AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

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BATCH 45

1. SUBJECT CLASSIFICATION

A. PRIMARY: Serials — Y-AS10-0120-G356

B. SECONDARY: Food production and nutrition--Food composition--Cereals--Maize--Guatemala

2. TITLE AND SUBTITLE

Corn fortification, a field demonstration model; progress report,May-Oct.1972

3. AUTHOR(S)

(101) Instituto de Nutricion de Centro America y Panama

4. DOCUMENT DATE	5. NUMBER OF PAGES	6. ARC NUMBER
1972	77p.	ARC GT633.15.I99

7. REFERENCE ORGANIZATION NAME AND ADDRESS

PAHO

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)

(Research summary)

9. ABSTRACT

10. CONTROL NUMBER	11. PRICE OF DOCUMENT
PN-AAC-890	
12. DESCRIPTORS	13. PROJECT NUMBER
Acceptability Enrichment Guatemala Maize	14. CONTRACT NUMBER CSD-3357 Res.
	15. TYPE OF DOCUMENT

AID 590-1 (4-74)

n9

cod 3357 .B0
GT633.15.199
PN-AAC-890

CORN FORTIFICATION:

A FIELD DEMONSTRATION MODEL

PROGRESS REPORT

May 15 - Oct. 15, 1972

CORN FORTIFICATION MODEL IN GUATEMALA

PROGRESS REPORT

May 15 to October 15, 1972

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The following report has been considerably condensed in view of the magnitude of the field study under way. Two preceding progress reports were submitted on May 12 and May 15, 1972.

The program is developing as outlined in the proposal with arising difficulties solved as they appear and promptly, and with excellent perspective for continuation of a successful operation.

A Work in the Fortification Village: Santa María Cauqué (Figure 1)

1. Field Personnel

The personnel presently working in this village consists of:

The Field Director (Dr. Juan J. Urrutia)

One Dietary Investigations Technician (Ms. Bertha García)

One Laboratory Technician (Mr. Raúl Fernández)

Two Mill Supervisors (Mr. Gustavo Linares and Mr. Edgar Vega)

Two Mill Operators (Mr. Javier Jitz and Mr. Cirilo Cutzán)

One Home Visitor (Ms. Enma Blanco Tobar)

Three Nurses

All this staff is supported by the project; the nurses are in the payroll of the Direction of Health Services of Guatemala.

Expectedly, the field personnel has been able to maintain the collaboration in a similar fashion as observed during the collection of basal data (1964-1971). More intensive contact with villagers and a greater penetration of the community has been necessary in view of the delicate nature of the Corn Fortification project.

Field work included the routine outlined in several INCAP publications; however, special emphasis was placed in meetings with friendly and antagonistic leaders, with village authorities and principals, and teachers, to discuss the characteristics of the project and clarify questions and doubts regarding the addition of fortifying mixture to corn.

2. Installations and Equipment for Fortification

After discussing the program with the two mill owners, consent was obtained to paint the walls and ceilings of the mill locals. Special rustic and simple equipment had to be designed and made, to deliver the fortified mixture to corn (Figure 3). The equipment consists of a balance with a blocked dial to read exact numbers of pounds of nixtamal (lime-cooked and pealed kernels). Measurements of various sizes were made of tin, to deliver the corresponding amounts of fortifying mixture to the nixtamal

brought by the individual families to the mills (Figures 2 and 3). A special printed sheet with the numbers of village families and name of family heads was produced for daily display at the mills (see form enclosed in Appendix 1, Figure 4).

The procedure for corn fortification is as follows: Women or children bring the nixtamal to either one of the two mills (Figure 5). The nixtamal is carried in the traditional containers (earthen jars, or aluminium or porcelane containers), which have been marked with the family number by members of the INCAP staff before the project started. At the mill, the nixtamal is emptied into the tray of the balance; this has holes at the bottom to drain part of the water, a modification introduced to remove water and avoid certain complications as will be seen later. After weighing (a few seconds) the lady is asked if fortification is wanted. If the answer is affirmative, the proper measuring cup is then used to deliver the mixture on top of the nixtamal (Figure 6); a record is made in the corresponding sheet (Figure 7). Thereafter the lady takes the tray and empties the nixtamal into the hopper of the mechanical mill for grinding. After ground, the dough is collected by the lady (Figure 8), replaced to the container and carried home. In the process, the only intervention has been

the introduction of certain equipment and the addition of the supplement; no other modification is produced during the process that ends in the preparation of tortillas (Figure 9).

Other installations in the village consist in two rooms, one at the school and the other at the Major's office, for storage of the fortified mixture (Figure 10).

3. Date of Implementation of Fortification

Corn fortification began on the 29th. of May, 1972 in a full scale basis at the village level. The program is developing smoothly up to the present time, with excellent perspectives for continued success.

4. Bacterial Proliferation in Tortilla

During the first few days of fortification around 90% of the village families were cooperating and adding the mixture to corn. Before the first week ended, however, many villagers began complaining about foul odor and bad taste in the fortified tortillas; cooperation dropped to about 30% for a few days. The problem was promptly investigated in the field and laboratory. It was found that grinding of the corn with added mixture required a greater amount of water which raised the water content of the final tortilla. Storage of tortillas in closed and not

well ventilated baskets favored bacterial proliferation (*Bacillus*, coliforms and cocci) to levels that were greater than those in non fortified tortillas, Table 1. The logical practical solution was then to remove part of the water from corn before it was ground (nixtamal) and after grinding. For the first, holes were drilled through the bottom of the balance tray (this removes from 5 to 10% of the total weight). Prepared tortillas should be left a little longer on the hot dish ("comal") for water evaporation. It is interesting that many women found this out by themselves. Recommended solutions and intensive field work resulted in excellent cooperation a few days later (and ever since) the problem of spoilage was detected.

5. Level of Fortification (cooperation)

As indicated above, the problem of bacterial overgrowth in tortilla, and the addition of a mixture to their main and almost holy food, have not been obstacles for maintaining a good level of cooperation. The control of this aspect of the project has been done as follows. Approximately 250 IBM cards are punched daily (6 times per week) containing the records of attendance (or non attendance) to the mills, amount of corn ground, and of mixture added. A computer program has been designed by Mr. Arellano, permitting two different weekly sum-

maries: one consists of a summary of fortification corresponding to the preceding week (Appendix 2); the other, a summary of fortification for the preceding 5 weeks, organized per family, (Appendix 3). Both summaries contain information organized as indicated in Table 2. In this manner it is possible to survey rapidly which families are adding mixture to corn and the constancy with which fortification is being observed in every family.

To illustrate, the percentages of families cooperating with the program and receiving the mixture, for the weeks 13 through 17, and by level of fortification, are presented in Tables 3 and 4. At least 40% of families are regularly cooperating with the program and adding mixture to their corn, at least at a level of 75% (index P, see Table 2); an additional 10% is adding the mixture at a level of 50 to 75%; approximately 40% of the families are adding the mixture to a level below 25%, or not cooperating at all.

In addition to the two summaries just mentioned, programs have been written to display the level of fortification per family per week on a cumulative basis. Furthermore the total consumption of corn in the village, in relation to level of

fortification, will be soon available, which will enable to know if corn intake has increased as a result of fortification, a crucial observation as will be indicated below.

6. Monitor of the fortification project

Monitoring is being done by determining the level of fortification per family as indicated above. Furthermore, tortillas are being examined in the chemistry laboratory. Random sampling of 100 houses is obtained every month; from these houses, and without prior notification, one tortilla is collected ($0.01 per tortilla is paid), placed in a plastic bag properly labelled, and forwarded with an accompanying form (see form in Appendix 1), to determine lysine and nitrogen. To illustrate, the analysis conducted in tortillas from 5 families picked at random, is presented in Table 5.

In addition, every 4 months tortillas prepared in the village, and known to having been fortified, are analyzed for a complete quality control that will include chemical and bacteriological assays. Also the mixture from several drums are examined at 6 months intervals for quality control and stability of the product.

Food composits of village diets were made before fortifi-

cation begun and will be repeated at 6 months intervals in diets containing fortified and unfortified tortillas.

7. Evaluation of the biological impact of fortification

As indicated in the proposal and various discussions with AID Officials, the parameters chosen are being measured in the same manner as during the collection of basal data. The aim is to detect changes in fetal and post-natal growth, dietary intake, infection and morbidity, and infant mortality.

Bleeding of a significant number of individuals was done before fortification began; a similar bleeding has been projected for next year (during the same season) to draw comparison between several hematological and biochemical parameters before and after one year of fortification. The dietary investigation in mothers and children and the determination of consumption of corn per family (see above) will indicate if extra calories, among other things, are being consummed as a result of fortification.

Also, data are collected on Shigella infections, childhood mortality, bone development, tooth eruption and socio-economic conditions. No difficulties have been encountered.

B Work in the Control Village: Santo Domingo Xenacoj

The field personnel working in'this village consists of:

The Field Physician (Dr. Luis A. Reynoso)

Two Nurses

One Mid-wife

Mr. Gustavo Linares (the Senior mill Supervisor in the fortification village) conducted a census and produced a map of the village before he assumed his duties in the fortification village. The field personnel at Xenacoj edited the census and map which now permit a better field work. Since March 25 data from virtually all pregnant women and newborns have been obtained The preliminary analysis of fetal growth (Table 6) shows the same problem unveiled in the fortification village, that is, a high incidence of fetal growth retardation and prematurity. Furthermore the analysis of infant mortality for the past 10 years, derived from the official register, revealed an infant mortality of 150 per 1,000 live-births, that is, a rate similar to the one observed in Santa María Cauqué before the longterm study begun in 1963. Then, the control village is fairly similar to the fortification one, as judged by two of the most important parameters, namely fetal growth and infant mortality.

Work in the Chemistry Laboratory

1. Fortifying mixture based on a local soybean meal

A soybean meal (Table 7) was obtained in the local market of Guatemala. The sample was ground in a Raymond pulverizer and screened to pass 80 mesh. Chemical analyses were carried out in the original soybean meal as well as in the soybean flour obtained after screening. The results were compared with those for the soybean flour imported from the United States, as shown in Table 7. The data shown indicate that the soybean flour prepared from the Guatemalan soybean meal, compares favorably with that imported from the U.S. Acceptability and stability trials were also carried out at the laboratory, by using 8% of this soybean flour to supplement the tortilla flour. The results revealed a similar flavor, texture, and appearance of the supplemented tortillas than those of supplemented with the imported soybean flour. In order to evaluate the protein quality of the local soybean flour, a biological trial was undertaken using young rats from the INCAP colony. Both the imported as well as the locally prepared soybean flour were incorporated to the tortilla flour at the level used to improve its nutritional value, that is 8%. The results are shown in Table 8. The weight gain of the animals, as well as the protein efficiency ratio (PER) were similar, indicating that both materials

have the same supplementary value to tortilla flour as far as protein is concerned.

2. Test Pelleting on the Protein Supplement

In order to facilitate the addition of the supplement to the cooked corn at the mill level, pelleting was considered. It was necessary, first, to study the behavior of the material in the pelleting procedure, and second, to check if the protein quality of the supplement was not reduced by the pelleting process.

a) Pelleting. A pilot test was carried out to assess the feasibility of pelleting the supplement, soybean flour (Soya fluff 200 W), with vitamins and minerals added. It was found that (a) It was necessary to add approximately 10% moisture to the mixture in order to pellet this material; (b) The mixture weighed 28 lbs per cubic foot and the pellets 37 lbs per cubic foot, which means less volume per unit of weight. This aspect appears to be beneficial from the practical point of view, since people in the field receiving this supplement suggest that it would be better if a smaller amount of the supplement were added to the cooked corn during milling; (c) The pellet size was 3/16"

which is quite close to the size and shape of the corn kernel.

In general, it can be said that no difficulty was found in pelleting this protein supplement. Table 9 shows the chemical analysis of the processed and unprocessed supplement. Further studies are underway to estimate if there are losses in the amounts of vitamins added

b) Effect of pelleting on the protein quality of the supplement. Biological assays were carried out to find out if the pelleting process did not affect the protein quality of the supplement. One group of young rats were fed the tortilla flour; a second group received the tortilla flour supplemented with the unprocessed mixture; the third group received the pellet-supplemented tortilla; the last group was given casein as a control diet. As can be seen from the results presented in Table 10, the protein value of the mixture was reduced slightly by pelleting. The slight difference in PER observed between the pellets and the unprocessed mixture, could be due to the smaller amount of protein in the diet made from the unprocessed material. In view of the advantages offered by the soybean flour processed in Guatemala and by the use of pel-

lets, it is felt that of the two, the locally produced flour should be given first choice, provided this soybean flour is accepted without problems by the village population.

c) Cost of fortifying mixture. Using local soybean meal and Roche's vitamins manufactured in Nicaraguå, the cost of fortifying mixture will be approximately $0.108 per pound, that is, significantly less than the cost of imported mixture ($0.26 per pound, not including the very costly transportation). It will be extremely convenient for the project to move ahead in the preparation of mixture in Guatemala for testing at the village. Pelleting of the mixture is indicated; its possible use at the village deserves prompt investigation, on the basis of the preceding discussion.

In order to engage in the exploration of these two possibilities, special equipment is required, as stated in the section for Budget. The equipment will be paid within two years, owing to the considerable savings in costs. Furthermore this equipment will be useful for other projects of INCAP related to fortification and other means of improving local foods.

D Budget

Mr. Rodrigo Donoso, Administrator of INCAP, submitted a budget for the next period, as requested. However, it should be pointed out that there is a pressing need to enlarge the present budget. This aspect became obvious during the discussions at Vail, Colorado, and in many other discussions with Drs. Forman, Hornstein, Lachance and Wilcke (see summary of discussions of the task group responsible of corn, at Vail, Colo.).

Briefly, an additional $26,950 are needed for the second year of the project (1973), to cover expenses as outlined below. Of this amount, only $10,000 need to be increased in the budgets of 1974 through 1976. The significant raise in the budget for 1973 relates to the purchase of the equipment (approximately $18,000) required for production of the fortifying mixture in Guatemala.

Personnel	
Two Technicians for additional work on chemistry, biochemistry and hematology	7,000.00
Additional Supplies	2,340.00

Equipment

Vibro-energy separator. Basic equipment, 3 screens (60,80,100 mesh). One cover and two discharge tubes	1.370.00
P-K Standard twin shell mixer. 20 cubic feet	8.740.00
California Lab pellet mill. (Prod/hr 200 lbs)	5,900.00
Hammer mill	1,600.00

Grinding and Screening costs are $0.25 and $0.50 per 100 lbs respectively. Since there is a loss of about 10% solids due to milling and screening, the cost of soybean flour locally processed to be used as the protein source for the supplement increases to $215/ton. The process of mixing the soybean with the lysine and vitamins costs $0.70 per 100 lbs. This can be done with the P-K mixer, which mixes batches of 60 lbs every 30 minutes.

To be able to use present supplement supplies, as well as to facilitate the addition of the supplement to nixtamal, the supplement can be easily pelletized using the Pellet Mill, which produces a maximum of 200 lbs of pellets per hour.

The uniqueness of the corn fortifaction project and the excellent way in which it is developing is a warranty for the additional investment, which aims at the improvement, in all possible ways, of means to detect biologic changes attributable to fortification.

With families cooperating in a marvelous way, comparisons of blood parameters in relation to fortifcation is indicated, then the need for additional personnel and supplies.

On the other hand, being one of the objectives of the study the exploration of application of fortifcation in larger areas, the acquisition of special equipment to reduce the cost of the supplement, becomes a priority.

It must be realized that it is not possible to utilize available resources to cover this extra cost. The additional funds requested should be found to buy the equipment and cover the extra costs. Our present budget is being utilized to its maximum capacity in a way that we believe is paying well for the investment, It must be kept in mind that other ongoing projects of the Divisions of Microbiology and Agriculture and Food Sciences are helping directly or indirectly to the development and success of the corn fortification project.

Table 1

BACTERIOLOGICAL EXAMINATION OF TORTILLAS IN RELATION TO TIME OF STORAGE UNDER THE CONDITIONS OF VILLAGE HOMES

Bacterial Group	Days of Storage							
	0		1		2		3	
	NF*	F*	NF	F	NF	F	NF	F
Bacillus	10**	10	10^8	10^7	10^9	10^{10}	10^9	10^{10}
Coliforms	10	10	10	10	10^3	10^5	10^4	10^8
Total count	10^2	10^2	10^8	10^7	10^9	10^{10}	10^9	10^{10}

* NF = Non-Fortified Tortillas; F = Fortified Tortillas.

** Bacterial Counts (rounded) per gram of whole wet tortilla.

NOTE: Total counts were obtained by pour-plate (Trypticase soy agar); counts of Bacillus and coliforms were obtained from this medium and from Tergitol-7 and egg-yolk agar; all temperatures were 37°C and incubation was for 24 hours.

Bacterial counts in fortified tortilla were, in general, one log greater than in regular tortillas. However, the striking difference was a significantly greater concentration of coliforms (mainly Escherichia coli) in the fortified product, likely due to its greater nutritive value.

Table 2

KEY FOR ITEMS IN WEEKLY SUMMARY OF
CONTROL OF FORTIFICATION AT THE MILL LEVEL*

Column Item	Identification
Fam.	Number of the family
Nombre	Name of the head of the family
W	Days mill operation is supervised
A	Days the particular family attended the mill
H	Days mixture added to corn
A/H	% of attendance to mill (1)
H/W	% of expected fortification (2)
4*5	(1)x(2) = index of participation in the program (%)
H/A	% of estimated fortification
MA	Total pounds of nixtamal
HA	Total amount of fortifying mixture (number of measurements)
P	Index "P" of fortification = $\frac{HA}{MA}$ = $= \frac{\text{total measurements of fortifying mixture}}{\text{total pounds of nixtamal}} \times 100$

* Examples of the weekly summaries are found in Appendix 2 and 3.

Table 3

DISTRIBUTION OF THE 256 FAMILIES ACCORDING TO LEVEL OF FORTIFICATION (P) IN SANTA MARIA CAUQUE AUG. 28 - SEPT. 25, 1972

Level (P)* %	Week of Fortification 13	14	15	16	17
> 75	103	113	108	109	112
51 - 75	32	26	27	27	25
25 - 50	17	20	19	13	19
< 25	104	97	102	107	100
Total	256	256	256	256	256

* Index of fortification = $\frac{HA}{MA}$. See Table 2 and text.

Table 4

PERCENT DISTRIBUTION OF THE FAMILIES ACCORDING TO LEVEL OF FORTIFICATION (P) IN SANTA MARIA CAUQUE AUG. 25 - SEPT. 25, 1972

Level (P)* %	Week of fortification 13	14	15	16	17
> 75	40.2	44.1	42.1	42.5	43.7
51 - 75	12.5	10.1	10.5	10.5	9.7
25 - 50	6.6	7.8	7.4	5.0	7.4
< 25	40.6	37.8	39.8	41.7	39.0
Total	100	100	100	100	100

* Index of fortification = $\frac{HA}{MA}$. See Table 2 and text.

Table 5

HUMIDITY AND PROTEIN IN TORTILLAS PREPARED IN 5 HOMES OF SANTA MARIA CAUQUE, JUNE, 1972

Family (Initials of Head)	Proteins, g	Humidity, %	Fortification*
F. A.	12.1	48.1	Yes
A. de P.	11.0	47.0	Yes
C. T.	9.6	45.9	No
J. S.	11.9	47.5	Yes
N. S.	11.5	41.6	Yes

* Not known when analyses were made.

Table 6

ANTHROPOMETRIC MEASUREMENTS (MEAN ± S.D.) OF 49 NEWBORNS
SANTO DOMINGO XENACOJ, MARCH 25 - SEPT. 25, 1972
COMPARED TO THOSE OF SANTA MARIA CAUQUE

	S. D. Xenacoj (Control Village)	S. M. Cauqué* (Fortification Village)
Weight, g	2589 ± 340	2561 ± 348
Length, cm	46.2 ± 1.7	46.1 ± 4.5
Head circumference, cm	33.0 ± 1.8	32.2 ± 1.4

* Data of several years, Mata *et al.*, *Am. J. Clin. Nut.*, *24*: 249, 1971.

Table 7

Sample	Moisture g %	Fat g %	Crude fiber g %	Protein g %	Ash g %
Soybean meal	11.0	2.2	3.2	55.1	5.9
Soybean flour[1]	9.7	2.4	2.7	56.7	6.5
Soybean flour 200 W[2]	8.1	1.5	3.2	56.0	3.4

1 Produced from soybean meal obtained in Guatemala.
2 Imported from the United States, and presently used in the Fortification Village, Guatemala Corn Fortification project, sponsored by AID.

Table 8

PROTEIN QUALITY OF TORTILLA FLOUR SUPPLEMENTED WITH THE SOYBEAN FLOUR LOCALLY PRODUCED AND SOYBEAN FLOUR IMPORTED FROM THE UNITED STATES

Ingredients	% Protein in diet	Average initial weight g	Average weight gain g	Protein efficiency ratio
Tortilla flour	7.4	52	40	1.61
Tortilla flour + soybean flour imported from USA	10.3	52	120	2.41
Tortilla flour + soybean flour locally produced	10.3	52	113	2.30
Casein	10.3	52	135	2.84

Table 9

CHEMICAL COMPOSITION OF THE MIXTURE BEFORE AND AFTER PELLETING

	Moisture g %	Fat g %	Crude fiber g %	Protein g %	Ash g %
Unprocessed supplement	8.9	1.8	3.3	54.3	6.2
Pellets	13.4	1.0	2.7	50.8	5.9

Table

EFFECT OF THE PELLETING PROCESS ON THE NUTRITIVE VALUE OF THE PROTEIN

Ingredients	% Protein in diet	Average initial weight g	Average weight gain g	Protein efficiency ratio
Tortilla flour	7.4	52	40	1.61
Tortilla flour + unprocessed supplement	10.3	52	120	2.41
Tortilla flour + pellets	11.2	52	114	2.12
Casein	10.3	52	135	2.84

LEGEND TO FIGURES

View of Santa María Cauqué, the Fortification Village, August, 1972.

2. The main street of Santa María Cauqué, showing a lady leaving one of the two mills at the village.

3. Equipment employed for the fortification operation. Two identical sets of equipment are available, one for each mill. Each one consists of (a) an adjusted balance with blocked dial to show the approximate number of pounds of "nixtamal" (lime-cooked and pealed kernels); (b) measurements (hanging on the wall) to add the corresponding amount of fortifying mixture; (c) bulletin board with forms for recording visits of each family.

4. A detail of the bulletin board. Each day a new set of forms is used. Each family is identified by a 3-digit number and the name of the head of family.

5. A young girl brings the nixtamal. Mr. Cirilo Cutzán, a native from the village now in our payroll, gets ready to weight and supplement the corn; to his right, a drum with fortifying mixture.

6. The supplement is added to nixtamal. The custom is to cover the powder with kernels to facilitate grinding.

7. Supplementation is recorded. Mr. Gustavo Linares, the Senior Supervisor keeps a daily watch on the operation, functioning also as a social worker with capacity to maintain the cooperation of the families in the program.

8. After the supplemented corn has been ground, the lady places the dough in the container.

9. No changes or modifications are introduced in the various steps of corn preparation as a consequence of supplementation, except supplementation itself.

10. Supplement storage facility at the village School. Mr. Linares keeps a record of the daily consumption of supplement.

Figure 1

Figure 2

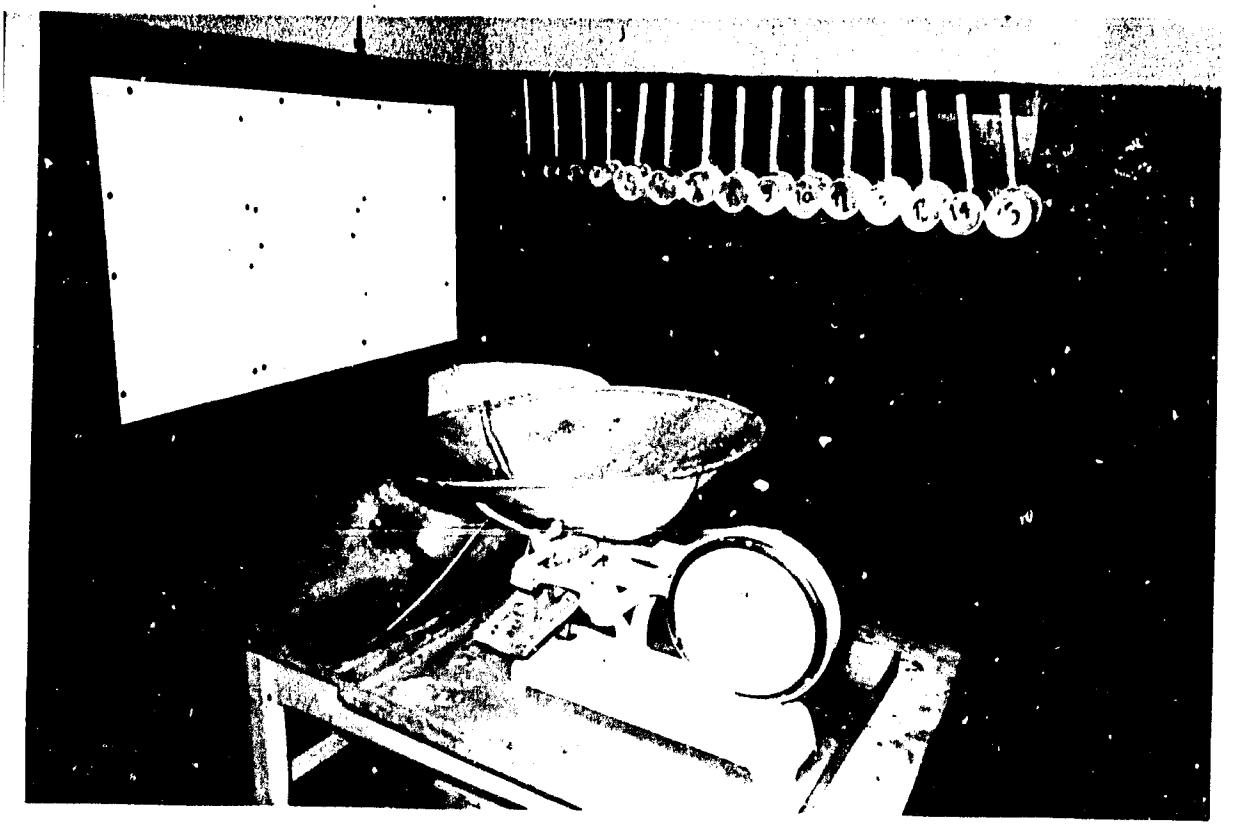

Figure 3

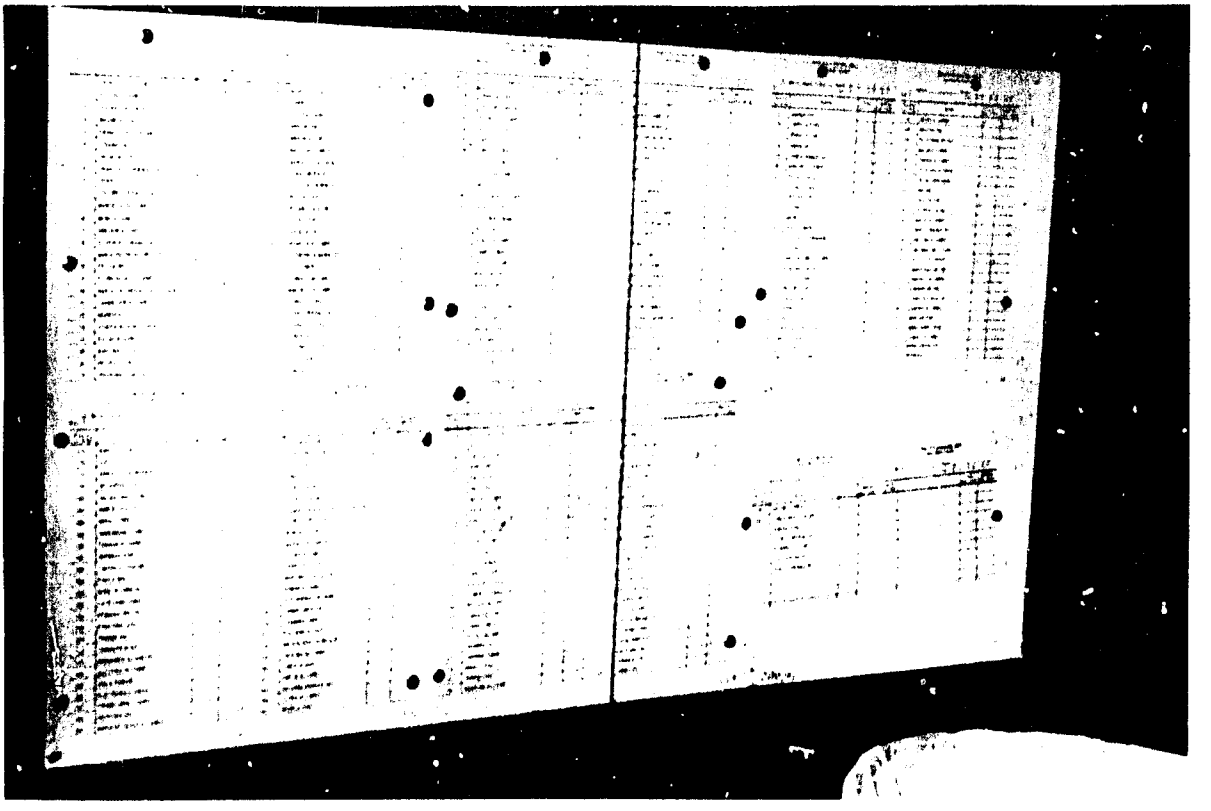

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

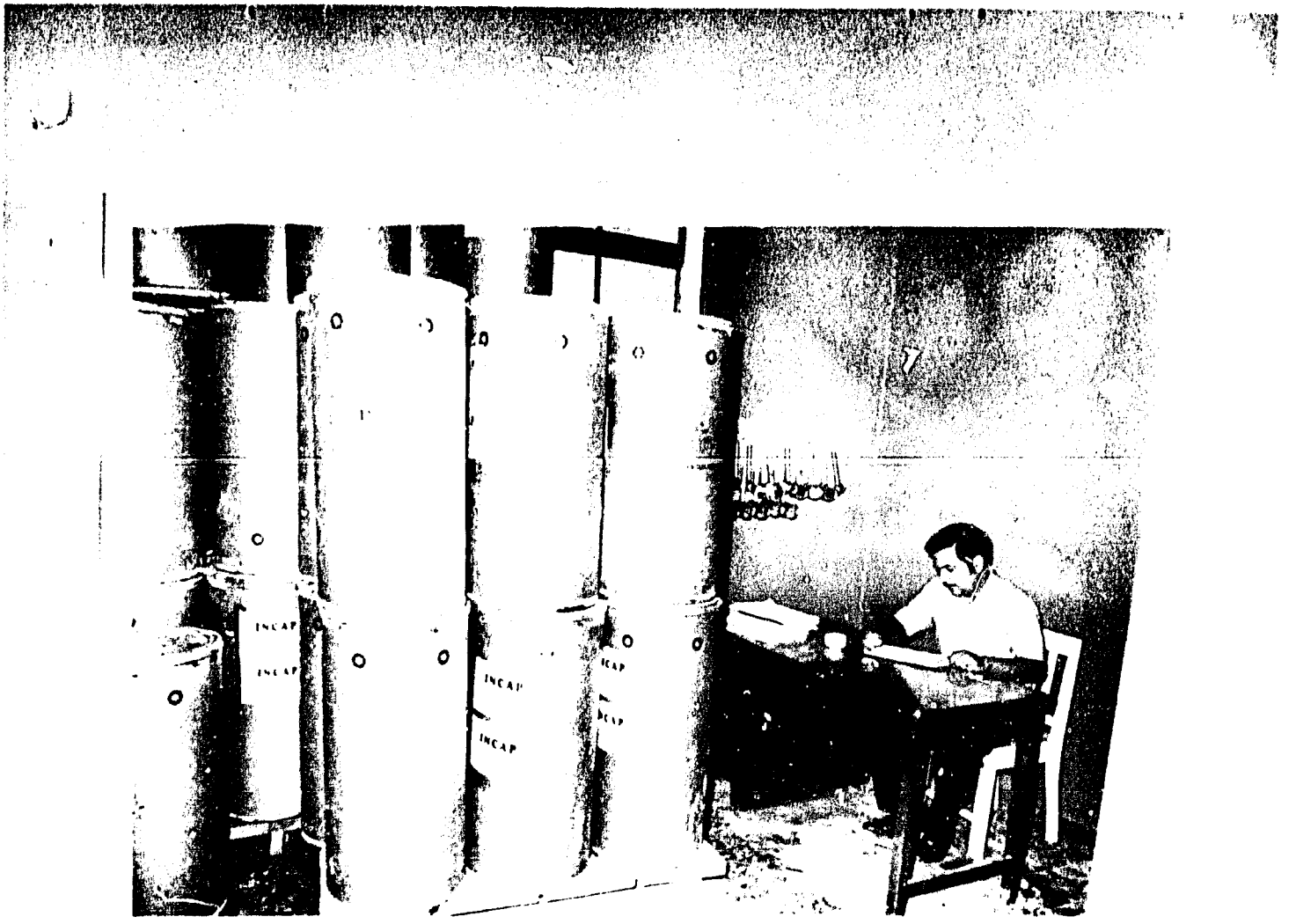

Figure 10

Appendix 1

FORMS USED IN THE CORN FORTIFICATION PROJECT (FORTIFICACION DEL MAIZ)

1. Diagnosis of Pregnancy
2. Obstetric History (a and b)
3. Record of Abortions
4. Prenatal Examination
5. Samples from Pregnant Women
6. Record of Bloods (from women)
7. Morbidity of Pregnant Women
8. Record of Stool Samples
9. History of Intake (Child)
10. History of Intake (Mother) (a and b)
11. Dietary Survey
12. Examination of Newborn
13. Fetal Evaluation
14. Morbidity (Child) (a and b)
15. Anthropometry (Child)
16. Mortality Record
17. Births Record
18. Record of Milling
19. Control of Fortification and Control of Fortifying Mixture

NOTE: Approximately a half of these forms have been designed and tested specifically for the corn fortification project. The forms are being filled routinelly; the reader can realize easily the kind of data collected by examining these forms.

INCAP - DIVISION DE MICROBIOLOGIA

FORTIFICACION DEL MAIZ

DIAGNOSTICO DEL EMBARAZO

Nombre _____ Observador _____

IDENTIFICACION

Columna	Código	Clave
1 - 8 Identificación	— — — — — — — —	Clave del niño (pueblo, fam., manzana, individuo)
9 - 14 Fecha examen	— — — — — —	Día Mes Año
15 - 16 No. registro	2 1 — —	Identificación del formulario

Columna	Código	Clave
17 - 19 No. del sujeto	— — —	No. de ingreso al estudio
20 - 21 Edad	— —	Años cumplidos — —
22 - 23 No. embarazo	— —	De 01 en adelante

Columna	Código	Clave
24 Ultima menstruación (U.M.)	—	1: recuerda fecha 2: no recuerda fecha 3: no la vió
25 - 30 Fecha última menstruación (U.M.)	— — — — — —	Día Mes Año 8: no la vió 9: no recuerda
31 Prueba del sapo	—	0: negativo 1: positivo 2: dudoso 9: no se hizo
32 Prueba serológica	—	0: negativo 1: positivo 2: dudoso 9: no se hizo
33 - 34 Edad del embarazo (U.M.)	— —	Semanas — —

Columna	Código	Clave
35 Estado de salud	—	0: sano 1: enfermedad 9: no determinado
36 Fin embarazo	—	0: aborto 1: parto 9: desconocido

70 - 72 No. del niño	— — —	No. de ingreso al estudio
73-75 No. de la madre	— — —	No. de ingreso al estudio

P-1975 a

2a
*

INCAP - DIVISION DE MICROBIOLOGIA
FORTIFICACION DEL MAIZ
HISTORIA OBSTETRICA (EMBARAZOS PREVIOS)

Nombre _____ Observador _____

Identificación

Columna	Código	Clave	Columna	Código	Clave
1 - 8 Identificación	___ ___ ___ ___ ___ ___ ___ ___	Clave del niño	22 - 23 No. del embarazo	___ ___	De 01 en adelante
9 - 14 Fecha examen	___ ___ ___ ___ ___ ___	Día Mes Año	24 - 27 Fecha nacimiento	___ ___ ___ ___	Mes Año
15 - 16 No. de registro	2 2	Identificación del formulario	28 - 29 Edad menarquia	___ ___	Años cumplidos
17 - 19 No. del sujeto	___ ___ ___	No. de ingreso al estudio	30 - 31 Edad al casarse (unión)	___ ___	Años cumplidos
20 - 21 Edad	___ ___	Años cumplidos			

EMBARAZOS PREVIOS:

Columna	Código	Columna	Código
32 - 33 Embarazo No. 1	___ ___	34 - 37 Fecha fin embar. 1	___ ___ ___ ___
38 - 39 Embarazo No. 2	___ ___	40 - 43 Fecha fin embar. 2	___ ___ ___ ___
44 - 45 Embarazo No. 3	___ ___	46 - 49 Fecha fin embar. 3	___ ___ ___ ___
50 - 51 Embarazo No. 4	___ ___	52 - 55 Fecha fin embar. 4	___ ___ ___ ___
56 - 57 Embarazo No. 5	___ ___	58 - 61 Fecha fin embar. 5	___ ___ ___ ___
62 - 63 Embarazo No. 6	___ ___	64 - 67 Fecha fin embar. 6	___ ___ ___ ___

Clave de "Embarazo X"

	Masc.	Fem.
Aborto	00	00
Está vivo	10	50
Mortinato	11	51
Muerto:		
0 - 6 días	12	52
7 - 28 días	13	53
29 d - 0.11 años	14	54
1.00 - 1.11 años	15	55
2.00 - 2.11 años	16	56
3.00 - 4.11 años	17	57
5.00 - 9.11 años	18	58
10.00 - 19.11 años	19	59
20.00 y más años	20	60
Embarazo actual	99	99

Columna 68 No. de tarjeta	1	Columna 69 Total de tarjetas	___	70-72	___ ___ ___ No. del niño
				73-75	___ ___ ___ No. de la madre

Columna	Código	Columna	Código
Columna 1-31		Se duplica de tarjeta No. 1	
32 - 33 Embarazo No. 7	— —	34 - 37 Fecha fin embar. 7	— — — —
38 - 39 Embarazo No. 8	— —	40 - 43 Fecha fin embar. 8	— — — —
44 - 45 Embarazo No. 9	— —	46 - 49 Fecha fin embar. 9	— — — —
50 - 51 Embarazo No. 10	— —	52 - 55 Fecha fin embar. 10	— — — —
56 - 57 Embarazo No. 11	— —	58 - 61 Fecha fin embar. 11	— — — —
62 - 63 Embarazo No. 12	— —	64 - 67 Fecha fin embar. 12	— — — —
Columna 68 No. de tarjeta	2	Colum. 69 - 75	Se duplica

Clave de "Embarazo No. x" (32-33)

	Masc.	Fem.
Aborto	00	00
Está vivo	10	50
Mortinato	11	51
Muerto:		
0 - 6 días	12	52
7 - 28 días	13	53
29 d - 0.11 años	14	54
1.00 - 1.11 años	15	55
2.00 - 2.11 años	16	56
3.00 - 4.11 años	17	57
5.00 - 9.11 años	18	58
10.00 - 19.11 años	19	59
20.00 y más años	20	60
Embarazo actual	99	99

Observaciones:

Colum. 1-31		Se duplica de tarjeta No. 2	
32 - 33 Embarazo No. 13	— —	34 - 37 Fecha fin embar. 13	— — — —
38 - 39 Embarazo No. 14	— —	40 - 43 Fecha fin embar. 14	— — — —
44 - 45 Embarazo No. 15	— —	46 - 49 Fecha fin embar. 15	— — — —
50 - 51 Embarazo No. 16	— —	52 - 55 Fecha fin embar. 16	— — — —
56 - 57 Embarazo No. 17	— —	58 - 61 Fecha fin embar. 17	— — — —
62 - 63 Embarazo No. 18	— —	64 - 67 Fecha fin embar. 18	— — — —
Columna 68 No. de tarjeta	3	Colum. 69 - 75	Se duplica

P-1975 c

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INCAP- DIVISION DE MICROBIOLOGIA

HISTORIA GINECO-OBSTETRICA

Lugar_____ Fecha_____ Clave_____ Encuestador_____

Nombre	Sexo	Rel. Fam.	Edad	Fecha Nac.	Edad al morir	Causa	Aborto	Causa	Est. Civil	Cond. Física	Menarquia	Menopausia	Peso	Talla	Ocupación

P-1902

OBSERVACIONES:_____

INCAP - DIVISION DE MICROBIOLOGIA
FORTIFICACION DEL MAIZ
INFORME DE ABORTOS

Nombre _____ Observador _____

Columna	Código	Clave
1 - 8 Identificación	— — — — — — — —	Clave de la madre
9 - 14 Fecha del aborto	— — — — — —	Día Mes Año
15 - 16 No. registro	2 3	Identificación del formulario

Columna	Código	Clave
17 - 19 No. del sujeto	— — —	No. de ingreso al estudio
20 - 21 Edad madre	— —	Años cumplidos — —
22 - 23 No. embarazo	— —	De 01 en adelante

Columna	Código	Clave
24 - 29 Fecha última menstruación	— — — — — —	Día Mes Año
30 - 31 Edad embarazo	— —	semanas — — 99: desconocido
32 Método de edad embarazo	—	1: última menstr. 2: altura uterina 3: 1 + 2 9: no determinado
33 Clasificación del aborto	—	1: espontáneo 2: inducido 9: desconocido

Columna	Código	Clave
34 Historia abortos previos	—	1: sí 2: no 9: desconocido
35 Investigación microbiológica del feto	—	1: sí 2: no
36 - 39 Peso del feto	— — — —	gramos — — — — 9999: no se pesó
40 - 41 Talla del feto	— —	cms. — — 99: no se midió

73 - 75 No. de madre	— — —	999: nulíparas

P-1975 b

INCAP - DIVISION DE MICROBIOLOGIA
FORTIFICACION DEL MAIZ
EXAMEN PRENATAL

Nombre

Observador

Columna	Código	Clave
1 - 8 Identificación	— — — — — — — —	Clave
9 - 14 echa examen	— — — — — —	Día Mes Año
15 - 16 No. de registro	2 4	Identificación del formulario
17 - 19 o. del sujeto	— — —	No. de ingreso al estudio

Columna	Código	Clave
20 - 21 Edad	— —	Años cumplidos
22 - 23 No. embarazo	— —	De 01 en adelante
24 Edad del embarazo	—	1: 6 a 8 semanas 2: 12 a 14 semanas 3: 26 a 28 semanas 4: 36 a 37 semanas 5: 38 a 39 semanas

EXAMEN FISICO: DATOS PROPIOS DEL EMBARAZO

Columna	Código	Clave
25 - 30 ensión arterial	— — — — — —	Diastólica Sistólica
31 Leucorrea y hemorragia vaginal	—	0: ausentes 1: leucorrea 2: hemorragia 3: 1+2 9: desconocido
32 Edema miembros inferiores	—	0: ausente 1: maleolar 2: piernas 8: otros (especificar) 9: desconocido
33 Várices	—	0: ausentes 1: miembros infer. 2: vulvares, perineales y/o hemorroides 3: 1+2 8: otros 9: desconocido

Columna	Código	Clave
34 - 35 Altura uterina (cms)	— —	99: desconocido
36 Posición fetal	—	1: cefálica 2: podálica 3: transversa 9: no determinado
37 Examen ginecológico	—	0: normal 1: anormal (especificar) 9: no se efectuó
38 Albuminuria	—	0: ausente 1: trazas 2: 30 mg. 3: 100 mg. 4: 300 mg. 5: 1000 mg. 9: desconocido

Continuación de EXAMEN FISICO

Columna	Código	Clave
39 Glucosuria	—	0: ausente 1: poca 2: moderada 3: mucha 9: desconocido

Columna	Código	Clave
40 Hematuria	—	0: ausente 1: positiva 9: desconocido

DIAGNOSTICO DEL EMBARAZO

Columna	Código	Clave
41 - 42 Edad embarazo (por U. M.)	— —	Semanas 99: desconocido
43 - 44 Edad embarazo (por A.U.)	— —	Semanas 99: desconocido
45 Tipo embarazo	—	1: simple 2: gemelar 3: otros múltiples

Columna	Código	Clave
46 Resultado del examen físico	—	0: normal 1: anormal 2: con morbilidad 3: 1 + 2 9: no se practicó
47 Resultado del examen obstétrico	—	0: normal 1: anormal (incluye presentación anormal) 9: no se practicó

ANTROPOMETRIA

Columna	Código	Clave
48 - 51 Peso	— — — —	K g D g 9999: No se midió
52 - 54 Talla	— — —	cm 999: No se midió
55 - 57 Circunf. brazo derecho	— — —	mm 999: No se midió

Columna	Código	Clave
58 - 60 Circunf. pierna derecha	— — —	mm 999: No se midió
61 - 63 Pliegue cutáneo tricip. derecho	— — —	mm. 10 999: No se midió
64 - 66 Pliegue cutáneo escapular derecho	— — —	mm. 10 999: No se midió

P-1975 d

Col. 70 - 72 No. del niño	— — —	Ver manual
Col. 73 - 75 No. de la madre	— — —	Ver manual

INCAP - DIVISION DE MICROBIOLOGIA
ESTUDIO DE EMBARAZADAS
Registro de Muestras

No. del sujeto	
No. de la muestra	

Nombre _____

Técnico _____ Editor _____

Columna	Código	Item
1 - 8 Identificación	— ——— ———	Clave de la señora Pueblo, familia, manzana, individuo.
9 - 14 Fecha de recolección	— — ———	Día Mes Año
15 - 16 Clase de registro	2 5	Identifica a este formulario
17 - 19 No. del sujeto	— — —	No. de ingreso al estudio

Columna	Código	Item
20 - 21 Edad	— —	Años cumplidos
22 - 23 No. del embarazo	— —	De 01 en adelante
24 - 25 Edad del embarazo	— —	Semanas cumplidas
26 Salud	—	0. Sana 1. Enferma

Columna	Código	Item
27 - 31 No. de la muestra	———	Número correlativo
32 Tipo de muestra	—	0. Sangre (cultivo) 1. Heces fecales 2. Orina 3. Hisopo faríngeo 4. Pus 5. Exudado oral 6. Secreción conjuntival 7. Secreción (hisopo) vaginal 8. Otro 9. No se recogió

Columna	Código	Item
33 Diversificación de la muestra	—	1. Parásitos, bacterias, y virus 2. Bacterias + virus 3. Parásitos + virus 4. Parásitos + bacterias 5. Parásitos 6. Bacterias 7. Virus 8. Prueba embarazo 9. No se recogió

CARACTERISTICAS DE LAS HECES Llenar con 9 cuando la muestra no es heces.		
Columna	Código	Item
35 Consistencia	—	1. Formada, Semiformada } Normal 2. Viscosa-hulosa 3. Floja (mosh) 4. Semi-líquida 5. Líquida 8. Otro 9. Desconocido
37 Moco y sangre	—	1. Moco 2. Sangre 3. Moco y sangre 8. No hay 9. Desconocido
38 Sangre oculta	—	1. Si, hay 2. No hay 9. Desconocido

CARACTERISTICAS DE LA ORINA Llenar con 9 cuando la muestra no es orina.		
Coluna	Código	Item
39 Albuminuria	—	0. Ausente 1. Trazas 2. 30 mg 3. 100 mg 4. 300 mg 5. 1000 mg 9. Desconocido
40 Glucosuria	—	0. Ausente 1. Poca 2. Moderada 3. Mucha 9. Desconocido
41 Hematuria	—	0. Ausente 1. Positiva 9. Desconocido

Columna	Código	Item
42 - 43 No. de orden del examen	— —	Según control de muestras
44 Tipo de examen	—	1. Periódico 2. Especial

70 - 72 No. del niño	— — —	Ver clave
73 - 75 No. de la madre	— — —	Ver clave

P-1992

INCAP - DIVISION DE MICROBIOLOGIA
ESTUDIO DE EMBARAZADAS
Registro de Sangres

6

No. sujeto	
No. muestra	

Nombre _____

Técnico _____ Editor _____

Columna	Código	Item	Columna	Código	Item
1 - 8 Clave	_ _ _ _ _ _ _ _	Pueblo, familia, manzana, individuo.	20 - 21 Edad	_ _	Años cumplidos
9 - 14 Fecha	_ _ _ _ _ _	Día Mes Año	22 - 23 No. del embarazo	_ _	De 01 en adelante
15 - 16 Clase de registro	26	Identifica a este formulario	24 - 25 Edad del embarazo	_ _	Semanas cumplidas 99 = No aplica
17 - 19 No. del sujeto	_ _ _	No. de ingreso al estudio	26 Salud	_	0. Sana 1. Enferma

Columna	Código	Item	Columna	Código	Item
27 Clave de orden de la muestra	_	0. Pre-embarazo 1. Final 1o. trimestre 2. Final 2o. trimestre 3. Final 3o. trimestre 4. Suero de cordón 5. Post-parto (3 meses)	36 Utilización del suero	_	1. Rutina 2. Suero agudo 3. 1 + 2 4. Suero convaleciente 5. 1 + 4 8. Otro 9. No se tomó la muestra
28 - 29 Clave del estudio	_ _	05. Infeccion I. U. 06. Enriquecim. Maíz 07. 05 + 06	42 - 43 No. de orden del examen	_ _	Según control de muestras
30 - 35 No. del suero	_ _ _ _ _ _	999999. No se tomó la muestra	44 Tipo de examen	_	1. Periódico 2. Especial

70 - 72 No. del niño		Ver clave
73 - 75 No. de la madre		Ver clave

P-1992 b

INCAP - División de Microbiología

RESUMEN DE MORBILIDAD EN MUJERES EMBARAZADAS

Nombre _____

Columna	Código	Item
1 - 8 Clave	— — — — — — — —	Pueblo, familia, manzana, individuo
9 - 14 Fecha última menstruación	— — — — — —	Día Mes Año
15 - 16 Clase de registro	2 7	No se codifica
17 - 17 No. sujeto	— — —	No. de ingreso al estudio

Columna	Código	Item
20 - 21 Edad embarazo	— —	Semanas cumplidas
22 Estudio	—	Ver código
23 - 24 Total tarjetas	— —	De 01 en adelante
25 - 26 Año calendario	— —	Dos últimas cifras

ENFERMEDADES: FECHA INICIAL Y DURACION

Columnas ENFERMED.	27-30 CODIGO	31-34 F.I.	35-36 DUR	37-40 F.I.	41-42 DUR.	43-46 F.I.	47-48 DUR.	49-52 F.I.	53-54 DUR.	55-58 F.I.	59-60 DUR	61-64 F.I.	65-66 DUR.	67-68 = TARJ.

70 - 72 No. niño	— — —	Ver manual

73 - 75 No. madre	— — —	Ver manual

INCAP - División de Microbiología

Estudio Longitudinal en Santa María Cauqué

REGISTRO DE MUESTRAS

Niño No.	
Muestra	

Nombre del niño _____

Manipulador _____

Editor _____

Columna	Código	Item
1-8 Clave del niño	— — — — — — — —	Pueblo, familia, manzana e individuo
9-14 Fecha de recolección	— — — — — —	Día, mes y año
15-16 Clase de registro	0 5	No. del formulario
17 Sexo		No se codifica
18-21 Edad del niño		No se codifica
22-24 No. orden del examen	— — —	Según hoja de trabajo
25 Tipo de examen	—	(1) Periódico (heces o hisopo rectal solo) (2) Especial (9) No se hizo

Columna	Código	Item
26 Salud en tiempo del examen	—	(1) Buena (toda la familia) (2) Buena (hay enfermedad en la familia) (3) Niño enfermo (familia sana) (4) Niño enfermo (hay enfermedad en la familia) (9) Desconocido
27-31 No. de la muestra	— — — — —	Según hoja de trabajo
32 Tipo de muestra	—	(1) Heces (2) Hisopo rectal (3) Hisopo faríngeo (4) Pus (5) Exudado oral (6) Secreción conjuntival (7) Secreción vaginal (8) Otro (9) No se recogió
33 Diversificación de la muestra	—	(1) Parásitos, bacterias y virus (2) Bacterias y virus (3) Parásitos y virus (4) Parásitos y bacterias (5) Parásitos (6) Bacterias (7) Virus (8) Levaduras (9) No se recogió

Columna	Código	Item
CARACTERISTICAS DE LAS HECES (Llenar con 9 cuando la muestra no es heces)		
34 Color	—	(1) Blanco (2) Amarillo (3) Amarillo verdoso (4) Verde (5) Café (6) Rojo (7) Gris negro (8) Otro (9)
35 Consistencia	—	(1) Formada / Semi-formada } Normal (2) Viscosa-hulosa (3) Floja (mosh) (4) Semi-líquida (5) Líquida (8) Otro (9)
36 Restos de alimentos	—	(1) Si hay (8) No hay (9)
37 Moco y sangre	—	(1) Moco (2) Sangre (3) Moco y sangre (8) No hay (9)
38 Sangre oculta	—	(1) Si hay (8) No hay (9)

Columna	Código	Item
39 Olor	—	(1) A semen (2) Aromático (3) Rancio-ácido (4) Fétido (5) Sui generis (normal, a heces) (6) Sin olor (8) Otro (9)
40 Edad de muestra	—	Hora_____ ____ horas ____ minutos (1) 15 minutos (2) 30 minutos (3) 45 minutos (4) 60 minutos (5) 75 minutos (6) 90 minutos (7) 105 minutos (8) 120 minutos (9)
41-42 Hora en que se evacuó la muestra	— —	De 01 a 24 horas
43 Lavado o Biopsia	—	(1) Jugo (lavado) gástrico (2) Jugo (lavado) duodenal (3) Jugo (lavado) Y-Ileon (4) Biopsia estómago (5) Biopsia duodeno (6) Biopsia Y-Ileon (7) Biopsia colon (8) Biopsia recto (9)

P-1582

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA

(Estudio Virus Diarrea)

HISTORIA DE ALIMENTACION

Clave ☐ ☐☐☐ ☐☐ ☐☐

Nombre del niño _____

RUBRO	Fecha	Por Quién	Informante	Encuestador	Diarrea

M-1174

INCAP DIVISION DE MICROBIOLOGIA

10a

HISTORIA DE ALIMENTACION

Clave ☐ ☐☐☐ ☐☐ ☐☐

Nombre _____ Estado de Salud _____

Semana de embarazo: _____ Fecha _____ Peso _____ Lbs

Alimento	Medida	Frec. diaria	Frec. seman.	Total medidas	Total g	Observaciones

P-1948

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA
DIVISION DE MICROBIOLOGIA

10 b

CONSUMO DIARIO DE ALIMENTOS

LUGAR: _____ FECHA: _____ DIA: _____

NOMBRE: _____ EDAD: _____ PESO: _____

DESAYUNO

ALMUERZO

ENTRE COMIDAS

COMIDA

OBSERVACIONES: _____

P-1896

INCAP • División de Microbiología

Estudio Semanal en Santa María Cauqué

ENCUESTA DIETETICA

11

Nombre: _____ Encuestador: _____

Columna	Item	Rubro
1-8		Clave
9-14	-- -- --	Fecha inic. encuesta
15-16	0 7	Duración encuesta
17		Sexo
18-20		Edad

Columna	Item	Rubro
21-23	-- -- --	Número
24-29		Fecha nacimiento
30-31	-- --	Asistencia
32	—	Tipo Dieta: 1. Sólo leche materna 2. No leche materna 3. Combinada 4. Destetada

Alimento 33-35	Cantidad en medidas 36-39	Frecuencia diaria 40	Frecuencia semanal 41
---	--.--	-	-
---	--.--	-	-
---	--.--	-	-
---	--.--	-	-
---	--.--	-	-
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---	--.--	-	-
---	--.--	-	-
---	--.--	-	-
---	--.--	-	-

Alimento 33-35	Cantidad en medidas 36-39	Frecuencia diaria 40	Frecuencia semanal 41
---	--.--	-	-
---	--.--	-	-
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Observaciones: _____

P-1910

INCAP - División de Microbiología
Fortificación del Maíz
EXAMEN DEL RECIEN NACIDO

mbre: _____

cnico: _____ Editor _____

IDENTIFICACION

olumna	Código	Item	Columna	Código	Item
1 - 8 Clave	— — — — — — — —	Pueblo, casa, manzana, individuo	17 Sexo	—	1. Masculino 2. Femenino
9 - 14 cha de cimiento	— — — — — —	Día, mes y año	18 - 19 Hora del nacimiento	— —	01 a 24
5 - 16 ase del egistro	3 3	No se codifica	20 - 21 Orden del nacimiento	— —	01 en adelante

ANTROPOMETRIA

2 - 25 Peso	— — — —	— — — — g 9999. No se pesó	29 - 31 Circunferencia cabeza	— — —	— — — cm 999. No se midió
6 - 28 Talla	— — —	— — — cm 999. No se midió	32 - 34 Circunferencia tórax	— — —	— — — cm 999. No se midió

35 - 36 Edad de estación	— —	— — semanas 99. No determinado	37 Clasificación del recién nacido	—	1. A término 2. Prematuro por gestación 3. Prematuro por examen físico y por gestación 4. Prematuro por examen físico cuando se desconoce la gestación 5. Post maduro 9. No determinado

EXAMEN FISICO DEL NIÑO

Columna	Código	Item
38 Aspecto general	—	0. Bueno 1. Decaído 2. Malo 9. Desconocido
39 Esqueleto, ntonelas y suturas craneanas	—	0. Normales 1. Esqueleto anormal. Suturas; y fontanelas normales 2. Esqueleto anormal. Suturas y fontanelas anormales 3. Esqueleto normal. Suturas y fontanelas anormales 9. Desconocido
40 Fracturas	—	0. No hay 1. Si hay 9. Desconocido
41 Piel	—	0. Rosada completamente 1. Palidez y/o cianosis perifer. 2. Cianosis universal 3. Cianosis perif., cuerpo rosado 4. Equimosis 5. Ictericia 6. Púrpura o petequias 7. 5 + 6 8. Otro 9. Desconocido
42 Vómitos	—	0. Ausentes 1. Presentes 9. Desconocido
43 ctericia hepato y esplenomegalia durante las primeras 24 horas	—	0. Ausentes 1. Ictericia 2. Hepatomegalia 3. Esplenomegalia 4. 1 + 2 5. 1 + 3 6. 2 + 3 7. 1 + 2 + 3 9. Desconocido

Columna	Código	Item
44 Ritmo respiratorio	—	Ver código en el manua de operaciones
45 Auscultación de pulmones	—	0. Negativo 1. Estertores 2. Roncos 3. 1 + 2 4. Quejido 5. 4 + 1, 2 o 3 8. Otro 9. Desconocido
46 Auscultación cardíaca	—	0. Normal 1. Soplo 8. Otro 9. Desconocido
47 Cabeza	—	0. Normal 1. Caput succedaneum 2. Céfalo-hematoma 8. Otro 9. Desconocido
48 Malformaciones congénitas	—	0. Ausente 1. Presente 9. Desconocido

HISTORIA DEL PARTO

Columna	Código	Item
52 Tipo del parto	—	1. Simple 2. Gemelar 3. Otro
53 Eutócico	—	1. Sí 2. No
54 Presentación	—	1. Cefálico 2. Podálico 3. Otro
55 - 56 Duración del trabajo	— —	— — horas 99. Desconocido
57 - 58 Ruptura de membranas	— —	— — horas 99. Desconocido
59 Color del líquido amniótico	—	1. Claro 2. Turbio 3. Meconio 8. Otro 9. Desconocido
60 Circulares del cordón	—	1. Presentes 2. Ausentes

Columna	Código	Item
61 Sangre del cordón	—	1. Sí 2. No
62 - 64 Peso de la placenta	— — —	— — — gramos 999. No se pesó
65 - 66 Edad de la madre	— —	— — años 99. Desconocido
67 - 69 Muerte perinatal	— — —	— — — horas 999. No murió
70 - 72 Número del niño	— — —	Ver manual
73 - 75 Número de la madre	— — —	Ver manual

P-2 008

INCAP - División de Microbiología
Fortificación del Maíz
EXAMEN DE MADUREZ FETAL

Nombre: _____

Técnico: _____ Editor: _____

Columna	Código	Item
1 - 8 Clave	— — — — — — — —	Pueblo, casa, manzana, individuo
9 - 14 Fecha de nacimiento	— — — — — —	Día Mes Año
15 - 16 Clase de registro	3 4	No se codifica
17 Sexo	—	1. Masculino 2. Femenino
18 - 19 Hora de nacimiento	— —	01 a 24
20 - 21 Orden de nacimiento	— —	01 en adelante

EVALUACION DEL RECIEN NACIDO

APGAR		
22 Pulso central	—	0. Ausente 1. Menos de 100 por minuto 2. 100 o más por minuto
23 Esfuerzo respiratorio	—	0. Ausente 1. Lento, irregular 2. Bueno, llorando
24 Tono muscular	—	0. Flácido, no hay flexión 1. Alguna flexión de las extremidades 2. Movimientos activos
25 Respuesta al catéter en la entana de la nariz	—	0. Sin respuesta 1. Hace muecas solamente 2. Estornuda o tose
26 Color	—	0. Azul o pálido 1. Cianosis en extremidades, y/o cara y labios con el cuerpo rosado 2. Completamente rosado
27 - 28 Punteo total (APGAR)	— —	Suma de valores de las columnas 22-26

USHER		
29 Pliegues plantares	—	1. Unicamente pliegue transversal anterior 2. Presentes únicamente en los dos tercios anteriores 3. Presentes en todo [illegible]
30 Cartílago de la oreja	—	0. Ausente, oreja [illegible] 1. Algo de cartílago 2. Completo
31 - 32 Diámetro del tejido mamario	— —	Milímetros sin decimal
33 Descenso de testículos	—	0. No descendidos en el escroto 1. Un testículo en el escroto 2. Dos testículos en el escroto
34 Tamaño del escroto	—	0. Muy pequeño con pocas arrugas 1. Bien formado con abundantes arrugas anteriores y laterales
35 Naturaleza del cabello	—	0. Peluso, escaso 1. Peluso, abundante 2. Sedoso, escaso 3. Sedoso, abundante

Columna	Código	Item
36 Textura de la piel	—	0. Muy fina y gelatinosa 1. Fina y suave 2. Suave y medianamente gruesa 3. Ligeramente engrosada, con grietas y descamación superficial 4. Gruesa, apergaminada con grietas superficiales y profundas.
37 Color de la piel	—	0. Rojo oscuro 1. Rosado 2. Rosado pálido 3. Pálido 4. Amarillento 5. Cianótico
38 Visibilidad del clítoris	—	0. No visible 1. Apenas visible 2. Bien visible
39 Descarga vaginal	—	0. Ausente 1. Presente
40 Lanugo	—	0. Cubre todo el cuerpo 1. Cubre todo el cuerpo, menos la cara 2. Cubre hombros y espalda 3. Ausente
41 Tamaño de las uñas	—	0. No alcanzan la punta del dedo 1. Alcanzan la punta del dedo 2. Se extienden más allá de la punta del dedo
42 Clasificación del recién nacido, por examen físico	—	1. Prematuro 2. A término 3. Post-maduro
43 - 44 Edad de gestación (U.M.)	— —	Semanas

CONTROL DE TEMPERATURA

Columna	Código	Item
45 - 46 1er. día (0-23 hr.)	— —	°C, sin decimal
47 - 48 2o. día (24-47 hr.)	— —	°C, sin decimal

PERDIDA DE PESO POST-NATAL

49 - 51 Pérdida total	— — —	gramos, sin decimal
52 - 53 % pérdida	— —	En relación al peso al nacer, sin decimal
54 - 55 Edad de pérdida máxima de peso	— —	Días
56 - 57 Edad de recuperación del peso al nacer	— —	Días

PRUEBA DE BRAZELTON (PUNTEO)

58 - 59 Area motriz	— —	
60 - 61 Area refleja	— —	
62 - 63 Area social	— —	
64 - 65 Area conductual	— —	
66 - 67 Area habituación	— —	
68 - 69 TOTAL	— —	

70 - 72 Número del niño	— — —	Ver manual
73 - 75 Número de la madre	— — —	Ver manual

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INCAP - Division de Microbiología
RESUMEN DE MORBILIDAD EN NIÑOS

Nombre _____ Codificó _____

Columna	Código	Item	Columna	Código	Item
1 - 8 · Clave	— — — — — — — —	Pueblo, familia, manzana, individuo	22 Estudio	—	Ver código
9 - 14 Fecha nacimiento	— — — — — —	Día Mes Año	23 - 24 Total de tarjetas	— —	Control de tarjetas producidas por este formulario
15 - 16 Clase del registro	3 2	Identifica a este formulario	25 - 26 Año calendario	— —	Dos últimas cifras
17 Sexo	—	1. Masculino 2. Femenino	27 - 29 No. del episodio	— — —	De 001 en adelante
18 - 21 Edad	— — — —	No se codifica	30 - 32 Duración episodio	— — —	De 001 en adelante

ENFERMEDADES: Fecha inicial y duración

Columnas ENFERMEDAD	33-36 Código	37-40 F.I.	41-42 DUR.	43-46 F.I.	47-48 DUR.	49-52 F.I.	53-54 DUR.	55-58 F.I.	59-60 DUR.	61-64 F.I.	65-66 DUR.	67-68 DUR.

PESOS

Columna DESCRIP.	33-36 CODIGO	37-41 GRAMOS	42-45 FECHAS	67-68 # TARJ.
Peso 1	9901			
Peso 2	9902			
Peso 3	9903			
Peso 4	9904			
Peso 5	9905			
Peso 6	9906			
Peso 7	9907			
Peso 8	9908			
Peso 9	9909			
Peso 10	9910			
Peso 11	9911			
Peso 12	9912			
Peso 13	9913			
Peso 14	9914			
Peso 15	9915			
Peso 16	9916			
Peso 17	9917			
Peso 18	9918			
Peso 19	9919			
Peso 20	9920			
Peso 21	9921			

70 - 72 Número del niño	— — —	Ver manual
73 - 75 Número madre	— — —	Ver manual

OBSERVACIONES

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INCAP - División de Microbiología

Estudio Longitudinal en Santa María Cauqué

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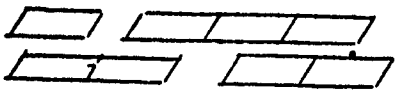
REGISTRO DE MORBILIDAD

Nombre del Niño: _____

Clave: 

Fecha del Primer Examen: _____

No. de Episodios de Enfermedad en Este Registro: 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

	Gramos:	Fechas:
Peso Inicial:	_____	_____
Peso Final:	_____	_____
Otros Pesos: 1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

Observaciones: _____

_____

_____

Tratamiento: _____

_____

_____

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DESCRIPCION DE LA ENFERMEDAD

30: Temperatura °C (R)

Días de Evolución

ódigo	Item	1		2		3		4		5		6		7		8		9		10		11		12		13		14		1
		M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M
	1. Menos de 37.5																													
	2. Imp. madre: afebril																													
	3. Imp. madre: febril																													
	4. 37.5 - 38.5																													
	5. 38.6 - 40.0	16		17		18		19		20		21		22		23		24		25		26		27		28		29		3
		M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M	T	M
	6. 40.1 o más																													
	9. No información																													

31: Ojos

ódigo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Lagrimeo																													
	2. Enroj. conj. y/o sup.																													
	3. Opac. córnea y/o esta																													
	4. Orzuelo																													
	5. Abceso de párpado																													
	6. Queratitis																													
	7. Ulcera de la córnea																													
	8. Asintomático																													
	9. No información																													

32: Oidos

ódigo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Obst. por cerumen																													
	2. Cuerpo extraño																													
	3. Dolor de oído																													
	4. Otitis externa																													
	5. Otitis media aguda																													
	6. Otitis media supurada																													
	7. Infección surco R. A.																													
	8. Asintomático																													
	9. No información																													

33: Naríz

Cód.	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Rinorrea u obstrucción																													
	2. Estornudos																													
	3. 1 +2																													
	4. Descarga purulenta																													
	5. Senositis																													
	6. 5 + (1 y/o 2 o 3)																													
	7. Epistaxis																													
	8. Asintomático																													
	9. No información																													

34: Boca

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Fisuras angulares																													
	2. Vesículas y/o ulceras																													
	3. Placas blancas																													
	4. Aftas																													
	5. Enantema																													
	6. Koplik																													
	7. Enantema y Koplik																													
	8. Asintomático																													
	9. No información																													

35: Localización de lesiones en la boca

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Labios																													
	2. Lengua																													
	3. Encias																													
	4. Carrillos																													
	5. Paladar																													
	6. Labios + enc. y/o len.																													
	7. Carrillos + pala. y/o 6																													
	8. Asintomático																													
	9. No información																													

Garganta

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1. Dolor de garganta																													
2. Enrojecimiento																													
3. 1+ 2																													
4. 2+exud. o membranas																													
5. 2+ vesículas o ulcer.																													
6. Moco pur. retro-nasal																													
7. 2 + 6																													
8. Asintomático																													
9. No información																													

Laringe

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1. Ronquera (disfonia)																													
2. Pérdida de la voz																													
3. Croup																													
8. Asintomático																													
9. No información																													

Ganglios Linfáticos

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1. Aumentados de tamaño																													
2. 1+ signos inflamatorios																													
3. 1+ supuración																													
4. 1, 2 y/o 3 + adherencia en plano superfic.																													
5. 1, 2 y/o 3 + adherencia en plano profundo																													
8. Asintomático																													
9. No información																													

39: Localización Ganglios Linfáticos Afectados

ódi	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Cervicales anteriores																														
	2. Cervicales laterales																														
	3. 1 + 2																														
	4. Pre-auriculares																														
	5. Retro-auriculares y/o occipitales																														
	6. Ing. y/o triang. scarpa																														
	7. Axilares																														
	8. Asintomático																														
	9. No información																														

40: Tos

ódigo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Solamente tos																														
	2. Tos con vómitos																														
	3. 1 + dolor subesternal																														
	4. 2 + dolor subesternal																														
	5. 1 + disnea																														
	6. 2 + disnea																														
	8. Asintomático																														
	9. No información																														

41: Respiración

ódigo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Polipnea																														
	2. Sibilante																														
	3. Dolorosa																														
	4. Disnea																														
	8. Asintomático																														
	9. No información																														

42 Tórax: Inspección y Percusion

digo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	1. Retracción																														
	2. Matidez																														
	3. 1 + 2																														
	4. Hiperresonancia																														
	5. 1 + 4																														
	8. Asintomático																														
	9. No información																														

43: Tórax: Auscultación

igo	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	1. Roncus																														
	2. Estertores húmedos																														
	3. Sibilancias o pillidos																														
	4. 1 y/o 2 + 3																														
	5. Ester. crepitantes																														
	6. 1, 2 y/o 3 + 5																														
	7. Frote pleural																														
	8. Asintomático																														
	9. No información																														

4: Gastrointestinal: Sintomatología General

go	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	1. Náusea																														
	2. Sólo vómitos																														
	3. Dolor abdominal																														
	4. Diarrea																														
	5. Diarrea y vómitos																														
	6. 3 + 4																														
	7. 3 + 5																														
	8. Asintomático																														
	9. No información																														

45: No. de Evacuaciones Intestinales en el Primer Día

Cód	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. 1 - 3																													
	2. 4 - 6																													
	3. 7 - 9																													
	4. 10 - 12																													
	5. 13 - 15																													
	6. 16 - 20																													
	7. 21 o más																													
	8. Asintomático																													
	9. No información																													

46: Moco y sangre

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Moco																													
	2. Sangre																													
	3. Moco y Sangre																													
	8. No hay																													
	9. No información																													

47: Neurológico

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	1. Signos meníngeos																													
	2. Hipotonía muscular																													
	3. Parálisis flácida																													
	4. Parálisis espástica																													
	5. Convulsiones																													
	6. Convulsiones + 1																													
	7. Convulsiones + 3 ó 4																													
	8. Asintomático																													
	9. No información																													

48: Piel: Infecciones

Cód	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Lesión pust. superf.																														
	2. Abceso, forúnculo																														
	3. Celulitis																														
	4. 1 + 2																														
	5. 1 + 3																														
	6. 2 + 3																														
	7. 1 + 2 + 3																														
	8. Asintomático																														
	9. No información																														

49: Piel: Traumatismos

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Herida o escoriación																														
	2. 1 + infección secund.																														
	3. Quemadura																														
	4. 1 + infección secund.																														
	5. Contusiones																														
	8. Asintomático																														
	9. No información																														

50: Piel: Varias

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. eczema y/o dermatitis de contacto																														
	2. 1 + Infeccion secund.																														
	3. Urticaria papulosa																														
	4. Intértrigo o dermatitis seborreica																														
	5. Erupción mac.-papul.																														
	6. Erupción pap.-vesic.																														
	7. Lesiones purpúricas																														
	8. Asintomático																														
	9. No información																														

51: Localización de las Lesiones Cutáneas

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Cara																														
	2. Tronco																														
	3. Extremidades																														
	4. 1 + 2																														
	5. 1 + 2 + 3																														
	6. 2 + 3																														
	7. Axilas y/o inguinales																														
	8. Asintomático																														
	9. No información																														

52: Cuero Cabelludo

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Lesión seca																														
	2. Lesión exudativa																														
	3. 1 + infección seca																														
	4. 2 + infección seca																														
	5. 1 + alopecia																														
	6. 2 + alopecia																														
	7. Heridas																														
	8. Asintomático																														
	9. No información																														

53: Sintomatología General

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Irritabilidad																														
	2. Decaimiento																														
	3. Anorexia																														
	4. 1 y/o 2 + 3																														
	8. Asintomático																														
	9. No información																														

54: Sintomatología Sistémica

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Malestar, fatiga, debilidad general																														
	2. Dolor de cuerpo																														
	3. Cefalea																														
	4. Calofríos																														
	5. 1 y/o 2 + 3																														
	6. 1 y/o 2 + 3 + 4																														
	8. Asintomático																														
	9. No información																														

55: Traumatismos

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Contusiones																														
	2. Fracturas																														
	8. No hay																														
	9. No información																														

56: Nutrición

Código	Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	3
	1. Desnutrido																														
	2. Marasmo																														
	3. Pre-Kwashiorkor																														
	4. Kwashiorkor																														
	5. Otro trastorno nutric.																														
	8. Bien nutrido																														
	9. No información																														

INCAP - División de Microbiología

Estudio Longitudinal en Santa María Cauqué

EXAMEN PEDIATRICO

Nombre del niño _____

Técnico _____ Editor _____

Columna	Código	Item
1-8 Clave		
9-14 Fecha del examen		días meses años
15-16 Clase de registro	3 5	3 5
17 Sexo		(1) Masculino (2) Femenino
18-21 Edad del niño		semanas días
22-24 Número de Orden del Examen		(999) No se hizo
25 Tipo de Examen		(1) Periódico (2) Especial (3) Recuperación de la pérdida de peso postnatal

Columna	Código	Item
26 Salud del Niño		(1) Buena (2) Hay enfermedad
27-31 Peso (gms)		x̄
33-35 Talla (cms)		x̄
35-37 Circunferencia de cabeza (cms)		x̄
39-41 Circunferencia de tórax (cms)		x̄

70-72 No. del niño	___ ___ ___	Ver manual
73-75 No. de la madre	___ ___ ___	Ver manual

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INSTITUTO DE NUTRITION DE CENTRO AMERICA Y PANAMA
DIVISION DE MICROBIOLOGIA
REGISTRO DE MORTALIDAD

1 2 Pueblo _____ 3 4 5 Año (menos 1000) No de hoja 6 7 8

Nro. de orden 9-10	Nombre	Sexo 11	Edad			Fecha	Causa de muerte	
			Años 12-13	Mes. 14-15	Días 16-17	Mes 18-19	Código 20-21	Descripción

Códigos

Sexo: M - 1
F - 2

Causa Muerte:

01 - Tos ferina
02 - Sarampión
03 - Disentería, asientos
04 - Neumonía, bronconeum.
05 - Hidropesía, hinchazón, desmerecido
06 - Viruela
07 - Tifo
08 - Cólera
09 - Tétano (mal de 7 días)
10 - Otros

OBSERVACIONES

INSTITUTO DE NUTRICION DE CENTRO AMERICA Y PANAMA
DIVISION DE MICROBIOLOGIA
REGISTRO DE NATALIDAD

__ __ Pueblo _____ __ __ __ Año (menos 1000) No. de hoja __ __ __
1 2 3 4 5 6 7 8

Nro. de orden 9-10	Nombre	Sexo 11	Fecha mes 12-13	Hora 14-15	Edad Padres Pad. 16-17	Mad. 18-19	Códigos
							Sexo: M - 1 F - 2 Hora: De 1 a 24 hrs.
							OBSERVACIONES

FORTIFICACION DEL MAIZ
Santa María Cauqué

Col. 1 — Molino _____ Fecha Col. 2 - 3 — 4-5 — 6 - 7

Familia Col. 8-10	Nombre	Libras Col. 11-12	Medidas Col. 13-14
58	TRINIDAD CHIROY ZIL		
59	TEODORA GARCIA		
60	PATRICIA ALVAREZ		
62	AGUSTINA YUS		
63	SARITA YUS		
64	SIMONA CHIROY		
65	JOSEFA CHIROY		
66	FAUSTINA CHIROY		
67	MERCEDES JITZ		
68	ALEJANDRA ALVAREZ		
69	MANUELA SOC		
70	VICTORIA SEBAQUIJAY		
71	ROSA DIAZ		
73	JOSEFA ALVAREZ		
74	ISABEL TUBAC		
75	JESUS AGUILAR		
76	ROSA URRION		
77	MARIA CHIROY		
79	NATIVIDAD SUBUYUJ		
80	FRANCISCA CHIROY		
82	JESUS CHIROY		
83	SABINA CHIROY		
84	ESTEFANA AGUILAR		
86	FIDELIA SEBAQUIJAY		
87	MARIA SEBAQUIJAY		

FORTIFICACION DEL MAIZ
Santa María Cauqué

— Molino ———————— Fecha —— —— —— ——
Col. 1 Col. 2 - 3 4 - 5 6 - 7

Familia Col. 8-10	Nombre	Libras Col. 11-12	Medidas Col. 13-14
88	FRANCISCA CHIROY		
89	MARIA ISABEL ZIL		
90	SABINA MORALES		
91	SECUNDINA DE PAZ		
92	AURORA DE PAZ		
93	DOLORES YUS		
94	MARIA ZIL		
95	ALBERTA ALQUIJAY		
96	PAULA MORALES		
97	CASIMIRA YUS		
98	FERNANDA ALVAREZ		
99	ROSA PETRONA DIAZ		
100	MARIA MERCES YUS		
101	PRIMIDA ZIL		
102	LUCIA CON		
103	MACARIA CHIROY		
104	MARIA EUSTAQUIA CUC		
105	CRISTINA RECOPACHI		
106	FAUSTINA SOC		
107	GREGORIA SEBAQUIJAY		
108	CRISTINA C. SEBAQUIJAY		
109	JOSEFINA SUBUYUJ		
110	CARLOTA LOPEZ		
111	DOMINGA AGUILAR		
112	IGNACIA SEBAQUIJAY		

INCAP - División de Microbiología
Fortificación del Maíz

CONTROL DEL SUPLEMENTO

Columna	Item	Código
1-4	__ __ __ __	NUMERO DE LA MUESTRA
5-7	__ __ __	Identificación de la casa
8	__	TIPO DE MUESTRA 1. Tortilla: control parcial 2. Tortilla: control del suplemento 3. Tortilla: control completo 4. Suplemento: control de calidad 5. Orina 6. 9. Desconocido
9-14	__ __ __ __ __ __	Fecha de la muestra
		ANALISIS
15-20	__ __ __ __ __ __	Fecha del análisis
21-22	__ __	Técnico
23-25	__ __ __	Humedad, __ __ . __ g %
26-28	__ __ __	Extracto etéreo, __ __ . __ g %
29-31	__ __ __	Fibra cruda, __ __ . __ g%
32-34	__ __ __	Nitrógeno, __ __ . __ g%
35-37	__ __ __	Proteína (N x 6.25), __ __ . __ g %
38-40	__ __ __	Cenizas, __ __ . __ g %
41-43	__ __ __	Carbohidratos totales, __ __ . __ g %
44-47	__ __ __ __	Calcio, __ __ __ __ mg %
48-51	__ __ __ __	Fósforo, __ __ __ __ mg %
52-54	__ __ __	Hierro, __ __ . __ mg %
55-58	__ __ __ __	Lisina, __ __ __ . __ mg %
59-61	__ __ __	Tiamina, __ __ . __ mg %
62	__	Riboflavina: (1) Positivo (2) Negativo (9) Desconocido
63-65	__ __ __	Riboflavina, __ __ . __ mg %
66-68	__ __ __	Niacina, __ __ . __ mg %
69-72	__ __ __ __	Vitamina A, __ __ __ __ U.I.

Appendix 2

SUMMARY OF LEVEL OF FORTIFICATION FOR THE PRECEDING WEEK

This summary is produced each week. The present case is for the week of September 15, 1972. All families are included. The total summary has six pages of which only two are shown as examples. The first page shows families not attending the mill, or attending but not receiving the supplement. In the second page 4 families are shown with an index P of 100%. (see Table 2 and text for details on Index P).

Index P

FAM	NOMBRE	W	A	H	A/W	H/W	4*5	H/A	MA	HA	P	FECHA			NS
065	JOSEFA CHIROY											11	9	15	902
049	MANUELA ALVAREZ											11	9	15	902
037	FAUSTINA MORALES											11	9	15	902
137	EUSEBIO QUEL											11	9	15	902
153	JULIA DE PAZ											11	9	15	902
166	CANDIDA DE PAZ											11	9	15	902
171	FELIPA ALVAREZ											11	9	15	902
182	MARCELINA ZIL											11	9	15	902
199	ZOILA TOBAR											11	9	15	902
211	PAULA MORALES											11	9	15	902
213	EMMA BLANCO DE TOBAR											11	9	15	902
221	MARIA ADELINA ROCA											11	9	15	902
236	CASIMIRA CHOC											11	9	15	902
250	EMILIA TAZ											11	9	15	902
252	INES GARCIA											11	9	15	902
254	MATILDE CHON											11	9	15	902
259	FELICITA ZIL											11	9	15	902
266	REFUGIO ALVAREZ											11	9	15	902
269	JUANA AGUILAR											11	9	15	902
273	CANDIDA TOBAR											11	9	15	902
277	JOSEFINA CUJCUJ											11	9	15	902
287	ANGELA TAZ											11	9	15	902
295	MILAGRO DIAZ											11	9	15	902
315	PETRONA CHIROY											11	9	15	902
001	TRANSITO ALVAREZ	6	3	0	50	0	0	0	23	0	0	11	9	15	902
002	EUGENIA CHIROY	6	3	0	50	0	0	0	34	0	0	11	9	15	902
005	FRANCISCA CUTZAN	6	6	0	100	0	0	0	72	0	0	11	9	15	902
006	SUSANA SAL	6	4	0	66	0	0	0	67	0	0	11	9	15	902
007	JACINTA JOP	6	6	0	100	0	0	0	60	0	0	11	9	15	902
017	MARIA PETRONA RECOPACHI	6	6	0	100	0	0	0	74	0	0	11	9	15	902
018	FELISA RECOPACHI	6	1	0	16	0	0	0	9	0	0	11	9	15	902
019	FLORENCIA ALVAREZ	6	5	0	83	0	0	0	55	0	0	11	9	15	902
021	CANDELARIA CHIROY	6	1	0	16	0	0	0	5	0	0	11	9	15	902
033	MATILDE CHIROY	6	6	0	100	0	0	0	68	0	0	11	9	15	902
038	MAGDALENA ZIL	6	6	0	100	0	0	0	84	0	0	11	9	15	902

043	ROSALIA ALVAREZ	6	6	0	100	0	0	0	98	0	0	11	9	15	902
050	TOMASA CHIROY	6	6	0	100	0	0	0	131	0	0	11	9	15	902
051	CLARA SEBAQUIJAY	6	1	0	16	0	0	0	9	0	0	11	9	15	902
069	MANUELA SOC	6	6	0	100	0	0	0	54	0	0	11	9	15	902
070	VICTORIA SEBAQUIJAY	6	5	0	83	0	0	0	52	0	0	11	9	15	902
074	ISABEL TUBAC	6	1	0	16	0	0	0	8	0	0	11	9	15	902
100	MARIA MERCEDES YUS	6	6	0	100	0	0	0	51	0	0	11	9	15	902
103	MACARIA CHIROY	6	4	0	66	0	0	0	46	0	0	11	9	15	902
105	CRISTINA RECOPACHI	6	4	0	66	0	0	0	67	0	0	11	9	15	902
106	FAUSTINA SOC	6	6	0	100	0	0	0	93	0	0	11	9	15	902
107	GREGORIA SEBAQUIJAY	6	6	0	100	0	0	0	64	0	0	11	9	15	902
108	CRISTINA C. SEBAQUIJAY	6	6	0	100	0	0	0	47	0	0	11	9	15	902
109	JOSEFINA SUBUYUJ	6	5	0	83	0	0	0	59	0	0	11	9	15	902
110	CARLOTA LOPEZ	6	2	0	33	0	0	0	14	0	0	11	9	15	902
113	ANDREA YUS	6	3	0	50	0	0	0	18	0	0	11	9	15	902
115	JUANA CUTZAN	6	5	0	83	0	0	0	36	0	0	11	9	15	902
128	JOSEFA TOBAR	6	5	0	83	0	0	0	63	0	0	11	9	15	902
130	JULIANA YUS	6	6	0	100	0	0	0	102	0	0	11	9	15	902
132	AGUSTINA GARCIA	6	6	0	100	0	0	0	77	0	0	11	9	15	902
138	FRANCISCA CUC	6	3	0	50	0	0	0	23	0	0	11	9	15	902
147	MACARIA CHIROY	6	1	0	16	0	0	0	9	0	0	11	9	15	902
151	FELISA HERNANDEZ	6	5	0	83	0	0	0	32	0	0	11	9	15	902
157	BENITA SEBAQUIJAY	6	3	0	50	0	0	0	33	0	0	11	9	15	902
159	ANTONIA CON CUTZAN	6	3	0	50	0	0	0	28	0	0	11	9	15	902
160	ALICIA ALVARADO	6	5	0	83	0	0	0	38	0	0	11	9	15	902
161	MARIA AGUILAR	6	4	0	66	0	0	0	35	0	0	11	9	15	902
167	FRANCISCA AGUILAR	6	5	0	83	0	0	0	61	0	0	11	9	15	902
174	PETRONA ZIL	6	3	0	50	0	0	0	29	0	0	11	9	15	902
188	PAULA SOC	6	6	0	100	0	0	0	74	0	0	11	9	15	902
196	TRANSITO DIAZ	6	4	0	66	0	0	0	36	0	0	11	9	15	902
198	AGUSTINA ALVAREZ	6	4	0	66	0	0	0	19	0	0	11	9	15	902
200	ELEUTERIA CHIROY	6	4	0	66	0	0	0	23	0	0	11	9	15	902
209	JUANA ALVAREZ	6	5	0	83	0	0	0	30	0	0	11	9	15	902
210	JUANA REVOLORIA	6	5	0	83	0	0	0	41	0	0	11	9	15	902
217	JUANA SUBUYUJ	6	5	0	83	0	0	0	56	0	0	11	9	15	902
220	ROMUALDA SACTIC	6	1	0	16	0	0	0	12	0	0	11	9	15	902
225	FRANCISCA DIAZ	6	5	0	83	0	0	0	36	0	0	11	9	15	902
235	CANDELARIA VALLE	6	4	0	66	0	0	0	49	0	0	11	9	15	902
239	PAULINA ALVAREZ	6	6	0	100	0	0	0	61	0	0	11	9	15	902
240	TIMOTEA QUEL	6	2	0	33	0	0	0	20	0	0	11	9	15	902
244	CLARA ALVAREZ	6	6	0	100	0	0	0	65	0	0	11	9	15	902
246	PATRICIA CHIROY	6	1	0	16	0	0	0	10	0	0	11	9	15	902
248	PAULA FISCAL	6	5	0	83	0	0	0	42	0	0	11	9	15	902
256	MARIA ASUNCION TOP	6	5	0	83	0	0	0	30	0	0	11	9	15	902
261	JUANA ALVAREZ	6	2	0	33	0	0	0	20	0	0	11	9	15	902
274	ANGELA DIAZ	6	2	0	33	0	0	0	12	0	0	11	9	15	902
276	ASUNCION AGUILAR	6	1	0	16	0	0	0	6	0	0	11	9	15	902
280	ANDREA TAZ	6	4	0	66	0	0	0	52	0	0	11	9	15	902
291	MARIA ALEJANDRA DIAZ	6	4	0	66	0	0	0	31	0	0	11	9	15	902
294	SERAPIA DIAZ	6	4	0	66	0	0	0	31	0	0	11	9	15	902
319	CIRIACA MORALES	6	4	0	66	0	0	0	48	0	0	11	9	15	902
324	MARIA ANA TOP	6	4	0	66	0	0	0	36	0	0	11	9	15	902
329	MACARIA CHIROY	6	5	0	83	0	0	0	48	0	0	11	9	15	902
330	TERESA BRAVO VALDEZ	6	3	0	50	0	0	0	30	0	0	11	9	15	902
331	DEMESIA OCHOA	6	2	0	33	0	0	0	27	0	0	11	9	15	902
334	JESUS SEBAQUIJAY	6	6	0	100	0	0	0	72	0	0	11	9	15	902
066	FAUSTINA CHIROY	6	1	1	16	16	3	100	6	6	100	11	9	15	902
144	MODESTA CHIROY	6	1	1	16	16	3	100	10	10	100	11	9	15	902
283	AVELINA DE PAZ	6	1	1	16	16	3	100	5	5	100	11	9	15	902
290	FELIPA ALVAREZ	6	1	1	16	16	3	100	13	13	100	11	9	15	902
027	JERONIMA GARCIA	6	2	1	33	16	6	50	9	5	55	11	9	15	902
275	TOMASA CHOC	6	2	1	33	16	6	50	19	11	57	11	9	15	902

Appendix 3

SUMMARY OF LEVEL OF FORTIFICATION DURING THE PRECEDING 5 WEEKS

Two pages are shown of the summary that consists of 21 pages. The various indexes are calculated for every family for the past 5 weeks. In the example, fortification level is shown for the period August through September 11, 1972 (one week was skipped because of the village holiday: August 15).

Index P

FAM	NOMBRE	W	A	H	A/W	H/W	4*5	H/A	MA	HA	P	FECHA	NS		
001	TRANSITO ALVAREZ	6	4	0	66	0	0	0	40	0	0	7	8	10	902
001	TRANSITO ALVAREZ	6	5	0	83	0	0	0	38	0	0	21	8	12	902
001	TRANSITO ALVAREZ	6	6	0	100	0	0	0	43	0	0	28	8	13	902
001	TRANSITO ALVAREZ	6	6	0	100	0	0	0	48	0	0	4	9	14	902
001	TRANSITO ALVAREZ	6	3	0	50	0	0	0	23	0	0	11	9	15	902
002	EUGENIA CHIROY	6	6	0	100	0	0	0	56	0	0	7	8	10	902
002	EUGENIA CHIROY	6	6	0	100	0	0	0	79	0	0	21	8	12	902
002	EUGENIA CHIROY	6	4	0	66	0	0	0	30	0	0	28	8	13	902
002	EUGENIA CHIROY	6	2	0	33	0	0	0	14	0	0	4	9	14	902
002	EUGENIA CHIROY	6	3	0	50	0	0	0	34	0	0	11	9	15	902
003	JULIANA ALVAREZ	6	4	3	66	50	33	75	50	34	68	7	8	10	902
003	JULIANA ALVAREZ	6	3	2	50	33	17	66	31	17	54	21	8	12	902
003	JULIANA ALVAREZ	6	4	2	66	33	22	50	35	17	48	28	8	13	902
003	JULIANA ALVAREZ	6	5	4	83	66	56	80	47	35	74	4	9	14	902
003	JULIANA ALVAREZ	6	5	5	83	83	69	100	47	47	100	11	9	15	902
004	MACARIA DIAZ	6	6	3	100	50	50	50	46	23	50	7	8	10	902
004	MACARIA DIAZ	6	5	2	83	33	28	40	30	10	33	21	8	12	902
004	MACARIA DIAZ	6	5	5	83	83	69	100	26	26	100	28	8	13	902
004	MACARIA DIAZ	6	4	4	66	66	44	100	31	31	100	4	9	14	902
004	MACARIA DIAZ	6	4	3	66	50	33	75	27	18	66	11	9	15	902
005	FRANCISCA CUTZAN	6	4	0	66	0	0	0	43	0	0	7	8	10	902
005	FRANCISCA CUTZAN	6	6	0	100	0	0	0	78	0	0	21	8	12	902
005	FRANCISCA CUTZAN	6	5	0	83	0	0	0	71	0	0	28	8	13	902
005	FRANCISCA CUTZAN	6	6	2	100	33	33	33	55	10	18	4	9	14	902
005	FRANCISCA CUTZAN	6	6	0	100	0	0	0	72	0	0	11	9	15	902
006	SUSANA SAL	6	6	0	100	0	0	0	82	0	0	7	8	10	902
006	SUSANA SAL	6	6	0	100	0	0	0	77	0	0	21	8	12	902
006	SUSANA SAL	6	4	0	66	0	0	0	40	0	0	28	8	13	902
006	SUSANA SAL	6	5	1	83	16	14	20	65	8	12	4	9	14	902
006	SUSANA SAL	6	4	0	66	0	0	0	67	0	0	11	9	15	902
007	JACINTA JOP	6	6	0	100	0	0	0	66	0	0	7	8	10	902
007	JACINTA JOP	6	3	0	50	0	0	0	40	0	0	21	8	12	902
007	JACINTA JOP	6	4	0	66	0	0	0	41	0	0	28	8	13	902
007	JACINTA JOP	6	4	0	66	0	0	0	40	0	0	4	9	14	902
007	JACINTA JOP	6	6	0	100	0	0	0	60	0	0	11	9	15	902
008	FRANCISCA SEBAQUIJAY	6	6	0	100	0	0	0	97	0	0	7	8	10	902

008	FRANCISCA SEBAQUIJAY	6	2	0	33	0	0	0	25	0	0	28	[illegible]	3	902
008	FRANCISCA SEBAQUIJAY	6	3	0	50	0	0	0	51	0	0	4	9	14	902
008	FRANCISCA SEBAQUIJAY	6	4	1	66	16	11	25	48	8	16	11	9	15	902
009	JOSEFA JITZ	6	5	4	83	66	56	80	54	44	81	7	8	10	902
009	JOSEFA JITZ	6	4	3	66	50	33	75	45	31	68	21	8	12	902
009	JOSEFA JITZ	6	5	5	83	83	69	100	51	51	100	28	8	13	902
009	JOSEFA JITZ	6	5	5	83	83	69	100	46	46	100	4	9	14	902
009	JOSEFA JITZ	6	4	4	66	66	44	100	34	34	100	11	9	15	902
011	DOLORES SEBAQUIJAY	6	5	4	83	66	56	80	59	34	57	7	8	10	902
011	DOLORES SEBAQUIJAY	6	5	5	83	83	69	100	49	42	85	21	8	12	902
011	DOLORES SEBAQUIJAY	6	6	4	100	66	67	66	59	39	66	28	8	13	902
011	DOLORES SEBAQUIJAY	6	6	6	100	100	100	100	50	45	90	4	9	14	902
011	DOLORES SEBAQUIJAY	6	5	4	83	66	56	80	53	41	77	11	9	15	902
012	MARCELA SOCOREC	6	3	3	50	50	25	100	23	23	100	7	8	10	902
012	MARCELA SOCOREC	6	3	2	50	33	17	66	19	13	68	21	8	12	902
012	MARCELA SOCOREC	6	2	2	33	33	11	100	17	17	100	28	8	13	902
012	MARCELA SOCOREC	6	4	4	66	66	44	100	23	23	100	4	9	14	902
012	MARCELA SOCOREC	6	2	2	33	33	11	100	15	15	100	11	9	15	902
014	MONICA CON	6	5	5	83	83	69	100	38	30	78	7	8	10	902
014	MONICA CON	6	6	6	100	100	100	100	58	22	37	21	8	12	902
014	MONICA CON	6	5	4	83	66	56	80	41	18	43	28	8	13	902
014	MONICA CON	6	5	5	83	83	69	100	48	19	39	4	9	14	902
014	MONICA CON	6	5	5	83	83	69	100	39	22	56	11	9	15	902
015	GREGORIA CHOC	6	3	3	50	50	25	100	26	26	100	7	8	10	902
015	GREGORIA CHOC	6	4	3	66	50	33	75	27	17	62	21	8	12	902
015	GREGORIA CHOC	6	4	3	66	50	33	75	28	20	71	28	8	13	902
015	GREGORIA CHOC	6	6	4	100	66	67	66	50	34	68	4	9	14	902
015	GREGORIA CHOC	6	5	5	83	83	69	100	36	33	91	11	9	15	902
016	SILVERIA SEBAQUIJAY	6	6	6	100	100	100	100	66	66	100	7	8	10	902
016	SILVERIA SEBAQUIJAY	6	6	6	100	100	100	100	55	55	100	21	8	12	902
016	SILVERIA SEBAQUIJAY	6	6	6	100	100	100	100	52	52	100	28	8	13	902
016	SILVERIA SEBAQUIJAY	6	5	5	83	83	69	100	46	46	100	4	9	14	902
016	SILVERIA SEBAQUIJAY	5	6	5	100	83	83	83	61	51	83	11	9	15	902
017	MARIA PETRONA RECOPACHI	6	4	1	66	16	11	25	60	6	10	7	8	10	902
017	MARIA PETRONA RECOPACHI	6	5	0	83	0	0	0	70	0	0	21	8	12	902
017	MARIA PETRONA RECOPACHI	6	4	0	66	0	0	0	56	0	0	28	8	13	902
017	MARIA PETRONA RECOPACHI	6	6	0	100	0	0	0	90	0	0	4	9	14	902
017	MARIA PETRONA RECOPACHI	6	6	0	100	0	0	0	74	0	0	11	9	15	902
018	FELISA RECOPACHI	6	2	0	33	0	0	0	26	0	0	7	8	10	902
018	FELISA RECOPACHI	6	3	0	50	0	0	0	29	0	0	21	8	12	902
018	FELISA RECOPACHI	6	3	0	50	0	0	0	27	0	0	28	8	13	902
018	FELISA RECOPACHI	6	2	0	33	0	0	0	17	0	0	4	9	14	902
018	FELISA RECOPACHI	6	1	0	16	0	0	0	9	0	0	11	9	15	902
019	FLORENCIA ALVAREZ	6	6	1	100	16	17	16	72	11	15	7	8	10	902
019	FLORENCIA ALVAREZ	6	5	1	83	16	14	20	84	5	5	21	8	12	902
019	FLORENCIA ALVAREZ	6	5	0	83	0	0	0	58	0	0	28	8	13	902
019	FLORENCIA ALVAREZ	6	6	0	100	0	0	0	83	0	0	4	9	14	902
019	FLORENCIA ALVAREZ	6	5	0	83	0	0	0	55	0	0	11	9	15	902
020	MARIA ENCARNACION ALVAREZ	6	4	0	66	0	0	0	24	0	0	7	8	10	902
020	MARIA ENCARNACION ALVAREZ	6	4	0	66	0	0	0	26	0	0	21	8	12	902
020	MARIA ENCARNACION ALVAREZ	6	3	0	50	0	0	0	23	0	0	28	8	13	902
020	MARIA ENCARNACION ALVAREZ	6	4	0	66	0	0	0	22	0	0	4	9	14	902
020	MARIA ENCARNACION ALVAREZ	6	3	1	50	16	8	33	17	6	35	11	9	15	902
021	CANDELARIA CHIROY	6	2	0	33	0	0	0	8	0	0	7	8	10	902
021	CANDELARIA CHIROY	6	1	0	16	0	0	0	8	0	0	21	8	12	902
021	CANDELARIA CHIROY	6	1	0	16	0	0	0	6	0	0	28	8	13	902
021	CANDELARIA CHIROY	6	3	0	50	0	0	0	22	0	0	4	9	14	902
021	CANDELARIA CHIROY	6	1	0	16	0	0	0	5	0	0	11	9	15	902
022	MODESTA JOJ	6	6	4	100	66	67	66	54	33	61	7	8	10	902
022	MODESTA JOJ	6	5	2	83	33	28	40	53	15	28	21	8	12	902
022	MODESTA JOJ	6	3	0	50	0	0	0	23	0	0	28	8	13	902