. 3 & 4	CORCOOP Reg. 2	Monthly Total	Cumulative Total	
<u>SEPTEMBER 1981</u>	<u>SITPOL</u>	1684 Ton	243 Ton		297 Ton	2.224 Ton	25.634 Ton	1/ Based on interviews with each Union Nov. 3, 1981 through Nov. 6, 1981.
	<u>CIMPOR</u>	731 Ton 2415 Ton	140 Ton 383 Ton	158 Ton 158 Ton	297 Ton	1.029 Ton 3.253 Ton		
<u>OCTOBER 1981</u>	<u>SITPOL</u>	460 Ton	251 Ton	160 Ton	350 Ton	1.221 Ton	27.958 Ton	2/ Based on following estimates obtained by visits to plants on Aug. 19, 1981 and Sept. 1, 1981 (J.L. Pinheiro memos of Aug. 20 and Sept. 10, 1981): SITPOL - 2000 Tons thru Aug CIMPOR - 2146 Tons " " SOLCALINA - 2763 Tons " "
	<u>CIMPOR</u>	340 Ton 800 Ton	350 Ton 601 Ton	413 Ton 573 Ton	350 Ton	1.103 Ton 2.324 Ton		
<u>NOVEMBER 1981</u> (Estimated) ^{1/}		2400 Ton	700 Ton	750 Ton	800 Ton	4.650 Ton	32.608 Ton	12,909 Tons thru Aug
<u>DECEMBER 1981</u> (Estimated) ^{1/}		2400 Ton	700 Ton	600 Ton	150 Ton	3.850 Ton	36.458 Ton	The CIMPOR figure includes 6,576 tons sold to Quimical in Jan., Feb., and March before the contract was cancelled. This amount was subtracted from the 8 month total to arrive at an estimated monthly average of 792 tons (792 X 4 = 3.168 + 12.909 = 16.077).
Total Distributed Under the Subsidy Program		23.289 Ton	5.155 Ton	3.333 Ton	4.681 Ton		36.458 Ton	
% of Total		63.88%	14.14%	9.14%	12.84%			
Estimated Amount Distributed Outside the Subsidy Program ^{2/}							16,077 Ton	
T O T A L							52,535 Ton	

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PRODUCTION CAPACITY OF LIMESTONE PLANTS IN NORTHERN PORTUGAL FOR 1981 AND 1982 AND PROJECTED PRODUCTION CAPACITY FOR 1983 AND 1984 (TON)

LIMESTONE PLANT	1981		1982		1983		1984	
	MINIMUM	HIGH	MINIMUM	HIGH	PROJECTED	PROJECTED		
CIMPOR	26,000	30,000	26,000	40,000	40,000	40,000		
SITROL	24,000	40,000	40,000	50,000	75,000 ^{4/}	150,000 ^{4/}		
SOLCALINA	90,000	120,000	90,000	120,000	120,000	120,000		
CORCOOP ^{1/}	-0-	-0-	-0-	30,000 ^{5/}	60,000	60,000		
AGROCALCIO ^{2/}	-0-	-0-	-0-	-0-	30,000 ^{6/}	60,000		
VIMIOSA ^{3/}	-0-	-0-	-0-	-0-	30,000	30,000		
TOTAL	140,000	190,000	156,000	240,000	355,000	460,000		
WITHOUT SOLCALINA AND CORCOOP	50,000	70,000	66,000	90,000				
WITHOUT SOLCALINA	50,000	70,000	66,000	120,000				
^{1/} Proposed plant is to be constructed at Campeã, near Vila Real.								
^{2/} Proposed plant to be located at Conceixa.								
^{3/} Proposed plant in the for northwest likely to be built by Corcoop near Vimiosa or Castro Vicente where there are large dolomitic deposits.								
^{4/} A new "busher" plant is proposed for the first stage of expansion. The second stage would involve a new plant.								
^{5/} Based on operating one half year.								
^{6/} Based on operating one half year.								

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MONTHLY AVERAGE COSTS PER TON OF LIMESTONE SHIPPED UNDER THE SUBSIDY PROGRAM TO REGIONS 1, 2, AND 4
(ESC. PER TON)

	UNION	1981	TONS	FOB PLANT PRICE	TRANSPORT. COST	DELIVERED COST	ADMINIST. COST	DELIVERED COST W/ADMIN.COST	S U B S I D Y		PRICE PAID BY LOCAL COOPERATIVE	
		MONTH							WITH ADM. COST	WITHOUT ADM. COST		
REG. 1	UCANORTE	MARCH	1458	830.47	1009.74	1840.21	-0-	1840.21	726.26	726.26	1113.95	
		ABRIL	1676	780.17	1023.68	1803.85	-0-	1803.85	744.01	744.01	1059.84	
		MAY	2931	742.92	1019.51	1762.43	-0-	1762.43	720.45	720.45	1041.98	
		JUNE	2769	737.52	1006.11	1743.63	65.22	1808.85	766.94	701.72	1641.90	
		JULY	3022	750.77	1004.03	1754.75	64.62	1819.37	744.51	679.89	1674.90	
		AUGUST	3418	762.86	958.96	1721.82	63.86	1785.68	727.68	663.82	1052.99	
		SEPTEMBER	2415	773.02	968.94	1741.96	72.08	1814.04	747.69	674.61	1067.35	
		Weighted Averages			762.12	995.75	1757.67					
		Weighted Average Subsidy with Adm. Costs for June, July, Aug., Sept. =										745.36
REG. 3 & 4	UNICENTRO	MARCH	183	829.59	683.53	1513.12	-0-	1513.12	402.46	402.46	1110.66	
		APRIL	575	794.97	731.60	1526.58	-0-	1526.58	444.74	444.74	1081.84	
		MAY	327	705.01	598.84	1303.86	-0-	1303.86	281.08	281.08	1022.78	
		JUNE	92	623.91	634.76	1258.67	338.22	1597.19	630.89	292.37	966.30	
		JULY	40	600	795.27	1295.27	703.26	2098.47	1148.47	445.27	950	
		AUGUST	35	600	680.49	1280.19	629.43	1909.92	959.92	330.50	950	
		SEPTEMBER	218	670.64	629.41	300.06	149.74	1449.80	451.63	301.89	998.16	
		Weighted Averages			740.18	675.36	1415.54					
		Weighted Average Subsidy with Adm. Costs for June, July, Aug., Sept. =										613.09
REG. 3 & 4	AGROSCOOP	MARCH	456	824.70	1005.13	1828.01	-0-	1828.01	724.87	724.87	1103.15	
		APRIL	912	768.34	917.79	1684.80	-0-	1684.80	620.25	620.25	1064.56	
		MAY	565	724.99	770.14	1495.13	-0-	1495.13	487.70	487.70	1007.43	
		JUNE	340	851.23	1123.07	1977.61	133	2110.61	972.60	839.60	1134.71	
		JULY	257	880.23	1191.93	2072.28	146.52	2218.82	1059.82	905.24	1166.93	
		AUGUST	272	723.99	1149.51	2094.09	151.82	2245.91	990.08	838.26	1035.24	
		SEPTEMBER	384	739.26	1052.85	1792.11	117.21	1909.32	864.73	747.52	1044.60	
		Weighted Averages			779.30	983.85	1763.15					
		Weighted Average Subsidy with Adm. Costs for June, July, Aug., Sept. =										961.20

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ATTACHMENT 3
 MONTHLY AVERAGE COSTS PER TON OF LIMESTONE SHIPPED UNDER THE SUBSIDY PROGRAM TO REGIONS 1, 2, 3 AND 4

UNION	1981 MONTH	TONS	FOR PLANT PRICE	(ESC. PER TON)			ADMINIST. COST	DELIVERED COST	S U B S I D Y		PRICE PAID BY LOCAL COOPERATIVE
				TRANSPORT. COST	DELIVERED COST	W/ADMIN.COST			WITH ADM. COST	WITHOUT ADM. COST	
REG. 2	CORCOOP	MARCH	80	820	1383.40	2203.40	-0-	2203.40	1130.94	1130.94	1100
		APRIL	458	747.90	1208.69	1956.57	-0-	1965.57	904.17	904.17	1652.41
		MAY	1127	675.35	1152.12	1783.11	-0-	1783.11	852.53	852.53	1001.90
		JUNE	809	733.84	1098.19	1832.03	89.55	1921.58	857.94	786.39	1045.64
		JULY	490	788.61	1187.77	1976.39	104.43	2080.82	994.49	890.06	1086.33
		AUGUST	80	820	1157.12	1977.12	342.37	2319.49	1219.49	877.12	1100
		SEPTEMBER	297	820	1470.82	2290.82	125.34	2416.16	1316.16	1190.82	1100
		Weighted Averages		735.83	1185.98	1921.81					
		Weighted Average Subsidy with Adm. Costs for June, July, August, Sept. = 1005									
SOURCE: Forms for calculation of limestone subsidy funds submitted each month by each Union to Coical for payment of subsidy due for preceding month.											

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