

FD-ABL-368
95454

**FOOD SECURITY
MANAGEMENT PROJECT**

**AGRICULTURAL DATA
COLLECTION COMPONENT**

**Quarterly Report
April 1 - June 30, 1990**

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1. HIGHLIGHTS:

Construction of the Pakistan National Area Sampling Frame made good progress as spot imagery was available as needed. The Wheat Objective Yield (WOY) Survey and a research study to determine the optimum plot size for the Pakistan WOY Survey were completed. An FBS Chief Statistical Officer and two Statistical Officers attended a six week study tour in the United States. Mr. Robert Addison arrived in Pakistan to assume the Team Leader position of the ADC Project.

2. FRAME CONSTRUCTION:

As of 28 June, 1990, one hundred eighty topographic maps had been stratified with one hundred forty eight of those digitized. One hundred and twenty seven SPOT scenes had been received from SUPARCO.

FBS personnel visited various sites in Balochistan during the first week of June. The purpose of the travel was to verify that the SPOT interpretation of land use was correct. The group traveled in Khuzdar, Pishin, and Quetta Districts. A report summarizing findings of this group was written by the Area Sampling Frame Section of the FBS ADC Cell.

3. SURVEY ACTIVITY:

The survey activities of the quarter were the completion of the WOY Survey and the wheat research study to determine the optimum plot size for the Pakistan WOY Survey. The results of the WOY Survey are presented as Appendix 1. A separate report of the research findings was prepared by Thomas Birkett, Mathematical Statistician, NASS/USDA. Mr. Birkett's conclusions are shown as Appendix 2.

The ADC Project staff prepared a preliminary summary of the 1989 Sugarcane Objective Yield Survey results. The summary is presented as Appendix 3.

4. SAMPLING:

It was not necessary to draw any samples during the quarter.

5. GOVERNMENT OF PAKISTAN SUPPORT:

The GOP agreed to provide office space for the ADC Staff. At the present time, adequate space is not available within GOP premises. The ADC Office will remain at its present location, 29 Blue Area, until suitable space is available in a GOP building.

A draft of the ADC Sixth Year Work Plan was distributed to project officials on 15 May, 1990. Comments were requested by 3 June. Mr. M. Jalil Ahmed, Project Officer, FSM/USAID, and the ADC Cell of FBS provided useful suggestions. The workplan was discussed during the August Technical Committee Meeting held in Quetta and was finalized.

6. TRAINING:

Mr. Shahid Naeem, Chief Statistical Officer; Iqbal Ahmad, Statistical Officer; and Mansoor A. Sherazi, Statistical Officer of the Survey Planning and Estimation Section of the ADC Cell of FBS attended a six week study tour in the U.S. The tour was sponsored by the NASS/USDA. Places visited and major objectives accomplished during the tour are shown below:

Table 1: FBS Study Tour Itinerary, 1 May - 12 June

Place	Objective
Scottsdale, Anizona	Attended NASS's National ASF and Objective Yield school to observe methods of teaching Statisticians attending from the various U.S. States
Washington, D.C.	<p>Visited various Sections of NASS's headquarters's office to participate in discussions and receive presentations on the following:</p> <ol style="list-style-type: none"> 1) Statistical methodologies 2) Wheat and rice estimation programs 3) Questionnaire design 4) Survey training 5) Objective yield estimating procedures 6) Agricultural survey management 7) Citrus, non-citrus fruit and vegetable crop estimation
Little Rock, Arkansas	<p>Visited the NASS State Statistical office in Little Rock, Arkansas to do the following:</p> <ol style="list-style-type: none"> 1) Attend a State mid-year enumerators training school where State statisticians that attended the National School in Scottsdale,

(Continued)

Table 1: FBS Study Tour Itinerary 1 May - 12 June (Continued)

Place	Objective
Topeka, Kansas	<p>impart training to the State enumerators that collect the data in the field.</p> <ol style="list-style-type: none"> 2) Tour the Mississippi river Delta area to observe many growing crops and farming methodologies. 3) Tour one of the worlds largest fish hatcheries. <p>Visited the NASS State Statistical Office in Topeka. Kansas, the largest U.S. wheat producer, to do the following:</p> <ol style="list-style-type: none"> 1) Tour one of the largest wheat, terminal elevators in the world with a storage capacity of 31 million bushels. 2) Tour the Western Kansas wheat growing area which is the largest wheat producing area in the U.S. 3) Observe an enumerator laying-out a wheat objective yield plot in Western Kansas. 4) Tour the NASS objective yield laboratory in Topeka where samples from several states are processed monthly.
Washington, D.C.	<p>Returned to NASS's headquarters's office and visited several Sections to participate in discussions and receive presentations on the following:</p> <ol style="list-style-type: none"> 1) Current agricultural statistics versus U.S Census data 2) Concepts in micro-computers 3) Cotton estimating procedures 4) Training the trainer 5) Remote sensing crop area estimation

(Continued)

Table 1: FBS Study-Tour Itinerary 1 May - 12 June (Continued)

Place	Objective
	6) Survey sample design
	7) Estimates research
	8) Non-sampling errors in surveys
	9) Agricultural price programs
	10) Livestock estimation programs
	In addition, these places, which are a part of the NASS headquarter's office were visited:
	1) The Area Sampling Frame Section, where sampling frames are constructed for all States in the U.S.
	2) The International Program's office which handles all of NASS's foreign work programs.
	3) The Agricultural Statistics Board lock-up where much of NASS's agricultural data are prepared in locked-up quarters and released to the public at pre-published times.
	These places, which are nearby NASS's headquarter's office, were also visited and presentations were received as follow:
	1) The Economic Research Service, which is a separate Agency in the U.S.D.A.
	A presentation was received on "design and estimators for economic surveys in agriculture".
	2) The U.S. Census Bureau, where a presentation was received on "sample design, estimation, data collection & processing techniques, and strategies for improved efficiency of survey/census data processing.

7. CONSULTATION:

The ADC Staff's consulting activities outside the "daily" contacts with FBS in Islamabad included:

- o visits to the wheat research threshing sites to observe threshing operations and ensure quality control
- o field travel with FBS personnel within Balochistan to groundtruth SPOT satellite imagery.
- o discussions of SPOT satellite imagery with Jeff Gates, Office of Energy, USAID; Gary Archer, Pakistan Household Energy Strategy Study. The World Bank Resident Mission; John Wightman, Forestry Sector Master Plan, and Reid Collins, Forest Resource Consultants, Vancouver, B.C., Canada.
- o PISTAR computer "maintenance".

Thomas Birkett, Mathematical Statistician. NASS spent two weeks in Islamabad during June analyzing the wheat plot size study data. See Appendix 2 for Mr. Birkett's conclusion.

8. DELIVERABLES FOR THE QUARTER:

The deliverables for the quarter as defined in the ADC FIFTH YEAR WORKPLAN included:

- o 400 topographic maps stratified and digitized by the end of the quarter.

Frame construction started slowly and by the end of the quarter only 148 topographic maps had been digitized. However, two new digitizing machines were added to the ASF Section and additional employees were hired to speed-up the work.

- o National ASF sample selection calendar was prepared.

During the 18 March, 1990 ADC Technical Committee Meeting, targets of frame construction for 1990-91 were established. By July, 1991 -

Sample selection for Balochistan would be completed with preparation of field overlays for sample segments started thereafter.

Sixty percent of the Punjab frame construction would be completed.

- o Third Quarter Progress Report was distributed to concerned individuals.
- o April ASF Survey results were to be finalized.

This survey was not conducted because of involvement of the FBS headquarters and field staffs with the "Pakistani Wheat Plot Size Study". This cancelation was approved by the Technical Committee.

- o Wheat OY Survey results were finalized.

Summaries were finalized by 31 May, considerably earlier than when data were available from the rovinces

- o The Sixth Annual Workplan draft was presented.

The workplan was distributed for comments on 15 May. It was approved by GOP and USAID but was not officially approved until the August Technical Committee Meeting, where several revisions and /or modifications were made.

- o July AF Survey calendar prepared.

The calendar was prepared by FBS in early May.

Appendix 1.

1989/90 WHEAT OBJECTIVE YIELD SURVEY RESULTS 1/
=====

	AREA HECTARES	C.V (%)	YIELD (ADJUSTED) KG/HECT. C.V (%)		PRODUCTION M. TONNES	C.V (%)
=====	=====	=====	=====	=====	=====	=====
PAKISTAN (7 Dists)	1,571,650	2.3	2,448	3.4	3,847,798	4.1
PUNJAB (4 Dists)	1,191,927	2.6	2,550	4.0	3,038,833	4.8
FAISALABAD	266,616	3.6	2,736	7.9	729,544	8.6
JHANG	344,549	5.7	2,640	7.7	909,450	9.6
MULTAN	303,457	6.2	2,331	8.9	707,323	10.9
SHEIKHUPURA	277,305	4.2	2,497	7.1	692,516	8.3
SINDH (3 Dists)	379,723	4.6	2,130	6.2	808,965	7.7
HYDERABAD	123,794	8.5	2,544	8.3	314,910	12.0
LARANA	57,840	14.2	960	10.8	55,528	17.8
NAWABSHAH	198,089	5.7	2,214	9.7	438,527	11.2

1/ Yield and production data are on 10% moisture level basis.

1990 PAKISTAN WHEAT PLOT SIZE STUDY:
AN INVESTIGATION INTO HOW YIELDS VARY ACROSS
PAKISTAN WHEAT FIELDS

Conclusions from the research study:

- 1) The wheat objective yield plot size should not be greater than 21.6 square inches or 1.8 square feet.

For example, doubling the plot size to 43.2 square inches lowers the standard error of the mean for the Punjab and Sindh combined from 103.567 to 97.417 kgs per hectare but at the same time doubles the work involved. As a result, a plot of this size is only about half as efficient as the 21.6 square inch plot when we consider that twice as much work is required. Therefore, a larger plot size can not be justified.

- 2) The 21.6 square inch wheat OY plot estimates the same universe as the 15' x 20' crop cutting plot.

The mean yield for the plot 21.6 square inches in size is 2580.36 kgs per hectare. The mean yield for the entire plot, approximately 15' x 20' in size, is 2654.72 kgs per hectare, a difference of only 2.8 percent. Therefore, it can be said that both plots are estimating the same universe.

The large VMS plot has only 1.3 percent efficiency compared to the 21.6 square inch OY plot when we consider that 96 times as much work is required to lay-out, harvest, and thresh this large plot.

- 3) The research report made some conclusions possible concerning desired sample sizes.

To obtain CV's of 5 percent at the province levels, a sample size of approximately 100 should be used for each province. A sample size of at least 80-90 would be required for each district to obtain CV's of 5 percent at the district levels.

When an OY sample plot is located in a field, it is recommended that a second plot also be randomly located in the same field since travel costs to the field are fixed regardless of the number of plots. At summary time, data from the two plots would be combined to better represent the field's yield. This recommendation is made because the high correlation between units does decrease as the partitions (plots) get further apart. Therefore, two plots randomly located in the same field, collapsed into one at harvest time, will give a better representation of yield for that particular field.

- 4) Based on the research project, it was also recommended that in order to convert to the metric system, a plot size 0.5 meters square be used in future surveys rather than 21.6

square inches which has been somewhat confusing. This new plot size would be marginally smaller than the one previously used.

- 5) The last conclusion made from the research project was that a further study should be planned in the fall and conducted in the 1991 Rabi season to study why the difference still exists in wheat yields from the ASF and VMS surveys. In both the 1988-89 and 1989-90 seasons, the ASF has given yields much higher than the VMS. The research project proved that the small wheat OY plot size used in the ASF is not causing these differences. Since plot size has been ruled out as the cause, another research project is needed to explore the reasons for these differences in yield levels and to arrive at the average per hectare yield actually realized by the farmer.

Appendix 3.

1989 SUGARCANE OBJECTIVE YIELD SURVEY RESULTS 1/
=====

	AREA HECTORS	C.V. (%)	YIELD(AJUSTED) KG/HECT	C.V. (%)	PRODUCTION M. TONNES	C.V. (%)
=====	=====	=====	=====	=====	=====	=====
PAKISTAN (6 Dists)	309,109	6.0	77,623	5.4	23,993,954	8.0
PUNJAB(4 Dists)	146,333	7.8	49,723	13.5	7,276,100	15.6
FAISALABAD	78,257	10.3	54,687	21.3	4,279,608	23.8
JHANG	41,873	16.1	48,156	15.2	2,016,419	22.3
MULTAN	4,742	41.7	36,383	29.7	172,528	100.0
SHEIKHUPURA	21,461	17.8	37,628	22.4	807,545	28.9
SINDH(2 Dists)	162,776	9.0	102,705	5.0	16,717,854	10.3
HYDERABAD	89,650	12.5	86,284	8.8	7,735,386	15.3
NAWABSHAH	73,126	12.9	122,835	5.4	8,982,468	14.0

1/ Yield and production data are on a field weight basis. The yields are based on data gathered from a 1 x 7 meter plot.

Appendix 4.

APR - JUN, 1990 COMMODITY UTILIZATION - COMPUTER

EQUIPMENT	NO.	USER	LOCATION	ASSESSMENT OF USAGE	COMMENTS
PC-AT & MONITOR	6	STATISTICS DIVISION	ISLAMABAD	PARTLY USED	LIB NOT BRING USED
PRINTER	5	STATISTICS DIVISION	ISLAMABAD	PARTLY USED	LIB NOT BRING USED
PC-AT & MONITOR	11	FED BUREAU OF STAT	ISLAMABAD	FULLY USED	
PRINTER	12	FED BUREAU OF STAT	ISLAMABAD	FULLY USED	
LASSER PRINTER	1	FED BUREAU OF STAT	ISLAMABAD	FULLY USED	
PC-AT & MONITOR	4	FED BUREAU OF STAT	KARACHI	FULLY USED	
PRINTER	4	FED BUREAU OF STAT	KARACHI	FULLY USED	
PC-AT & MONITOR	3	CROP REPORT SERVICE	LAHORE	FULLY USED	
PRINTER	3	CROP REPORT SERVICE	LAHORE	FULLY USED	
PC-AT & MONITOR	2	AG DEPT	HYDERABAD	FULLY USED	
PRINTER	2	AG DEPT	HYDERABAD	FULLY USED	
PC-AT & MONITOR	3	AG DEPT	PESHAWAR	FULLY USED	
PRINTER	3	AG DEPT	PESHAWAR	FULLY USED	
PC-AT & MONITOR	2	AG DEPT	QUETTA	FULLY USED	
PRINTER	2	AG DEPT	QUETTA	FULLY USED	
PC-AT & MONITOR	12	STATISTICS DIV	PISTAR	FULLY USED	
PRINTER	12	STATISTICS DIV	PISTAR	FULLY USED	
PC-AT & MONITOR	1	PASSCO	LAHORE	FULLY USED	
PRINTER	1	PASSCO	LAHORE	FULLY USED	
COMPAQ 286	1	MR. KAZI GULZAR PHM	LAHORE	FULLY USED	DELIVERED BY USAID
PRINTER	1	MR. KAZI GULZAR PHM	LAHORE	FOR REPAIR	DELIVERED BY USAID
PC-AT & MONITOR	1	IFPRI	ISLAMABAD	FULLY USED	
PRINTER	1	IFPRI	ISLAMABAD	FULLY USED	
PC-AT & MONITOR	1	ODRP	ISLAMABAD	FULLY USED	
PRINTER	1	ODRP	ISLAMABAD	FULLY USED	
PC-AT & MONITOR	5	ADC STAFF	ISLAMABAD	FULLY USED	
COMPAQ III	5	ADC STAFF	ISLAMABAD	FULLY USED	
COMPAQ 286	5	ADC STAFF	ISLAMABAD	PARTLY USED	
PRINTER	10	ADC STAFF	ISLAMABAD	FULLY USED	
PC-AT	4	ADC STORE ROOM	ISLAMABAD	NOT USED	
MONITOR	6	ADC STORE ROOM	ISLAMABAD	NOT USED	
PRINTER	9	ADC STORE ROOM	ISLAMABAD	NOT USED	

Appendix 4 cont'd.

APR - JUN, 1990 COMMODITY UTILIZATION - VEHICLE

VEHICLE TYPE	CHASSIS NUMBER	LOCATION	***** BEGINNING QUARTER	KILOMETERS ENDING QUARTER	***** QUARTER USAGE	ASSESS- MENT OF USAGE	COMMENTS
LAND CRUISER	16331	FBS/ISLAMABAD	64,700	70,664	5,964	FULLY USED	
PAJERO JEEP	400205	FBS/ISLAMABAD	76,001	81,966	5,965	FULLY USED	
PAJERO STAMCN	400766	FBS/LAHORE	44,328	49,849	5,521	FULLY USED	
PAJERO STAMCN	400832	FBS/LAHORE	48,672	52,950	4,278	FULLY USED	
LAND CRUISER	16380	MINPA	N/A	126,741		FULLY USED	
LAND CRUISER	16326	AG DEPT/HYDERABAD	N/A	N/A		FULLY USED	ASSIGNED TO MIN OF AG
PAJERO JEEP	400548	AG DEPT/HYDERABAD	105,784	N/A		FULLY USED	INFO NOT AVAILABLE
PAJERO STAMCN	400834	AG DEPT/HYDERABAD	N/A	N/A		FULLY USED	INFO NOT AVAILABLE
LAND CRUISER	16577	AG DEPT/LAHORE	146,350	154,360	8,010	FULLY USED	
PAJERO JEEP	400345	AG DEPT/LAHORE	151,916	158,046	6,130	FULLY USED	
PAJERO STAMCN	400833	AG DEPT/LAHORE	71,899	80,164	8,265	FULLY USED	
PAJERO JEEP	400318	AG DEPT/PESHAWAR	65,500	N/A		FULLY USED	
PAJERO JEEP	400336	AG DEPT/QUETTA	46,000	48,400	2,400	FULLY USED	
PAJERO STAMCN	400835	AG DEPT/QUETTA	18,000	23,700	5,700	FULLY USED	
HI ACE	2995	ADC OFFICE	49,721	50,857	1,136	FULLY USED	AD 64 405
LAND CRUISER	30289	ADC OFFICE	59,187	65,243	6,056	FULLY USED	AD 64 404
LAND CRUISER	33794	ADC OFFICE	51,017	52,997	1,980	FULLY USED	AD 64 417
LAND CRUISER	33798	ADC OFFICE	63,601	67,960	4,359	FULLY USED	AD 64 418
PAJERO STAMCN	400204	ADC OFFICE	65,082	68,350	3,268	FULLY USED	AD 64 486
PAJERO JEEP	400487	VPC OFFICE	70,297	N/A		FULLY USED	AD 64 499

Appendix 4 cont'd.

APR - JUN, 1990 COMMODITY UTILIZATION - OTHER THAN
COMPUTER OR VEHICLE

EQUIPMENT	NO.	LOCATION	ASSESSMENT OF USAGE	COMMENTS
MOTORCYCLE	1	FBS/ISLAMABAD	FULLY USED	
MOTORCYCLE	20	AG DEPT/HYDERABAD	FULLY USED	2 BEING HELD IN RESERVE
MOTORCYCLE	10	AG DEPT/LAHORE	FULLY USED	ADC
MOTORCYCLE	13	AG DEPT/LAHORE	FULLY USED	CRS
MOTORCYCLE	6	AG DEPT/PESHAWAR	FULLY USED	
PRINTING PRESS	1	FBS/KARACHI	FULLY USED	
PRINTING PRESS	1	AG DEPT/HYDERABAD	NOT USED	SITE NOT PREPARED
PRINTING PRESS	1	AG DEPT/LAHORE	NOT USED	SITE PREPARATION IN PROGRESS

Appendix 5.

ADC FINANCIAL STATEMENT

Budget Element	Budget Jul89-Jun90	Jul-Sep 1989	Oct-Dec 1989	Jan-Mar 1990	Apr-Jun 1990	Cumulative	Percent of Budge
FEDERAL BUREAU OF STATISTICS							
Pay of Officers & Staff		3,720	5,400	8,798	8,363	26,280	
Supplies		916	4,047	10,272	57,211	72,446	
Maintenance		207	1,928	5,346	2,911	10,392	
Postal & Telephone		5	12	28	88	133	
Other		1,949	32	90	77	2,148	
SUB-TOTAL	110,799	6,796	11,419	24,533	68,650	111,398	100.5%
PROVINCIAL GOVERNMENTS							
Pay of Officers & Staff		14,913	15,639	17,441	33,287	81,279	
Supplies		2,195	2,604	3,474	5,328	13,602	
Maintenance		960	1,373	2,222	7,507	12,063	
Postal and Telephone		508	574	719	669	2,470	
Other		397	662	1,201	10,418	12,678	
SUB-TOTAL	122,955	18,973	20,853	25,058	57,208	122,092	99.3%
TECHNICAL ASSISTANCE							
Long term	150,000	55,900	50,700	37,100	67,400 1/	211,100	
Short Term	60,000	26,708	42,750	44,200	9,000	122,658	
Washington Backstop	25,000	6,130	5,900	5,900	5,900	23,830	
Computer Specialist	65,000	16,625	17,000	17,000	17,000	67,625	
SUB-TOTAL	300,000	105,363	116,350	104,200	99,300	425,213	141.7%
TRAINING							
In Country	20,000	827	2,480	23,369	565	27,241	
Foreign	0	0	0	0	16,500	16,500	
SUB-TOTAL	20,000	827	2,480	23,369	17,065	43,741	218.7%
COMMODITIES							
Computers	20,000	0	0	0	0	0	
Other	10,000	2,800	0	75,000	23,000	100,800	
SUB-TOTAL	30,000	2,800	0	75,000	23,000	100,800	336.0%
OTHER COST							
ADC Office Staff	80,000	21,491	17,199	13,510	15,693	67,893	
Office Supplies and Equipment	10,000	7,356	3,783	1,007	2,023	14,169	
Vehicle Repair, Maintenance	5,000	1,313	221	1,576	474	3,584	
Computer Software and Maint.	5,000	52	0	0	0	52	
ASF Expenses	40,000	0	300	3,968	74	4,342	
Aerial Photography	350,000	365	81	0	0	446	
Other Miscellaneous	20,000	9,561	6,721	9,130	6,867	32,279	
SUB-TOTAL	510,000	40,139	28,305	29,190	25,132	122,766	24.1%
GRAND TOTAL	1,093,754	174,898	179,407	281,350	290,355	926,010	84.7%

All values include appropriate overhead

Figures are preliminary

1/ Includes \$25,100 in moving expenses