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THE SAN JULIAN CONSOLIDATION PROJECT

SOCIAL ANALYSIS

WORKING PAPER N° 5

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I. INTRODUCTION

1. The San Julian Colonization project is located on aluvial soils in the semi-tropical lowlands of Santa Cruz, Bolivia, at an elevation of approximately 1,400 feet above sea level. The area is heavily forested.

2. Settlement began through spontaneous colonization in the late 1960's and early 1970's in areas number 1, 2, 3 and 4 (Figure 1). These settlements are in an extended line village pattern with long, narrow parcels fronting on the road. Beginning in 1972, settlement occurred following a different pattern of land division, explained below, in nucleos, a nucleated village arrangement, numbered 1 through 60 in Figure 1. Nucleos 1 through 9 were settled between 1972 and 1977. The remaining nucleos were settled beginning in 1977 and now reach to nucleo 39.

3. The Instituto Nacional de Colonización (National Institute of Colonization, INC) provides, partly with USAID funds, basic infrastructure consisting of roads and a well located in each nucleo. Settlers clear their farmland and forest and build their houses.

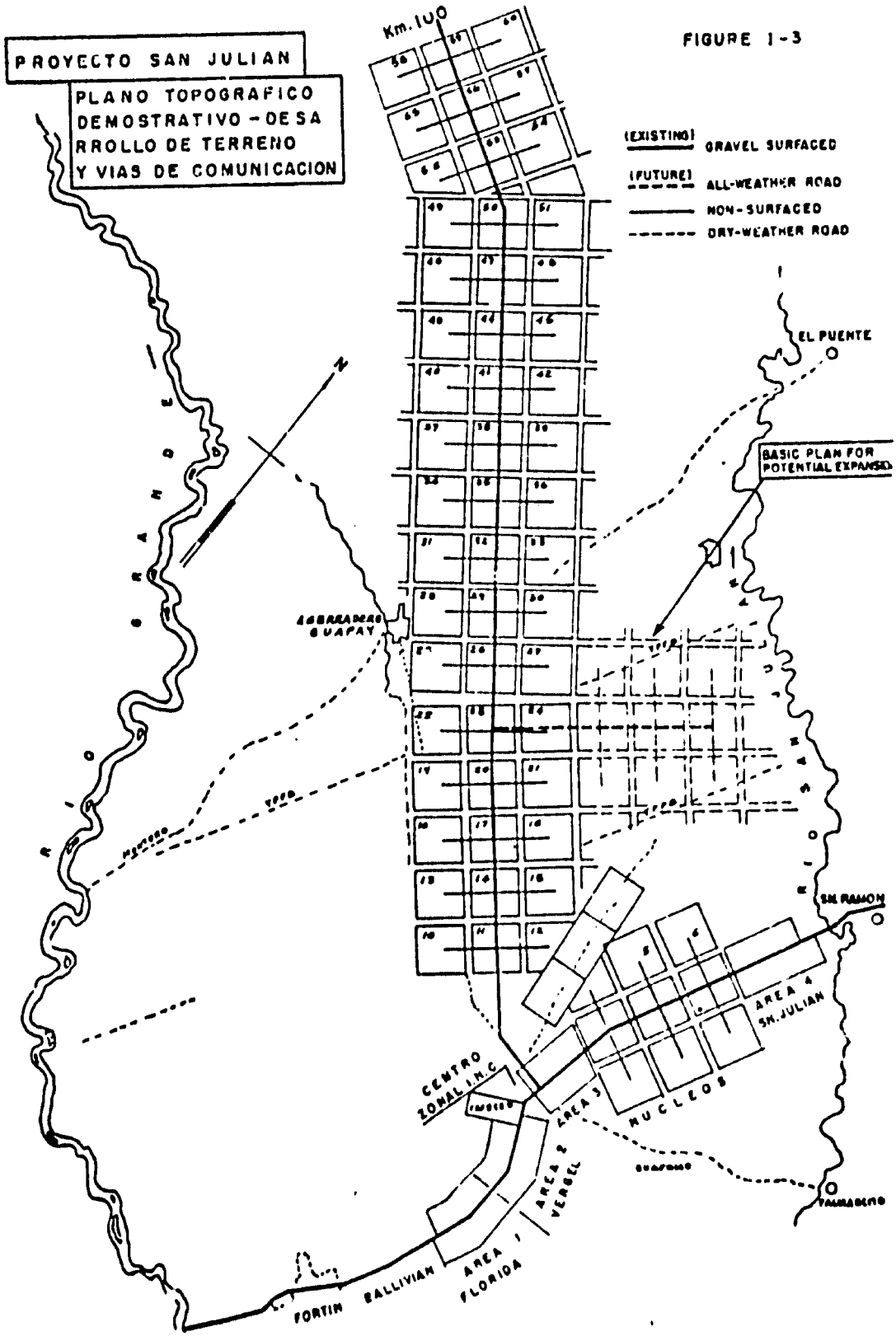
PROYECTO SAN JULIAN
PLANO TOPOGRAFICO DEMOSTRATIVO - DESARROLLO DE TERRENO Y VIAS DE COMUNICACION
Km. 100
(EXISTING) GRAVEL SURFACED
(FUTURE) ALL-WEATHER ROAD
NON-SURFACED
DRY-WEATHER ROAD
EL PUENTE
BASIC PLAN FOR POTENTIAL EXPANSION
N
RIO GRANDE
RIO SAN JULIAN
SN. RAMON
AREA 4 SN. JULIAN
NUCLEOS
AREA 3
AREA 2 VERGEL
AREA 1 FLORIDA
CENTRO ZONAL I.N.C.
FORTIN BALLIVIAN

FIGURE 1-3

II. MAN-LAND RELATIONS

A. Land Division and Size of Holdings

1. An ingenious innovative land division scheme has been adopted for the nucleos of the San Julian Colonization project. Each nucleo, a square tract of 2,000 hectares, is divided in radial fashion into 40-50 hectare parcels, each of which has frontage on a central square (Figure 2). Houses are built fronting on the square which is used as the location of community centers such as the school health post, small businesses and other services. Settlers erect their dwellings in the central block or on their individually assigned parcels, as they choose. The nucleo thus forms a community of 40 settler households. Additional households are frequently found consisting of non-agricultural workers such as a schoolteacher, store owner, priest.

2. This arrangement is economically efficient, as compared with the Andean village which is characterized by nucleated housing but widely scattered farm plots. The project system reduces the time and effort spent in going to and form house to plot and transportating from one to the other. Andean villagers often find it necessary to pont guard over the fields at harvest time due to their remoteness.

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NO. 4

3. The social advantages of spatial compactness of the population resulting from nucleated housing are kept. These include the development of community solidarity and institutions and efficiency in the provision of services whether schools, roads, health care or agricultural extension.

4. The colonization project further specifies that the central nucleo in each set of nine be designated as a Núcleo Agricola de Producción Asociada (Associated Production Agricultural Nucleo) commonly known by its acronym, NADEPA (Fig. 3). The NADEPA thus becomes a center for 360 farm families. An "urban" lot at the NADEPA nucleo is assigned to each of the 320 families who reside in the other eight nucleos forming the NADEPA. The central nucleo is to be the location of services benefitting all families in the nine-nucleo NADEPA such as, consumer cooperative warehouses, small agribusinesses health care services and schools.

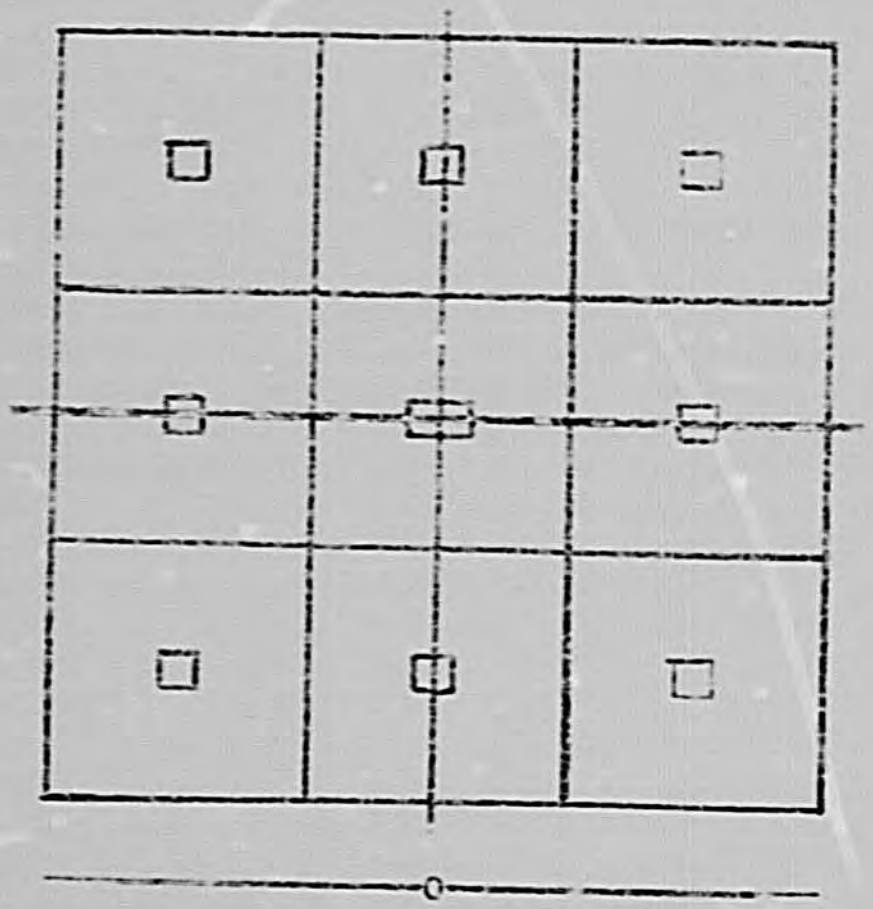
5. The distance between the center of any two nucleos as five kilometers. However, given the distribution pattern of access roads, the distance by road between nucleos not directly connected by a road is 15 kilometers (Fig. 1). Each nucleo is surrounded by a green belt Buffer zone of forest 500 meters in depth.

NADEPA

NUCLEOS AGRICOLAS DE PRODUCCION ASOCIADA

SUPERFICIE TOTAL 18000 HAS.

CAPACIDAD DE POBLACION 360 FAMILIAS



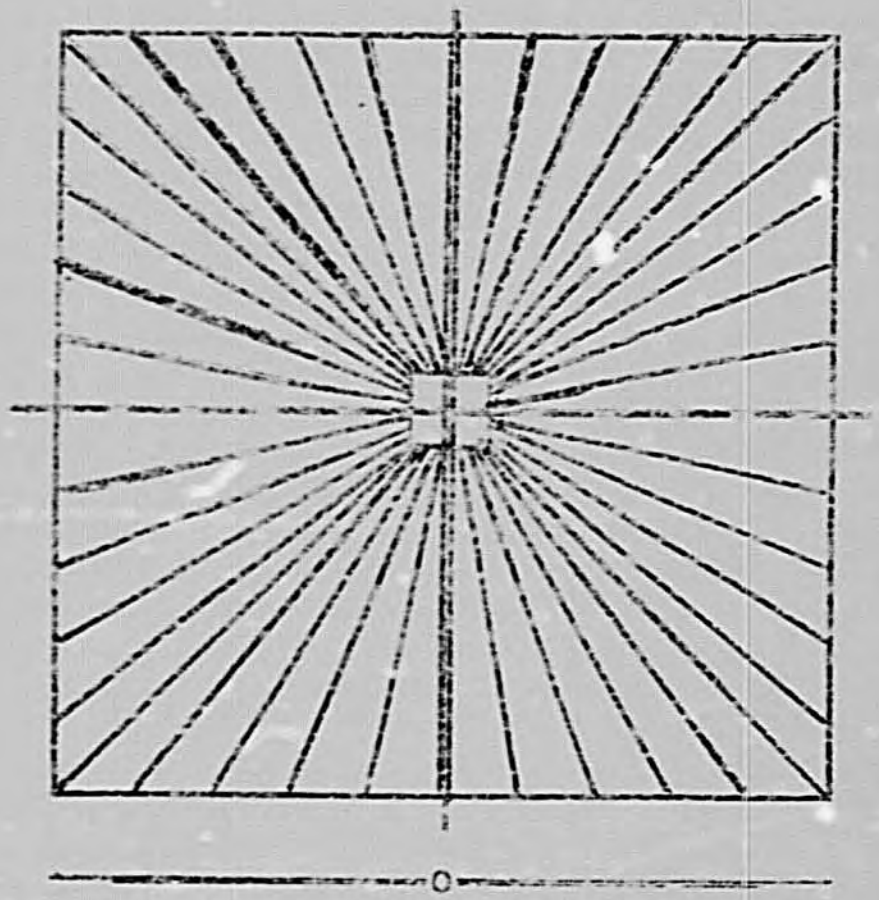
NUCLEO

CON CENTRO COMUNAL

SUPERFICIE 2000 HAS.

SUP. DE DOTACION 50 HAS. P/FLIA.

CAPACIDAD 40 FAMILIAS



6. In the "semi-directed" colonization plan, the Institute of Colonization is allotted a block of land for assignment to settlers, in the case of San Julian, 250,000 hectares (Figure 1). At the successful completion of the four-month orientation conducted by the United Church Committees settler applicants are awarded a Certificado de Asentamiento (Certificate of Settlement) and are promised a binding deed of title at the end of two years of exploitation.

7. Three areas of dissatisfaction among the settlers with the INC land tenure plan were noted. The first was the uncertainty of a clean title. There are two notable cases.

8. a) The settlers of San Julian Project Nucleo 25 (Figure 1) were forced to evacuate their allotted parcels when a person from the outside claimed the land with the support of a prior deed of title.

9. b) In September, 1979, a person from the outside initiated action against 60 settlers placed by INC in an area west of the San Julian Project area in 1975, claiming legal title to the land they occupied.

10. The second area of dissatisfaction was with prolonged, general delinquency in the part of the responsible authorities in its issuance of deeds of titles to the settlers duly qualifying under terms of their agreement with INC.

11. San Julian project settlers who have been placed on their parcels by INC for as long as 10 years have not received their deeds of title. Yapacani Colony settlers, who have officially occupied their parcels for 15 years, so for have not received deeds of title to their parcels.

12. Many San Julian settlers do not feel insecure in their tenure because of the issuance of the Certificate of Settlement. Still, they are desirous of obtaining titles because they believe that having a title they will be able to obtain production credit from the Agricultural Bank of Bolivia, (BAB). Until clear titles are issued a potential will exist for the expulsion of settlers from project lands. A logical solution would be for the National Institute of Colonization to obtain a clear title to lands to be settled through a cadastral survey and title search. The deed of title would be transfered from INC to the settlers promptly on the last day of their second year of occupance. This should be a condition precedent to further, outside assistance to the colonization of the area.

13. The third area of concern on the part of the settlers to the ownership and control of the 500 meter green belt plots surround and separate the nucleos. There are 25,000 hectares in the green belts in San Julian project area (Figure 1). The colonists, who have been thoroughly indoctrinated with the spirit cooperativeness in the

orientation program, feel that the green belts righfully belong to the nucleos. They are deeply concerned about the present exploitation of the timber in the green belts with no benefits accruing to them. One researcher indicates that the question of assigning the green belts to the settler was entertained in INC, but not acted upon because of the lack of a concensus.

14. The preliminary steps of setting aside such adequate buffers of climax vegetation is unique among colonization schemes. Certainly it should not be allowed to be lost due to conflict of interest. The 500 meter greenbelts with all the vegetation, including timber, that they have now and in the future, should be deeded to the settlers they surround in the form of NADFPA cooperatives. The cooperative with technical assistance from the appropriate sources would be encouraged to implement a perpetual growth forest maintenance program. The greenbelts would serve as physical incremental buffers (against wind erosion) and wildlife refuges as planned. The timber income from the greenbelts would be devoted to the provision of social services to the nucleos, including education, health, and roads. This should be a condition precedent to further outside assistance to the colonization of the area.

15. Although the Institute of Colonization provides the services of surveyors to demonstrate the bounds of the parcels allotted to the settlers, most have no more than a vague idea of where their respective bounds are due no doubt to the density of the vegetation, there are no survey in the recent settlement areas, at least, of lines, which tends to substantiate the above observation. Despite the cost of surveying property lines in dense undergrowth, it seems important that it be done in advance of settlement, as it is the only reason of showing an applicant for settlement what he is getting. This is illustrated in the recent settlement of a nucleo. After they had accepted the last of the group of forty settlers it was discovered that 200 hectares of their allotted 2,000 hectares was marshland, unsuited to cultivation. They resolved the issue amicably by informally agreeing among themselves to each take a 10 percent reduction in his personal allotment and hold the marshland in a cooperative trust. Ideally, the marsh would have been isolated in a presettlement survey and held as environmental reserve and wildlife refuge.

16. As a matter of social equity this supports the desirability of a land use potentials survey at a scale no smaller than 1:40,000 in advance of any new settlements. The inclusion of the practice should be considered as a condition precedent to further outside assistance to the colonization of the area.

III. SELECTED CHARACTERISTICS OF THE TARGET POPULATION

A. Size of Households

1. San Julian households are relatively small. Average household size for the entire colony is 3.8 persons (Table 1). Household size increases with length of time settled. Settlers who have lived in the colony for three or more years have a significantly larger household than those settled for only one year. With the passage of time household size will probably increase to an average of about 5 persons.

Table 1. Average Number of Persons in Household by Length of Time Settled in the Land San Julian Project Area, 1978

Length of Time Settled	Average Number of Persons per Household
One year	3.2
2-3 years	3.3
3 or more years	4.3
Total	3.8

Source: Harry Wing, Preliminary Tabulation of San Julian Colonization Survey Data, La Paz: USAID, May, 1979, Tabla 1.

2. In common with most pioneer settlements, San Julian has a disproportionately large proportion of single person households. Twenty four percent of households fall into that category (Table 2).

3. The proportion of single person households decreases with the length presidence in the colony from 31 percent single among colonists who have resided in San Julian for one year to 11 percent for those who have resided there for three or more years. As time goes by the proportion singles will tend to increase.

Table 2. Percent of Single Person Households by Length of Time Settled on Land, San Julian, 1978.

Length of Time Settled	Percent Single Person Households
One year	30.7
2-3 years	25.0
3 or more years	10.5
Total	23.8

Source: Harry Wing, Preliminary Tabulation of San Julian Colonization Project Data. La Paz:USAID, May, 1979, Table 1.

B. Literacy Level

4. Just over one half of the settlers residing in San Julian in 1976 reported that they can read and write (Table 3). The percent literate, so defined, ranged from 41 percent in area 4 to 57 percent in Nucleos 8, 11 and 14. Generally speaking the more recently settled zones have higher reported literacy rates. An unknown but possibly large fraction of those reporting the ability to read and write are likely to be functional illiterates. Communication programs need to take this into account. An interesting datum that is not available is the percent of households that have at least one literate member. Research has shown that written communication will reach the numbers of such households through the literate member.

Table 3. Percent of the Population Five Years Old or Older that Can Read and Write, By Zone, San Julian, 1976 (N = 1956).

Zone	Percent Literate
Area 1	42.7
Area 2	53.8
Area 3	43.2
Area 4	40.5
Nucleos 1 - 4	55.7
Nucleos 5 - 7	51.7
Nucleos 8, 11 and 14	56.6
Total	50.2

Source: Instituto Nacional de Colonización, 1976 Survey (Typescript) Table 3.

C. Conceptualization of Obstacles to Goal Achievement through Agriculture

5. The British Mission in Santa Cruz at CIAT conducted a sample interview survey of farmers in the several colonization areas of Santa Cruz. A portion of the sample was in the SanJulian colonization area. This portion of the overall sample collected in San Julian is not necessarily representative of San Julian colonists since colonization areas as a whole were the universe for the sample. The replies given by San Julian farmers to the question "What are the principal problems of cultivation?" (Cuales son los Principales problemas del cultivo?) are presented in Table 4. "No answer" and "None" in reply to the question account for nearly 30 percent of the mentions. The remaining mentions were widely spread over fourteen items. The leading complaints were lack of credit (19 percent) and supply and quality of drinking water (12 percent). The latter, which is not a problem of cultivation, probably represents a process of adjustment to the new water supply which tastes differently to their traditional sources. Whereas credit is a major component of the proposed consolidation program and therefore has a fit with the needs expressed by farmers in this survey, other components of the consolidation plan such as technical assistance which only received six percent of the mentions, and markets (three percent of the mentions) appear to have low salience for these res-

pondents. This lack of fit between felt needs and project inputs, as recorded in this survey, if indeed representative of San Julian project farmers will need to be dealt within project implementation planning.

6. However, an open-ended question such as this is not the best approach to determining felt needs. For example, it could be that technical assistance was not recognized as a means of solving problems due to the fact that it was unknown to respondent. Twenty percent of the respondents mentioned problems (rats, markets, seed, insect bites, low yields, and ants) which are directly addressed by technical assistance.

Table 4. Answers to Question "What are the Principal Problems of Cultivation?" asked of San Julian Project Farmers, 1979.

Reply	Number of Mentions	Percent of Mentions
No answer or answer not recorded	14	21.5
Lack of money or credit	12	18.5
Poor supply and quality of drinking water	8	12.3
None	5	7.7
Technical assistance	4	6.2
Poor roads	4	6.2
Rats	4	6.2
Either flooding or drought	3	4.6
Markets	2	3.1
Weeds, weeding	2	3.1
Lack of seed	2	3.1
Insect bites	1	1.5
Frost	1	1.5
Low yields	1	1.5
Well water insufficient for irrigation	1	1.5
Ants	1	1.5
Total mentions	65	100.0

Source: Hand-tabulated by the author from questionaires administered by the Centro de Investigaciones en Agricultura Tropical (CIAT) and the British Mission in a sample interview survey of colonization zones in Santa Cruz, 1979.

6. A somewhat different picture is presented in Table 5. However, it is not known what question was asked or what procedure was used to tabulate replies. It is assumed, however, that a representative sample of San Juliar farmers was interviewed. Again, it is noted that all items mentioned except one, technical assistents represented either objects, institutions, phenomena or foes to goal achievement. Technical assistance is a process helper effecting the other items, thus it cannot be equated with them.

7. Credit is again at the top of the list, of all mentions or first mentions, being mentioned by 34 percent of the farmers. Together with irrigation it accounts for nearly 52 percent of the total. . The balance is distributed among technical assistance, markets, roads and other. Non-responses were not recorded.

Table 5. Percent of Farmers Expressing Given Needs with Regard to Production, San Julian, 1978 (N = 396).

Need	Percent
Credit	33.7
Irrigation	18.1
Labor	15.5
Technical assistance	13.9
Guaranteed markets	5.0
More accessible markets	4.0
Better roads	2.6
Other	7.2
Total	100.0

Source: Harry Wing, Preliminary Tabulation of San Julian Colonization Survey Data USAID/Bolivia, May, 1979, Table 12.

8. The data in Table 5 represent a better fit with project inputs. Additional analysis of the material on which it is based could prove useful.

IV. COMMUNITY ORGANIZATION

1. One of the positive aspects of the San Julian colonization project which has frequently been mentioned is the orientation program for new settlers conducted by the National Institute of Colonization and the United Church Committee with the aid of an AID grant. One of the basic objectives of the orientation program is to lay the foundation for community-based initiatives, and institutions by providing the new settlers with opportunities for decision and try making and institution building. 1/

A. Nucleo Level Organizations

1. A Junta Vecinal is elected by the householders in each nucleo 2/ This committee serves to keep order, ensure participation in certain community activities and approve new settlers or vecinos. When a parcel in a nucleo becomes vacant persons wishing to occupy and cultivate it must be approved by a vote of the community. The candidate presents himself to the community, visiting his prospective

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1/ For a description and analysis of the orientation program see Allyn Maclean Stearman, San Julian Colonization Project, Evaluation Study, Anthropologist's Report, La Paz:USAID, November 15, 1978.

2/ Neighbor Land Committee, elected soon after the completion of the four-months orientation and the occupation of parcels in the nucleos.

future neighbors and arguing this merits as a settler. The Junta then calls a meeting of the community to consider the application.

2. A Junta de Acción Escolar or School Action Committee is found in most nucleos which have schools. Its functions are to help the school and the teacher and to help the teacher adjust to the community.

3. Clubs de Madres, or Mother's Club, are found in some nucleos. They concern themselves with the nutrition of children under six years of age by working with a mejoradora del hogar, roughly equivalent to a home demonstration agent. Other activities include sewing, manual arts and cooking.

B. NADEPA Level Organizations

4. Each nucleo elects a representative to the Mesa Directiva or Governing Board of the NADEPA. It is therefore composed of nine members. Although members of the Juntas Vecinales of the nucleos may be elected by the nucleo to serve on the Mesa Directiva of the NADEPA, this is exceptional; this leadership positions are diffused rather than concentrated. The function of the Mesa Directiva is to attend to problems that are common to the nucleos that form the NADEPA.

C. Project Level Organization

5. An ad-hoc committee has been formed to consider establishing a Central de Colonizadores (Colonists Central Organization). The committee will also consider the structure and functioning of the Central. It is thought that it will have a Mesa Directiva analogous to that of the NADEPAS. The main purpose presently anticipated for the Central de Colonizadores is that of representing the interests of the colonists as a whole before government agencies and other influential groups.

6. There is also under consideration the formation of a Comite Central de Juntas de Auxilio Escolar or Central Committee of School Action Committees to pressure the Ministry of Education for support of education in the project area.

V. COMMUNITY SERVICES

A. Education

1. It is the responsibility of the nucleo that wants a school, to build a school house on its own initiative and with its own resources and then request that a teacher be assigned by the Ministry of Education. Not all nucleos have schools, principally because some do not have enough children of school age to justify one. Although the quality of school buildings vary, they are generally one or sometimes two-room, adobe structures with earthen floors and windows without shutters or window panes. School

benches are made by the community. There is an obvious lack of teaching materials. Class size is generally 25 to 30. Grades 1 through 3 are generally offered.

B. Water

2. Before the nucleos were occupied, a well about 100 meters deep was constructed in each nucleo by project personnel and at project expense. It provides potable water, although often high in mineral content, leading to complaints about its salty flavor. Each well has a hand pump, and settlers carry water home from it. Simple maintenance is done by residents of the nucleo with appropriate tools provided by the project. When well problems require specialized maintenance, it is performed by the Colonization Institute. There are complaints about the tardiness of this service.

C. Cooperatives

3. During the four month orientation program for new settlers a consumer cooperative is organized and training is given in the principles of cooperativism. Members of the cooperatives' committee are rotated to provide as many as possible with this kind of experience. At the end of the orientation program the cooperative is disbanded. Settlers may, if they wish, form a new coopera-

tive. Six consumer cooperatives have been formed. There are consumer coop stores in most nucleos, usually managed by a credit committee. Some also operate as credit cooperatives. Seven nucleos have obtained credit to date. A group is formed for the purpose with each member of the group acting as co-signer for the others. Obtaining credit enhances the prestige of the nucleo.

D. Social Work

4. The Colonization Institute project headquarters at Los Calfeces is the location for the management of social services through the Departamento de Acción Social (Social Action Department) Promotores selected by communities work under the director of the Department and live in the nucleo, with the exception of one or two who are housed at project headquarters. Promotores work with families and communities in solving problems and providing advice on a wide range of subjects. Among the functions of the Social Action Department is that of reassigning vacated parcels on recommendation of the Junta Vecinal.

E. Extension

5. Reportedly, there are three colonization Institure extension workers in the project area. There was little evidence of any but minimal extension services.

F. Health

6. A health promotor may be selected by the nucleo from among its members for training in elementary preventive medicine. If the community is to have a health post, it is the community's responsibility, as with schools, to build one. Health services are minimal and only a few nucleos have promotores. Two medical doctors work in the area but do not live in it. A health post is being built as part of agro-services center in nucleo 38.

1.A. Montero Rural Health Project

7. A rural health delivery system has been developed through the Proyecto de Salud Rural Montero with USAID assistance, which has applicability to the project area. This system could be adopted for the project area with modifications to incorporate community institutions into the overall delivery system. It is compatible with the San Julian Project because it emphasizes community initiative, participation and responsibility for the program.

8. The Montero Rural Health Project works with communities of 40 to 50 families. Once communities have been selected for possible inclusion in the project, activities are undertaken to

develop awareness of health needs on the part of school teachers, formal and informal community leaders, and then the community as a whole.

9. Once on awareness of health needs has been developed a community assembly is held to establish and organize a Comité de Salud or Health Committee. Once constituted, the health committee meets to discuss the criteria for selecting a promotor de salud or health promotor. A second community assembly is then held to select the promotor. The prospective promotor then takes a qualification examination. A second meeting of the health committee is then held to sign an agreement between the health committee and the promotor and between the committee and the project.

10. Finally a consolidation phase is entered which follows these steps:

a. A seven-week training program for the promotor is given at the Escuela de Auxiliares de Enfermería (School for Nursing Auxiliaries at Montero .

11. b. Two leadership training short courses are given to the health committee, the first being inspirational and the second applied.

12. A revolving community fund and local administrative structure are established.

13. A schedule for health committee meetings and community assemblies is established.

14. A plan of work for the promotor is drafted and developed.

15. Prior arrangements are reinforced by followup reinforcement and supervision at the local level.

The principal responsibilities of the promotor are in maternal and child health care, nutrition, control of infectious diseases, sanitation and first aid.

16. In addition to the promotor, two other grades of health workers recruited largely from the communities they are to serve, are part of the system. Auxiliar de Enfermería I (Nursing. Auxiliaries I receive a seven-month training course at the School for Nursing Auxiliaries. Upon completion of a minimum of one year's experience in the field, the Auxiliary I may return for an additional three months of training to qualify as an Auxiliary II.

17. Whereas promotors are paid by the community auxiliaries and other health care personnel are paid by the Ministry of Health.

A supply of medicines is provided the community initially, free of charge. The proceeds from the sale of these medicines at a markup of 20% are used to replenish medical supplies and provide funds for the operation of the health committee.

Each auxiliar supervises three to five promotores in their communities once a week. The auxiliary treats patients identified by the promotores. Each auxiliary has an office or health post built by the community, with two exceptions in which adequate facilities were already available. These Communities are supervised by an auxiliary from Unidad Básica de Salud (Basic Health Unit). Above the Basic Health Unit is an area Headquarters Hospital (Hospital Cabecera de Area) staffed by auxiliares, nurses, laboratory technician, a physician and support personnel which offers limited bed care. The next step in the system is urban hospitals offering advanced and more specialized care.

18. The Montero Rural Health Project has had two principal problems. One has been payment of the promotor through community subscription which has been difficult to collect with regularity. It is thought that this problem can be overcome by allowing the promotor to charge a small fee for his services and by using some of the money gained from the markup on drugs. The second problem

has been delays in the initial shipment of medicines provided by USAID funding, resulting in a loss of credibility for the project.

19. Implementation of the Montero Rural Health program in the San Julian project would involve one promotor for each nucleo, two Auxiliaries I for each NADEPA. Additionally an Area Headquarters Hospital to be located at Los Cafeces with two auxiliaries, one trained nurse, one laboratory technician, one technician in environmental sanitation, one administrative assistant, 20 beds, and appropriate office and laboratory equipment and supplies.

Even though the Montero Rural Health program is not at present being implemented in San Julian, three NADEPAS have sent students to the School for Nursing Auxiliaries to complete the seven month Auxiliary I course. They will have graduated in October of 1979. The NADEPAS are helping to defray the cost of the training.

VI. COMMUNICATION OF AGRICULTURAL TECHNOLOGY

1. The slash-and-burn agriculture presently practiced by the San Julian settlers is wasteful of natural and of human resources. It places a limit on development just above the subsistence level. If this situation is to be changed for the better, two fundamental changes must take place in the manner in which the land is

cultivated. Production technoligies which increase yields must be adopted by farmers and the area under cultivation must be increased through the use of a source or sources of power other than the human arm. One of the critical elements in bringing about the far-reaching changes in behavior which are implied by the substitution of one system of agriculture by another is an appropriate and effective information delivery system which will transmit knowledge to farmers. A proposed information delivery and extension system follows.

2. The traditional modus operandi of extension services relies heavily on face-to-face interaction between the extension agent and the farmer. When applied in developing countries in which human resources are limited the traditional approach generally has a minimal impact. What is proposed here is the use of community level persons in association with inputs from radio and in partnership with auxiliary extension agents and professionals. This is basically the same structure as that proposed for the health component and as that which is now in use in providing social work type services by the promotor and his supervisors.

3. The approach recommended here is a modification and expansion of the one employed in the Guatemala Basic Village Education ex-

periment, to suit the particular circumstances of the San Julian project. 1/ It combines, in an interactive mode, radio programming, audio-visual materials, agronomist, livestock specialist, cooperative and credit specialist, animal traction specialist, auxiliary extension agent, village level promotor and model farmer. At the heart the system is message development and information feedback from the field.

4. Structurally, there would be one promotor agrícola in each nucleo selected according to existing practices. Above him or her would be an extensionista auxiliar responsable for supervising the work of 9 promotores or, one extensionista auxiliar per NADEPA. Two agronomists, one livestock specialist, one cooperative and credit specialist a cooperative technician and one animal traction specialist would supervise and work with the extensionistas and the promotores.

5. A message development center and radio station would prepare and broadcast relevant agricultural and related messages to the people of the area and prepare audio-visual aids such as tape cassettes and flip charts. Finally settlers would be encouraged to participate in a model farmer program providing a demonstration

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1/ For a description and analysis of the Guatemala Basic Village Education experiment see The Basic Village Education Project Guatemala, Final Report, Academy for Educational Development, September, 1978.

effect on the use of recommended agricultural practices. Schematically, from top to bottom: Message Center and Radio Station - professional field staff (agronomists, livestock specialist, cooperative and credit specialist, animal traction specialist), extensionistas auxiliares, promotores model farmer. Operationally the message center consists of a radio station, a recording studio, a graphic arts studies and office space. An important component of the staff is script writters who prepare material fro broadcasting. The graphic arts studio staff prepares visual messages such as flip charts, posters, and handouts. Programming should be varied and entertaining as well as instructive in order to maintain listener interest. Examples are radio novelas which can combine real life drama with recommended practices, musical request programs, announcements of local events, responses to listener mail, question-and-answer programs, talk shows and farmer interviews. The intended messages can thus be presented in a variety of formats. However, at the most one third of air time should be devoted to recommended practices. The remainder of the programming can be used as entertainment and also as a means of creating identification with an solidarity within the area.

6. In addition to messages about crops, livestock, coops, etc. the radio station should provide daily or at least weekly, market quotations for agricultural products grown by the farmers and for non traditional crops such as tomatoes, that would represent a desirable diversification. Awareness of prices for their crops will place the settler in a better bargaining position vis-a-vis middlemen. Awareness of prices paid for non-tradicional crops may encourage diversification.

7. An eight hour broadcasting day should be considered, split between morning, noon and evening hours when farmers are in from their fields.

8. Feedback is essential if the message center is to be effective. Messages need to be kept in track, be appropriate to the season and be adjusted as the need arises so as to communicate that which is intended in a manner that is acceptable to the listener. The most important part in the feedback mechanism is to promotorswho have a chance to observe directly how messages are received and interpreted. Additionally, letter drops could be installed at convenient locations for responses and suggestions to the programming. The professional and technical field staff also serve as sources of feedback for the message center.

9. The professional field staff will serve principally as resource persons for the extensionists and promotores, accompanying them on visits, answering questions that the extensionist and promotor cannot handle, and attending weekly promotor/nucleo meetings detailed below. It is an important source of feedback for message development. The professional field staff also conducts pre-training and in-service training for promotors and extensionists.

10. The auxiliary extensionists will be able to provide assistance to individual farmers who have problems that the promotor cannot tackle. Farmers would be referred to the extensionists by the promotor. They are also part of the feedback system.

11. The promotor will hold a weekly "radio forum" for members of the nucleo community. Prerecorded casettes and flipcharts will contain the radio broadcast message of the week for presentation followed by discussion, questions and answers. Questions the promotor cannot answer are referred to the extensionist or appropriate professional field staff and answered the following week. During the week the promotor will visit farmers in his nucleo.

12. To the extent possible, model farmers should resemble their fellow farmers. In operating their farm they should not receive technical assistance, credit, or inputs not equally available to other farmers. To be effective as a demonstrator the model farmer must be

perceived as being an average member of the group and not privileged in some way. Otherwise, the model farm demonstration may be perceived by other farmers as not being applicable to them. In keeping with existing community practices, the model farmer could be selected by the Junta Vecinal or through a community assembly by the appointment of an ad hoc committee for the purpose, etc. Each nucleo should decide how to go about the selection process and make the selection itself. Community decision making and involvement will significantly enhance the probability of desirable outcomes and will further develop the nascent tradition of community initiated action. Experience gained through the model farm program to be used by the Fundación Integral de Desarrollo (FIDES) should be utilized and applied.[1/]

13. There are 90 professionally trained extension agents in Bolivia. There are only 7 in the entire department, Santa Cruz. Several of these hold administrative jobs. It is not, therefore, reasonable to expect professionally trained extensionists to be available for this project. Additionally, it will be necessary to institute training programs for the promotores and extensionistas auxiliares. A one-week course should be ample for the promotor, whose principal function is to relay on a person-to-person basis the radio messages on recommended practices to his fellow farmers at a weekly meeting. The extensionista

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1/ See Colonization Consolidation in the Bolivian Sub-tropics, FIDES, 1979, pp. 22 - 27.

auxiliar who will carry greater responsibility, will require more extended training. In the Montero Rural Health Project auxiliares de enfermeria spend seven months in training. A shorter course may be adequate for the extensionista auxiliar.

14. As with the model farmer, the selection of candidates for promotor and for extensionista auxiliar should be a community responsibility. Project managers should discuss the criteria to be met by candidates with the community. The selection from among those who meet the criteria should be a community responsibility.

15. The programming and message center staff will need to decide whether or not to broadcast in Spanish only or to include Quechua and Aymara. While the men whose native tongue is Aymara or Quechua are bilingual, many of their wives have a poor understanding of Spanish. The impact of messages relating to home-making and child care will be increased if they are in the audiences' native tongues.

16. Depending on the location of the station and power output messages could reach colonias other than San Julian although in them there would not be the reinforcement of personal interaction, however, unless this project is replicated to provide it.

17. Once experience in the use of the system described above has been gained it could readily be adapted for health, nutrition and child care.

VII. SOCIO-CULTURAL FACTORS IN PROJECT IMPLEMENTATION

A. Project Philosophy

1. This is a project in human development of which agricultural development, improved health and nutrition and other positive changes are a consequence. The primary emphasis needs to be on developing people, their organizations knowledge, and skills. Very little change can be expected otherwise.

2. The project should be responsive to felt needs and to the desires of the people it seeks to serve and be willing to make adjustments in project implementation plans even though such adjustments may not always be technically most correct.

3. To decide for people, to do for people, to give to people is a strong impulse among those who wish to help the under-privileged and to better their condition as rapidly as possible. The end result, however, is the opposite of that which is desired. Paternalism fosters wrong policy decisions, generates dependency and inaction among the supposed beneficiaries of official programs.

4. The paternalistic impulse which is present everywhere among well-meaning people is further reinforced in Hispanic America by the traditional patron-peon role model which is pervasive and insidious.

This impulse must be resisted at all costs in project planning and by project personnel. To do otherwise will undermine the nascent community institutions and decision making behavior that are essential for the social and economic development of San Julian. The colony must learn to look after itself. In the long run no outsider can look after it.

5. The credibility of the project in the eyes of the settlers will be a function of the credibility of its agents. Failures on the part of project personnel to keep appointments, to carry through on commitments, to provide relevant information, will damage the project.

6. Finally, the project should not outdistance the farmers' capacity to sustain the changes brought about by the project after it terminates. If, for example, mechanized destumping of the land is provided by the project but will not be affordable by the farmers once the project terminates another means should be found for clearing the land that the farmer will be able to use without continued project assistance.

B. Strengthening Community Institutions and Decision Making

7. Community based decision making processes and nucleo and NADEPA level organizations were described elsewhere in the paper. The existence of this behavior pattern is in good measure due to the orientation program conducted by the United Church Committee. These are an

yet fragile structures. The project should encourage and reinforce these behaviors by giving the nucleos and NADEPAs the responsibility for decision-making and for managing their own affairs. Paternalism, which embodies a diametrically opposite point of view will, destroy within a short time the foundations which have been laid.

8. The project should encourage decision-making and the acceptance of responsibility by the community by utilizing existing local organizations such as the Asamblea Comunal and Junta Vecinal, among others to help farmers develop their motivation skills, and knowledge.

C. Language and Culture

9. The cultural and linguistic diversity of the San Julian settlers must be taken into consideration in project implementation. The languages spoken in the home are Spanish, Quechua and Aymara. Lowlanders with a tradition of living in the forest and practicing a shifting, subsistence, slash-and-burn agriculture have a different life experience from that of highlanders who have had to deal with a much harsher and more demanding environment. Agricultural practices, forms of social organization and values such as postponement of gratification will vary among these groups. Rational planning for project implementation should take into account these differences and incorporate this information in the program. For example, the farmers at Nucleo Six, all Aymaras from the Highlands, are

familiar with irrigation agriculture and want to install an irrigation system using well water in order to grow tomatoes to sell during the off season when prices are high. They also practice an ancient form of labor sharing mutual aid.

10. Prestige motivation is as important as economic motivation in providing incentives to produce, take risks, and change. The cargo fiesta of the Altiplano in which the alferez of the fiesta spends a lifetime's earnings to gain the prestige of occupying that position is a case in point. As cultural evolution proceeds as a means of obtaining prestige giving gives way to conspicuous ownership. This shift appears to be occurring among Altiplano groups in San Julian. The felt need for prestige could be used to encourage excellence in farming, by means of a mechanisms which will confer prestige. It is not possible at a distance to know what this mechanism should be. Possibly annual awards, recognition over the radio station, recognition at traditional fiesta days, and no doubt other, more imaginative ways of conferring prestige could be used. In any event members of the community should be consulted concerning the most appropriate kind of recognition and concerning who the recipient should be and how the selection should be made. The reward must be meaningful to the recipient.

VIII. EVALUATION

1. Evaluation should address processes and outcomes. The evaluation of process is an ongoing examination of project implementation strategies. It should provide feedback to project personnel and allow for adjustments in implementation procedures.

2. The evaluation of outcomes focuses on the extent to which desired changes occur in the project area. An evaluation unit should be established to accomplish these objectives.

A. Baseline Interview Survey

3. The Baseline Interview survey to be conducted before the project is initiated should accomplish two objectives. One is establishing basic population characteristics. Another is determining the current status of those practices or characteristics which the project is designed to change. Under the first heading would be found items such as age, sex, family composition, number of school-age and school attending children, language spoken in the home, province of origin, radio ownership. The process of making agricultural decisions and others. Under the second heading would be items such as use of herbicides, and other agricultural practices, area under cultivation, crops and livestock, days lost from work due to illness and others bearing on

project implementation and on the measurement of project outcomes. Items should be included in the baseline survey which relate to each of the project objectives.

B. Special Purpose Surveys

4. A periodic survey should be conducted once on twice each year to problems and possible solutions. It need not be nearly as comprehensive as the baseline survey and can focus on project objectives and related problems and be adapted to changing circumstances. It is a means for the project management to obtain systemative, quantifiable feedback on project performance.

C. End of Project Status Survey

5. Essentially repetition of the Baseline Interview Survey, the end of project status survey will obtain data against which change can be measured and quantified and with which factors influencing success or failure can be identified.

IX. RECOMMENDATIONS

A. Training Course

1. All personnel working directly with the project in the field as well as administrative personnel located elsewhere but with responsibility for the project should attend a training course emphasizing project history, project philosophy, project goals and objectives, social organization of the project area, agricultural problems and constraints, socio-cultural factors in project implementation, project operation, credit, health, educational and informational needs and programs. Audio-visual presentations, role playing and field trips are among the techniques which could be used.

B. Land Tenure

1. Land titles

2. Every means available should be utilized to obtain clear titles to their lands for those farmers who are entitled to them.

2. Property boundaries

3. The lines dividing farms need to be established in a clear manner to avoid encroachment on adjoining farm and conflicts over land use.

C. Homogeneous Versus Heterogeneous Nucleos

4. There are advantages to heaving nucleos populated by people of the same ethnic background. However, change is most likely to occur in the presence of diversity, not of sameness. The Aymaras of nucleo, six have nothing to teach each other and little contact with other ethnic groups to learn from or to teach. Heterogeneous nucleos provide the best setting for change.

D. Animal Traction

5. It would be premature to attempt to introduce as sohpisticated a system as mechanized agriculture at the present stage of development of the San Julian colony. Animal traction, however, relying on horses and mules, not on oxen, is indispensable if the land is to be fully and efficiently utilized with benefits to the settlers. The alternative is cultivation of a limited area of no more than four hectares and the perpetuation of the minifundio even though each settler commands 50 hectares.

E. Health

6. The extension of the Montero rural health delivery system which relies on community level promotores and auxiliares de enfermeria as the front line of the delivery system promises to provide essential health care which is now largely lacking.

F. Communication of Agricultural Technology

7. A system combining radio with trained professionals acting as resource persons for community level promotores, auxiliary extensionists and model farmers, incorporating message feedback with development is recommended. Daily or weekly market quotations for non-traditional and traditional crops would be provided over the radio. Radio programs would be used for motivation, introduction of new ideas for reminders and forthcoming events, such as nucleo meeting and the arrival of input supplies and for rewarding community members for achievement in forming and in community service.

8. School supplies are probably the most pressing need of schools in San Julian. The project should consider a cost sharing arrangement with the Juntas de Acción Escolar for the purpose of obtaining them. Many persons in rural Latin America become functional illiterates for lack or need of opportunity to read. Reading matter in San Julian is scarce to non-existent. A project-wide newsletter written by and for settlers center and produced by the extension information could not only serve as a means of communicating but provide meaningful reading matter for children and adults alike.

G. Reward System

9. An attempt should be made to develop a meaningful system to reward performance related to project goals. Public recognition of goal achievement via radio and newsletter have been suggested. This could be expanded to include an inexpensive group recognition.

H. Evaluation

10. Systematic evaluation of project performance should be conducted by an evaluation unit of the project. External assistance should be provided for this purpose the second and fourth project years.

I. Strengthening Community Institutions

11. The project should through its policies build upon existing community institutions and encourage community level decision-making and assumption of community responsibility.