

Crop productivity and adaptation to climate change in Pakistan

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ONLINE APPENDIX

Appendix A. Derivations and tables

Appendix A displays additional derivations and tables A1-A11 that are referred to in the main paper, “Crop productivity and adaptation to climate change in Pakistan.”

A1. Description of adaptation strategies

Table A1. Categories of on-farm adaptation

Category	Description	Used by x% of adapters
Crop timing	Changed the timing of cropping activities e.g. sowing and/or harvesting dates have been changed	25
Crop type/variety	Household has either changed the crop variety (e.g. switched to a different type of wheat) or changed the crop grown	34
Input alteration	Change in the amount of avariable input used. This could relate to increased water use on irrigated farms, higher rate of seed, fertiliser, and/or pesticide use	55
Soil conservation	Adoption of measures to maintain the fertility of soil or reduce erosion. Includes the application of organic matter (manure, crop residue), zero tillage methods, shelterbelts, or contour farming	52
Water conservation	Adoption of measures to use water more efficiently on-farm. Rainwater harvesting, construction of bunds, land levelling, furrow irrigation techniques	47

A2. Tables

A2.1 Selection instruments falsification test

Table A2. Test of the validity of selection instruments

	Wheat		Rice	
	Probit Adaptation 1/0	OLS Yield (nonadapters)	Probit Adaptation 1/0	OLS Yield (nonadapters)
<i>Perceptions</i>				
Average temperature increase	0.239** (0.095)	-2.047 (1.274)	0.404* (0.215)	2.395 (3.944)
Change in amount of rain	0.054 (0.125)	0.304 (2.483)	-0.276 (0.253)	1.831 (5.600)
Change in timing of rainy season	0.262* (0.144)	-0.666 (2.005)	-0.323 (0.284)	4.292 (5.239)
Extreme events increase	-0.107 (0.090)	-1.979 (1.571)	-0.398 (0.237)	-3.358 (5.972)
Wald Statistic $\chi^2(4)$	12.41**		8.57*	
F test		$F_{(4,751)} = 0.88$		$F_{(4,109)} = 0.33$
R ²	0.138	0.330	0.176	0.352

Notes:

Standard errors are heteroskedasticity robust.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In this table, we omit the other covariates used in the regressions and only report the perception variables.

A2.2 Balance tests

Table A3. Tests of overall covariate balance for wheat and rice

Sample	Ps R²	LR χ^2	p > χ^2	Mean bias	Median bias	B	R	% Var
Wheat								
Unmatched	0.113	336.971	0.000	18.1	17.9	81.4*	0.74	88
Matched	0.007	11.412	0.979	3.9	3.4	19.9	0.88	62
Rice								
Unmatched	0.097	277.394	0.000	15.4	16.6	74.9*	1.23	89
Matched	0.031	12.090	0.937	6.6	5.6	41.6*	0.79	0

Notes:

The results shown in the table are: the pseudo R² from probit regression for matched and unmatched sample; the likelihood ratio test; mean and median absolute standardised bias; Rubin's B and R; and the variance ratio.

* Denotes results that fall outside the threshold for sufficient balance.

A2.3 Rosenbaum bounds tests

Table A4. Rosenbaum bounds test: Wheat ATT

γ	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.001	0.001	2.500	2.500	0.937	3.954
1.1	0.014	0.001	1.667	3.167	0.167	4.750
1.2	0.096	0.000	1.000	3.875	-0.500	5.446
1.3	0.316	0.000	0.375	4.514	-1.167	6.111
1.4	0.610	0.000	-0.208	5.116	-1.750	6.729
1.5	0.838	0.000	-0.750	5.693	-2.375	7.300

Notes:

Results shown are estimated using the rbounds command in Stata. γ refers to the Rosenbaum sensitivity parameter, which measures the difference in odds of receiving treatment. The columns sig+ and sig- show the p-values of the treatment effects, t-hat+ and t-hat-. The associated confidence intervals are denoted by CI+ and CI-. Note that the point estimate may differ from the ATT and ATU estimated in the main results owing to the Rosenbaum method using the median as the treatment effect parameter.

Table A5. Rosenbaum bounds test: Wheat ATU

γ	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.000	0.000	3.5	3.5	2.119	4.9
1.1	0.000	0.000	2.683	4.250	1.333	5.675
1.2	0.002	0.000	2	5	0.667	6.458
1.3	0.023	0.000	1.375	5.667	0.000	7.167
1.4	0.123	0.000	0.833	6.278	-0.556	7.813
1.5	0.353	0.000	0.250	6.900	-1.125	8.458

Notes:

Results shown are estimated using the rbounds command in Stata. γ refers to the Rosenbaum sensitivity parameter, which measures the difference in odds of receiving treatment. The columns sig+ and sig- show the p-values of the treatment effects, t-hat+ and t-hat-. The associated confidence intervals are denoted by CI+ and CI-. Note that the point estimate may differ from the ATT and ATU estimated in the main results owing to the Rosenbaum method using the median as the treatment effect parameter.

Table A6. Rosenbaum bounds test: Rice ATT

γ	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.004	0.004	4.907	4.907	1.332	8.354
1.1	0.014	0.001	3.947	5.702	0.440	9.229
1.2	0.040	0.000	3.110	6.449	-0.361	10.051
1.3	0.089	0.000	2.449	7.216	-1.088	10.726
1.4	0.165	0.000	1.715	7.875	-1.680	11.418
1.5	0.264	0.000	1.131	8.524	-2.291	12.156

Notes:

Results shown are estimated using the rbounds command in Stata. γ refers to the Rosenbaum sensitivity parameter, which measures the difference in odds of receiving treatment. The columns sig+ and sig- show the p-values of the treatment effects, t-hat+ and t-hat-. The associated confidence intervals are denoted by CI+ and CI-. Note that the point estimate may differ from the ATT and ATU estimated in the main results owing to the Rosenbaum method using the median as the treatment effect parameter.

Table A7. Rosenbaum bounds test: Rice ATU

γ	sig+	sig-	t-hat+	t-hat-	CI+	CI-
1	0.001	0.000	6.060	6.060	2.591	9.033
1.1	0.004	0.000	5.295	6.828	1.493	9.661
1.2	0.012	0.000	4.612	7.428	0.550	10.258
1.3	0.031	0.000	3.832	7.874	-0.213	10.690
1.4	0.064	0.000	3.079	8.411	-1.066	11.197
1.5	0.115	0.000	2.588	9.033	-1.918	11.613

Notes:

Results shown are estimated using the rbounds command in Stata. γ refers to the Rosenbaum sensitivity parameter, which measures the difference in odds of receiving treatment. The columns sig+ and sig- show the p-values of the treatment effects, t-hat+ and t-hat-. The associated confidence intervals are denoted by CI+ and CI-. Note that the point estimate may differ from the ATT and ATU estimated in the main results owing to the Rosenbaum method using the median as the treatment effect parameter.

Table A8. Impact of adaptation by type of strategy

	ATT			ATU		
	Mean diff. (s.e.)	%	n	Mean diff. (s.e.)	%	n
Wheat						
SWC only	0.012 (4.746)	0.001	90	6.582* (3.899)	0.377	661
Cropping only	1.645 (2.421)	0.084	152	3.175 (2.026)	0.181	679
Combination	-1.480 (2.095)	-0.079	337	-2.617 (1.389)	-0.157	779
Rice						
SWC only	12.245* (7.068)	0.531	40	11.073* (5.858)	0.379	136
Cropping only	6.172 (5.416)	0.217	37	1.921 (4.691)	0.069	136
Combination	5.677 (4.934)	0.216	84	-0.991 (4.065)	-0.034	117

Notes:

Estimates shown are for separate types of adaption by implementing propensity score matching between type of adaptation (treated) and non-adapters (untreated). For each type of adaptation, adapters not falling into the given type of adaptation and not included in the estimation.

*p<0.1, **p<0.05, ***p<0.01.

A3. Endogenous switching regression**A3.1 Derivation of selection parameters**

We assume that farmers are risk neutral and therefore evaluate the benefits of adaptation based on their productive benefits. Farmers will choose to adapt to climate change

if the expected benefit is greater than not adapting. We assume that the necessary condition for adaptation is that productivity under adaptation is higher than under no adaptation. This can be represented by an unobserved variable A_i^* which represents a farmer's productive benefits from adaptation. We can express the decision to adapt based on a set of observed Z_i and unobserved ω_i factors. The observed factors could include household characteristics and other variables that affect the benefits from adapting to climate change. This decision can be expressed as:

$$A_i^* = \mathbf{Z}_i \boldsymbol{\pi} + \omega_i \quad (\text{A.1})$$

where

$$A_i = 1 \text{ if } A_i^* = \mathbf{Z}_i \boldsymbol{\pi} + \omega_i > 0$$

or

$$A_i = 0 \text{ if } A_i^* = \mathbf{Z}_i \boldsymbol{\pi} + \omega_i \leq 0$$

where the variable A_i represents the observed decision to adapt or not.

To empirically estimate this relationship, the sample is split in two based on whether the household has adapted or not:

$$y_{1i} = \mathbf{X}_{1i} \boldsymbol{\beta}_1 + \epsilon_{1i} \text{ if } A_i = 1 \quad (\text{A.2})$$

$$y_{2i} = \mathbf{X}_{2i} \boldsymbol{\beta}_2 + \epsilon_{2i} \text{ if } A_i = 0 \quad (\text{A.3})$$

The variables y_{1i} and y_{2i} represent crop yields for adapters and non-adapters respectively. The vectors \mathbf{X}_{1i} and \mathbf{X}_{2i} contain explanatory variables and $\boldsymbol{\beta}_1$ and $\boldsymbol{\beta}_2$ are vectors of estimated coefficients. The errors for each equation are contained in ϵ_{1i} and ϵ_{2i} .

As mentioned previously, the possibility that farmers self-select into adaptation may lead to correlation between the error terms in the production equations and the error in the selection into adaptation equation. The correlation between these terms is represented

in the covariance matrix Σ containing the three error terms ϵ_{1i} , ϵ_{2i} and ω_i . These are assumed to be distributed with trivariate zero mean and take the form:

$$\Sigma = \begin{vmatrix} \sigma_{\omega}^2 & \sigma_{\omega 1} & \sigma_{\omega 2} \\ \sigma_{\omega 1} & \sigma_1^2 & . \\ \sigma_{\omega 2} & . & \sigma_2^2 \end{vmatrix}$$

where σ_{ω}^2 represents the variance of the error term in the selection equation. Similarly, the variances of the production equations are represented by σ_1^2 and σ_2^2 . $\sigma_{1\omega}$ and $\sigma_{2\omega}$ are the covariances between the errors in the selection and production regimes 1 and 2 respectively. Since the outcomes of regimes 1 and 2 are not simultaneously observed for each household, the covariance between the two production equations are not specified and are represented simply with a dot (.).

In the presence of selection bias, the expectations of the error terms for the two production regimes will be non-zero depending on whether farmers have adapted or not. Thus, conditional on sample selection, the expected error terms can be expressed as follows:

$$\begin{aligned} E[\epsilon_{1i}|A_i = 1] &= \sigma_{\omega 1} \frac{\phi(\mathbf{Z}_i \boldsymbol{\pi})}{\Phi(\mathbf{Z}_i \boldsymbol{\pi})} \\ &= \sigma_{\omega 1} \lambda_{1i} \end{aligned} \tag{A.4}$$

and

$$\begin{aligned} E[\epsilon_{2i}|A_i = 0] &= -\sigma_{\omega 2} \frac{\phi(\mathbf{Z}_i \boldsymbol{\pi})}{1 - \Phi(\mathbf{Z}_i \boldsymbol{\pi})} \\ &= \sigma_{\omega 2} \lambda_{2i} \end{aligned} \tag{A.5}$$

where ϕ and Φ are standard normal probability distributions and standard normal cumulative distributions respectively. The terms λ_{1i} and λ_{2i} are interpreted as inverse Mills ratios (Heckman, 1979) which are included in the productivity equations as explanatory variables to account for any selection bias.

Of empirical interest is the direction of correlation between the decision to adapt and productivity. This relationship can be written as:

$$\rho_1 = \sigma_{\omega_1}^2 / \sigma_{\omega} \sigma_1 \quad (\text{A.6})$$

and

$$\rho_2 = \sigma_{\omega_2}^2 / \sigma_{\omega} \sigma_2 \quad (\text{A.7})$$

were the terms ρ_1 and ρ_2 are correlation coefficients between the error term in the selection equation ω_i and the errors from the productivity equations ϵ_{1i} and ϵ_{2i} respectively. The sign and significance of the estimated correlation coefficients ρ_1 or ρ_2 indicate the presence of selection bias since unobservable factors associated with productivity are correlated with unobserved characteristics that determine whether farmers adapt to climate change. If either of these coefficients is significantly different from zero, it can be concluded that there is evidence of unobserved selection into adaptation which would likely bias estimates of the impact of adaptation on crop productivity using straightforward techniques such as OLS.

In Tables A9 - A10 the full set of regression results are shown for the crop-specific yield and determinants of adaptation. Columns (1) and (2) present separate production functions for non-adapters and adapters. Column (3) shows the estimated determinants of adaptation, which are read as probit estimates.

Table A9. Endogenous switching regression: Wheat

	Yield non- adapters	Yield adapters	Adapt(0/1)
	Coef./se	Coef./se	Coef./se
Plot size (acres)	-0.858*** (0.175)	-0.250 (0.155)	-0.011 (0.009)
Fertiliser (kg/acre)	0.236** (0.106)	0.279 (0.258)	-0.006 (0.009)
Pesticide (kg/acre)	-0.090 (0.509)	1.915*** (0.412)	0.045* (0.026)
Labour intensity (no. of adults/acre)	1.345*** (0.312)	1.037*** (0.264)	-0.020* (0.011)
Seed (kg/acre)	0.060*** (0.020)	-0.011** (0.005)	0.002*** (0.001)
Irrigated	2.903* (1.568)	-1.705 (1.787)	0.081 (0.135)
Max education	-0.022 (0.273)	0.225 (0.307)	0.001 (0.022)
Females in household	-0.622 (4.520)	-6.443* (3.556)	0.594** (0.243)
Work off-farm	-1.137 (1.184)	-1.719 (1.245)	-0.174** (0.080)
Bank credit	-6.963*** (2.362)	-4.424*** (1.431)	0.216 (0.150)
Informal credit	-1.503 (1.461)	0.928 (1.513)	-0.306*** (0.099)
Owens land	2.444 (1.837)	0.578 (1.461)	-0.033 (0.095)
Formal extension	-0.480 (2.385)	-0.116 (2.147)	0.524*** (0.155)
Affected by flooding	2.348 (2.295)	-2.126 (2.180)	0.518*** (0.157)
Village school	1.782 (2.163)	-1.208 (1.856)	0.291** (0.118)
Owens livestock	-1.223 (1.188)	-0.087 (1.374)	0.192** (0.086)
Total land (acres)	0.175** (0.082)	-0.090** (0.043)	0.005 (0.004)

Ave. temp increase			0.224** (0.102)
Change in amount of rain			0.100 (0.134)
Change in timing of rainy season			0.322** (0.161)
Extreme event increase			-0.114 (0.097)
Constant	9.299** (4.645)	30.015*** (4.939)	-1.504*** (0.309)
Region dummies	Yes	Yes	Yes
$\ln\sigma$	2.673*** (0.110)	2.527*** (0.061)	
ρ	0.033 (0.109)	-0.243*** (0.123)	
Log pseudolikelihood			-6288.513
Wald test of indep. eq. ($\chi^2(2)$)			0.128
N	779	585	

Notes:

Regression includes regional dummy variables.

Standard errors are heteroskedasticity robust.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10. Endogenous switching regression: Rice

	Yield non-adapters	Yield adapters	Adapt(0/1)
	Coef./se	Coef./se	Coef./se
Plot size (acres)	0.550* (0.294)	-1.547* (0.835)	-0.037 (0.033)
Fertiliser (kg/acre)	1.963* (1.036)	0.326 (0.754)	0.093* (0.053)
Pesticide (kg/acre)	-0.470 (0.577)	0.792 (0.740)	0.111** (0.053)
Labour intensity (no. of adults/acre)	0.357 (0.247)	0.895** (0.361)	-0.024 (0.019)
Seed (kg/acre)	-0.085 (0.086)	-0.062 (0.084)	0.009 (0.006)
Irrigated	4.173 (2.733)	2.863 (5.014)	0.454* (0.252)
Max educ	-0.519 (0.811)	-0.693 (1.010)	0.025 (0.064)
Females in household	-16.302* (8.736)	-14.939 (9.928)	1.171** (0.555)
Work off-farm	-3.451 (2.989)	-6.954** (3.446)	-0.132 (0.188)
Bank credit	1.330 (4.272)	-1.779 (4.506)	0.458 (0.337)
Informal credit	1.654 (3.523)	0.133 (3.663)	-0.321 (0.220)
Owens land	6.000* (3.221)	1.860 (3.493)	-0.530*** (0.192)
Formal extension	-1.435 (2.788)	1.647 (5.834)	-0.631 (0.454)
Affected by flooding	13.332*** (3.983)	4.146 (4.810)	1.305*** (0.338)
Village school	-3.003 (3.073)	-11.718** (5.149)	0.346 (0.263)
Owens livestock	-2.723 (3.345)	4.228 (4.130)	0.597*** (0.215)
Total land (acres)	0.155 (0.203)	0.006 (0.217)	0.018 (0.012)

Ave. temp increase			0.508** (0.203)
Change in amount of rain			-0.263 (0.234)
Change in timing of rainy season			-0.333 (0.263)
Extreme events increase			-0.525* (0.272)
Constant	9.617 (7.084)	40.858*** (14.536)	-2.099*** (0.603)
Region dummies	Yes	Yes	Yes
$\ln\sigma$	2.619 (0.070)	2.832 (0.101)	
ρ	0.153 (0.226)	-0.651* (0.357)	
Log pseudolikelihood			-1384.125
Wald test of indep. eq. ($\chi^2(2)$)			0.128
N	161	136	

Notes:

Regression includes regional dummy variables.

Standard errors are heteroskedasticity robust.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A3.2 Robustness check: inclusion of weather variables

Given the subjective nature of climate change perceptions, we conduct a robustness test including weather variables in the switching regression. This test is intended to control for the potential effect that realised weather during the sample period could have on influencing perceptions. If actual weather during the sample period is partly responsible for climate change perceptions, it is possible that results could be biased by the exclusion of weather variables in the regression. Therefore, we compare the results using this specification with the results obtained from the main specification.

The weather variables included are obtained from the Pakistan Meteorological Department and are reported as monthly data on total precipitation and average temperature. The data have been interpolated from by inverse distance weighting each weather station observation to each of the survey sites. Weather variables for both the Rabi

and Kharif seasons to control for the fact that rice and wheat are grown in different seasons. This specification also excludes regional fixed effects, which are included in the main specification, given the high degree of collinearity between the regional dummy variables and the weather variables.

The results in Table A11 show that inclusion of weather variables in the endogenous switching regressions do not change the interpretation of the main results. For wheat, the impact of adaptation on adapters is estimated to not be significantly different from zero as in the main specification. The predicted effect for non-adapters is estimated to be around 1.8 maunds per acre, compared with 2.8 maunds per acre in the main specification. This is also significant at 1%.

For rice, the impacts are also very similar, with practically no difference between estimated impacts for adapters. For the non-adapters, the estimates are also very close to those in the main specification, with both predicted gains from adaption at over 50% of current yields.

Table A11. Impact of adaptation on yields of adapters: including weather variables
Mean Outcome (units: maunds/acre)

	Adapt	Not Adapt	Difference	% Change
ATT				
Wheat	19.572 (0.339)	19.991 (0.451)	-0.419 (0.359)	-2
Rice	33.943 (0.822)	32.167 (0.652)	1.776*** (0.730)	6
ATU				
Wheat	23.431 (0.352)	17.194 (0.360)	6.237*** (0.357)	36
Rice	45.221 (1.182)	28.376 (0.811)	16.845*** (1.107)	59

Notes:

Standard errors are heteroskedasticity robust.

*p<0.1, **p<0.05, ***p<0.01.

Appendix B. Household survey

A copy of the survey is provided in order to aid researchers in designing surveys in future.

Questionnaire No. |_|_|_|



“The Determinants, Impact and Cost Effectiveness of Climate Change Adaptation in the Indus Ecoregion”
Micro Econometric Study

HOUSEHOLD SURVEY (1,600 households)
(Household is defined as group of people living under the same roof and sharing a budget for food)



Complete address: _____ village name: _____ Union Council: _____

Village GPS Code: _____ HH GPS code _____

Name of Respondent with Father's/Husband's Name: _____

Age of the respondent:

National Identification Number (NIC) of the respondent _____

Cell Number of the respondent (optional) _____

Relationship of the Respondent with the Head of Household:

Relation with head of the household:

- | | |
|--------------------------------|------------------------|
| 1. Self; | 6. Mother/Father; |
| 2. Wife/husband; | 7. Brother/sister; |
| 3. Son/daughter; | 8. Other relatives; |
| 4. Son-in-law/daughter-in-law; | 9. Other non-relatives |
| 5. Grand son/grand daughter; | |

Date of interview:

1st visit __ / __ / __

Interviewer's name : _____

Supervisor's name : _____

Checked by : _____
(Checker's Name & Signature)

Edited by : _____
(Editor's Name & Signature)

Relevant Codes:

NA: Not Applicable

DK: Don't Know

Zero: 0

P: Protest

SECTION A: HOUSEHOLD CHARACTERISTICS

A1. Basic structure and livelihood source

A11. How many persons usually live in this household? (Exclude guests and those currently residing elsewhere even for 2-3 months of the year)

[] []

Table A12: Family structure, and livelihood source

Person Code	Relation with head of family *1		Gender		Age (years)		Education status *2		Principal Means of livelihood *3		Secondary means of livelihood *3		State if primary occupation is:		Marital Status *4		
			1.Male	2.Female									1. Outside village	2. In urban area			
A121		A121a		A121b		A121c		A121d		A121e		A121f		A121g		A121h	
A122		A122a		A122b		A122c		A122d		A122e		A122f		A122g		A122h	
A123		A123a		A123b		A123c		A123d		A123e		A123f		A123g		A123h	
A124		A124a		A124b		A124c		A124d		A124e		A124f		A124g		A124h	
A125		A125a		A125b		A125c		A125d		A125e		A125f		A125g		A125h	
A126		A126a		A126b		A126c		A126d		A126e		A126f		A126g		A126h	
A127		A127a		A127b		A127c		A127d		A127e		A127f		A127g		A127h	
A128		A128a		A128b		A128c		A128d		A128e		A128f		A128g		A128h	
A129		A129a		A129b		A129c		A129d		A129e		A129f		A129g		A129h	
A1210		A1210a		A1210b		A1210c		A1210d		A1210e		A1210f		A1210g		A1210h	
A1211		A1211a		A1211b		A1211c		A1211d		A1211e		A1211f		A1211g		A1211h	

*1 Self [1]; Wife/husband [2]; son/daughter [3]; son/daughter in law [4]; Grandson/daughter [5]; Mother/father [6]; Brother/sister [7]; other relatives [8]; other non-relatives [9]

*2 Read & write [1]; primary [2]; middle [3]; Matriculation [4]; intermediate [5]; graduate [6]; masters [7]; illiterate [8]

*3 Farming [1]; private employee (e.g. small business/ shop) [2]; Government employee (e.g. teacher, peon) [3]; (daily) wage earner [4]; Fishing [5]; Other _____ [6]

*4 Married [1]; Single [2]; Divorced [3]; Widow/er [4]

Table A13: Tenure Arrangements: [seasons: Kharif (May - September); Rabi (Oct - April)]

Separate land	Size of the total parcel (acres)	Distance from field to home (1-way km)	Rate quality of soil of this parcel? *1	Season	Cultivated crop (incl. fallow land) in 2012? *2	Total areas under cultivation ? (acres)	Tenure Arrangement *3	How many years have you continuously used this plot?	Shared cropping		Rent paid/ received if plot is leased? (PKR/yr)	Duration of tenancy contract (years)?	Tenancy changed in past 5 years? *4	Distance of plot to landlord? (tenants only) (Km)	Frequency of landlord's visit? (tenant/ landlord)													
									What is the sharing arrangement? (In %)	Other payment e.g. inputs (PKR/ yr)																		
Parcel 1	A131	A131a																										
																Rabi	A1311b	A1311d	A1311f	A1311h	A1311j	A1311l	A1311n	A1311p	A1311r	A1311t	A1311v	
																	A1312b	A1312d	A1312f	A1312h	A1312j	A1312l	A1312n	A1312p	A1312r	A1312t	A1312v	
																	A1313b	A1313d	A1313f	A1313h	A1313j	A1313l	A1313n	A1313p	A1313r	A1313t	A1313v	
																Kharif	A1311c	A1311e	A1311g	A1311i	A1311k	A1311m	A1311o	A1311q	A1311s	A1311u	A1311w	
	A1312c	A1312e	A1312g	A1312i	A1312k	A1312m	A1312o	A1312q	A1312s	A1312u	A1312w																	
	A1313c	A1313e	A1313g	A1313i	A1313k	A1313m	A1313o	A1313q	A1313s	A1313u	A1313w																	
Parcel 2	A132	A132a																										
																Rabi	A1321b	A1321d	A1321f	A1321h	A1321j	A1321l	A1321n	A1321p	A1321r	A1321t	A1321v	
																	A1322b	A1322d	A1322f	A1322h	A1322j	A1322l	A1322n	A1322p	A1322r	A1322t	A1322v	
																	A1323b	A1323d	A1323f	A1323h	A1323j	A1323l	A1323n	A1323p	A1323r	A1323t	A1323v	
																Kharif	A1321c	A1321e	A1321g	A1321i	A1321k	A1321m	A1321o	A1321q	A1321s	A1321u	A1321w	
	A1322c	A1322e	A1322g	A1322i	A1322k	A1322m	A1322o	A1322q	A1322s	A1322u	A1322w																	
	A1323c	A1323e	A1323g	A1323i	A1323k	A1323m	A1323o	A1323q	A1323s	A1323u	A1323w																	
Parcel 3	A133	A133a																										
																Rabi	A1331b	A1331d	A1331f	A1331h	A1331j	A1331l	A1331n	A1331p	A1331r	A1331t	A1331v	
																	A1332b	A1332d	A1332f	A1332h	A1332j	A1332l	A1332n	A1332p	A1332r	A1332t	A1332v	
																	A1333b	A1333d	A1333f	A1333h	A1333j	A1333l	A1333n	A1333p	A1333r	A1333t	A1333v	
																Kharif	A1331c	A1331e	A1331g	A1331i	A1331k	A1331m	A1331o	A1331q	A1331s	A1331u	A1331w	
	A1332c	A1332e	A1332g	A1332i	A1332k	A1332m	A1332o	A1332q	A1332s	A1332u	A1332w																	
	A1333c	A1333e	A1333g	A1333i	A1333k	A1333m	A1333o	A1333q	A1333s	A1333u	A1333w																	

*1. (1) Low; (2) Medium; (3) High

*2: (1) Fallow; (2) Fodder; Wheat - Sahar (1); wheat - Shafaq (2); wheat - Faisalabad 10 (3); wheat - Punjab 90 (4); wheat – Lasani (5); wheat – Bhakkar (6); Kapas(cotton) - Neelum 121 (7); Kapas(cotton) - Neelum 3700 (8); Kapas(cotton) - CIM-142 (9); Kapas(cotton) - CIM-886 (10); Kapas(cotton) - AA-703 (11); Kapas(cotton) - AA-802; Chawal (Paddy Rice) - IRRI-6; Chawal (Paddy Rice)- Basmati 382, Chawal (Paddy Rice) - Bastmati 386; Chawal (Paddy Rice) – Kernal (3)Kado Loki (Bottle Gourd);(4)Tuori (Ribbed Guord);(5)Bengan (Egg plant);(6)Bhendi (Lady Finger);(7) Hari Mirch (Green Chilies);(8)Tematar (Tomatoes);(9)Khira (Cucumber);(10)Kerela (Bitter Guord);(11)Gidra (Musk Melon);(12)Pan (Piper Bettle);(13)Kela (Pan);(14); Narial (Coconut);(15)Cheekoo (Mud Apple);(17)Ganna (Sugar Cane);(18)Aam (Mango);(20)Aloo (Potato);(21)Other (Specify here _____)

*3: Own land and cultivated (1); own land and rent to others (2); share cropped land (3); Land rented in (pay fixed rate to landlord) (4); Use of fructuary right (5); Other (specify)_____ (6)

*4: Rented extra land out (1); rented extra land in (2); Gone from sharecrop to fixed rent (3); Fixed rent to share crop (4) purchase land.

A14: If you were able to buy all of your owned/ cultivated land today (2012), what is the maximum you would pay for it? Specify total acres _____ and A14 a: Specify PKR per acre _____

A15: How often are the terms of tenancy reviewed? _____

Every year (1); every 2 years (2); every 4 years (3); at discretion of the landlord (4)

A16: Are rights to farm the land you're using? _____

Inherited (1); Purchased (2); Designated by national government; (3) Designated by local government (4)

A17: Since you have been a farmer, have you been evicted from any previous land? Yes/No

A18: Have you experienced other farmers in your village being evicted from their land? Often/Occasionally/Never

A19: Crop Choice

Who decides crop choice?		Circle as appropriate	If selected FARMER in the previous question, what are the primary reasons for the crop choices you make?		Rate 3 options		
A191	Farmer	1	Highest profit, high risk	1	1-Most Important	A191a	
A192	Landlord	2	Lower profit, lower risk	2	2-Most Important	A192a	
A193	Middleman	3	Past experience with these crops	3	3-Most Important	A193a	
A194	Credit supplier	4	Recommended by the landlord	4			
A195	Other (specify)	5	Recommended by the middleman	5			
			Preferred for home consumption	6			
			Low water use	7			
			Other (specify _____)	8			

Section B. Agricultural products: Inputs, outputs, and prices

B1. Agricultural products: outputs, and prices

Separate land	Season	Crop code as above		Planting Date		Harvesting date		Production in 2012 (Maunds)		Average Production in 2011 (Maunds)		Home Consumption (Maund)		Quantity consumed by Livestock (Maund)		Quantity stored (Maund)		Post - Harvest losses (Maund)		Quantity Sold (Maund)		Farmer Price (PKR/ Maund)		Market Price (PKR/ Maund)		Govt. price (PKR/ Maund)	
Parcel 1	Rabi	B111b		B111d		B111f		B111h		B111j		B111l		B111n		B111p		B111r		B111t		B111v		B111x		B111z	
		B112b		B112d		B112f		B112h		B112j		B112l		B112n		B112p		B112r		B112t		B112v		B112x		B112z	
		B113b		B113d		B113f		B113h		B113j		B113l		B113n		B113p		B113r		B113t		B113v		B113x		B113z	
	B111c		B111e		B111g		B111i		B111k		B111m		B111o		B111q		B111s		B111u		B111w		B111y		B111a		
	B112c		B112e		B112g		B112i		B112k		B112m		B112o		B112q		B112s		B112u		B112w		B112y		B112a		
	B113c		B113e		B113g		B113i		B113k		B113m		B113o		B113q		B113s		B113u		B113w		B113y		B113a		
Parcel 2	Rabi	B121b		B121d		B121f		B121h		B121j		B121l		B121n		B121p		B121r		B121t		B121v		B121x		B121z	
		B122b		B122d		B122f		B122h		B122j		B122l		B122n		B122p		B122r		B122t		B122v		B122x		B122z	
		B123b		B123d		B123f		B123h		B123j		B123l		B123n		B123p		B123r		B123t		B123v		B123x		B123z	
	B121c		B121e		B121g		B121i		B121k		B121m		B121o		B121q		B121s		B121u		B121w		B121y		B121a		
	B122c		B122e		B122g		B122i		B122k		B122m		B122o		B122q		B122s		B122u		B122w		B122y		B122a		
	B123c		B123e		B123g		B123i		B123k		B123m		B123o		B123q		B123s		B123u		B123w		B123y		B123a		
Parcel 3	Rabi	B131b		B131d		B131f		B131h		B131j		B131l		B131n		B131p		B131r		B131t		B131v		B131x		B131z	
		B132b		B132d		B132f		B132h		B132j		B132l		B132n		B132p		B132r		B132t		B132v		B132x		B132z	
		B133b		B133d		B133f		B133h		B133j		B133l		B133n		B133p		B133r		B133t		B133v		B133x		B133z	
	B131c		B131e		B131g		B131i		B131k		B131m		B131o		B131q		B131s		B131u		B131w		B131y		B131a		
	B132c		B132e		B132g		B132i		B132k		B132m		B132o		B132q		B132s		B132u		B132w		B132y		B132a		
	B133c		B133e		B133g		B133i		B133k		B133m		B133o		B133q		B133s		B133u		B133w		B133y		B133a		

B12. For total production (column d), what is the % upward or downward revision? _____ (%) (Consider average of past 5 years (2007-2011))

B13. For farmer price (column j), what is the % upward or downward revision? _____ (%) (Consider average past 5 years (2007-2011))

B14. For market price (column k), what is the % upward or downward revision? _____ (%) (Consider average past 5 years (2007-2011))

B2: Agricultural Inputs

B21. How far is it to the market where you purchase your inputs? One way distance _____ (km)

B22. What kind of transport do you mostly use to bring input from the market? _____ (walk, local bus, personal vehicle, rented vehicle, donkey/ camel cart);

B22a. One way cost for a visit _____ (PKR) (Not to be filled if farmer receives delivery of inputs by a middleman etc. Only relevant if farmer actually goes to the market to pick up goods)

B23: Fertilizers and Weedicides/ Pesticides

Separate land	Season	Enter Plot code as above	Weedicides/ Pesticides				UREA				D.A.P/ S.O.P				Manure				
			Quantity (Kgs)	Total Cost (PKR)	Source*	% of cost paid by the farmer?	Quantity (Kgs)	Total Cost (PKR)	Source*	% of cost paid by the farmer?	Quantity (Kgs)	Total Cost (PKR)	Source*	% of cost paid by the farmer?	Quantity (Kgs)	Total Cost (PKR)	Source*	% of cost paid by the farmer?	
Parcel 1	Rabi	B231 1b	B231 1d	B231 1f	B231 1h	B231 1j	B23 11l	B231 1n	B231 1p	B231 1r	B231 1t	B2311 v	B231 1x	B231 1z	B2311 bb	B2311 dd	B2311 ff		
		B231 2b	B231 2d	B231 2f	B231 2h	B231 2j	B23 12l	B231 2n	B231 2p	B231 2r	B231 2t	B2312 v	B231 2x	B231 2z	B2311 bb	B2312 dd	B2312 ff		
		B231 3b	B231 3d	B231 3f	B231 3h	B231 3j	B23 13l	B231 3n	B231 3p	B231 3r	B231 3t	B2313 v	B231 3x	B231 3z	B2313 bb	B2313 dd	B2313 ff		
	Kharif	B231 1c	B231 1e	B231 1g	B231 1i	B231 1k	B23 11m	B231 1o	B231 1q	B231 1s	B231 1u	B2311 w	B231 1y	B231 1a	B2311 cc	B2311 ee	B2311 gg		
		B231 2c	B231 2e	B231 2g	B231 2i	B231 2k	B23 12m	B231 2o	B231 2q	B231 2s	B231 2u	B2312 w	B231 2y	B231 2a	B2312 cc	B2312 ee	B2312 gg		
		B231 3c	B231 3e	B231 3g	B231 3i	B231 3k	B23 13m	B231 3o	B231 3q	B231 3s	B231 3u	B2313 w	B231 3y	B231 3a	B2313 cc	B2313 ee	B2313 gg		
Parcel 2	Rabi	B232 1b	B232 1d	B232 1f	B232 1h	B232 1j	B23 21l	B232 2n	B232 2p	B232 2r	B232 2t	B2321 v	B232 2x	B232 2z	B2321 bb	B2321 dd	B2321 ff		
		B232 2b	B232 2d	B232 2f	B232 2h	B232 2j	B23 22l	B232 2n	B232 2p	B232 2r	B232 2t	B2322 v	B232 2x	B232 2z	B2322 bb	B2322 dd	B2322 ff		
		B232 3b	B232 3d	B232 3f	B232 3h	B232 3j	B23 23l	B232 3n	B232 3p	B232 3r	B232 3t	B2323 v	B232 3x	B232 3z	B2323 bb	B2323 dd	B2323 ff		
	Kharif	B232 1c	B232 1e	B232 1g	B232 1i	B232 1k	B23 21m	B232 2o	B232 2q	B232 2s	B232 2u	B2321 w	B232 2y	B232 2a	B2321 cc	B2321 ee	B2321 gg		
		B232 2c	B232 2e	B232 2g	B232 2i	B232 2k	B23 22m	B232 2o	B232 2q	B232 2s	B232 2u	B2322 w	B232 2y	B232 2a	B2322 cc	B2322 ee	B2322 gg		
		B232 3c	B232 3e	B232 3g	B232 3i	B232 3k	B23 23m	B232 3o	B232 3q	B232 3s	B232 3u	B2323 w	B232 3y	B232 3a	B2323 cc	B2323 ee	B2323 gg		

Parcel 3	Rabi	B233 1b	B233 1d	B233 1f	B233 1h	B233 1j	B23 31l	B233 1n	B233 1p	B233 1r	B233 1t	B2331 v	B233 1x	B233 1z	B2331 bb	B2331 dd	B2331 ff
		B233 2b	B233 2d	B233 2f	B233 2h	B233 2j	B23 32l	B233 2n	B233 2p	B233 2r	B233 2t	B2332 v	B233 2x	B233 2z	B2332 bb	B2332 dd	B2332 ff
		B233 3b	B233 3d	B233 3f	B233 3h	B233 3j	B23 33l	B233 3n	B233 3p	B233 3r	B233 3t	B2333 v	B233 3x	B233 3z	B2333 bb	B2333 dd	B2333 ff
	Kharif	B233 1c	B233 1e	B233 1g	B233 1i	B233 1k	B23 31m	B233 1o	B233 1q	B233 1s	B233 1u	B2331 w	B233 1y	B233 1a	B2331 cc	B2331 ee	B2331 gg
		B233 2c	B233 2e	B233 2g	B233 2i	B233 2k	B23 32m	B233 2o	B233 2q	B233 2s	B233 2u	B2332 w	B233 2y	B233 2a	B2332 cc	B2332 ee	B2332 gg
		B233 3c	B233 3e	B233 3g	B233 3i	B233 3k	B23 33m	B233 3o	B233 3q	B233 3s	B233 3u	B2333 w	B233 3y	B233 3a	B2333 cc	B2333 ee	B2333 gg

*1: On cash payment from market/ local dealer (1); on credit from market/ local dealer (2); on cash from Middleman (3); On credit from Middleman (4); free from middleman (5); free from Landlord (6); on credit from land owner (7); Government (8); NGO/agricultural extension (9); other, pls. specify _____ (10)

B24: Seed

Farm land	Season	Enter Plot code as above		Seed							
				Quantity (Kg)		Total Cost (PKR)		Source*		% of cost paid by the farmer?	
Parcel 1	Rabi	B2311b		B2311bb		B2311dd		B2311ff			
		B2312b		B2311bb		B2312dd		B2312ff			
		B2313b		B2313bb		B2313dd		B2313ff			
	Kharif	B2311c		B2311cc		B2311ee		B2311gg			
		B2312c		B2312cc		B2312ee		B2312gg			
		B2313c		B2313cc		B2313ee		B2313gg			
Parcel 2	Rabi	B2321b		B2321bb		B2321dd		B2321ff			
		B2322b		B2322bb		B2322dd		B2322ff			
		B2323b		B2323bb		B2323dd		B2323ff			
	Kharif	B2321c		B2321cc		B2321ee		B2321gg			
		B2322c		B2322cc		B2322ee		B2322gg			
		B2323c		B2323cc		B2323ee		B2323gg			
Parcel 3	Rabi	B2331b		B2331bb		B2331dd		B2331ff			

		B2332b		B2332bb		B2332dd		B2332ff			
		B2333b		B2333bb		B2333dd		B2333ff			
	Kharif	B2331c		B2331cc		B2331ee		B2331gg			
		B2332c		B2332cc		B2332ee		B2332gg			
		B2333c		B2333cc		B2333ee		B2333gg			

*1: On cash payment from market/ local dealer (1); on credit from market/ local dealer (2); on cash from Middleman (3); On credit from Middleman (4); free from middleman (5); free from Landlord (6); on credit from land owner (7); Government (8); NGO/agricultural extension (9); other, pls. specify _____ (10)

25: Usage of Water

Farmland	Season	Crop code as above	What is your source of water?*1	Total No of water application per cropping cycle?	How many canal water applications?		How many tubewell applications?		If you use tubewell, who owns it? *1	If selected 2, 3 or 4, what was the rent of the tubewell per application? (PKR)	What is fuel expense for the tubewell per application for this crop? (PKR)	Which method do you use to water your farm?
					No of applications	Hours per application	No of applications	Hours per application				
Parcel 1	Rabi	B2611b	B2611d		B2611f	B2611h	B2611j	B2611l	B2611n	B2611p		
		B2612b	B2612d		B2612f	B2612h	B2612j	B2612l	B2612n	B2612p		
		B2613b	B2613d		B2613f	B2613h	B2613j	B2613l	B2613n	B2613p		
	Kharif	B2611c	B2611e		B2611g	B2611i	B2611k	B2611m	B2611o	B2611q		
		B2612c	B2612e		B2612g	B2612i	B2612k	B2612m	B2612o	B2612q		
		B2613c	B2613e		B2613g	B2613i	B2613k	B2613m	B2613o	B2613q		
Parcel 2	Rabi	B2621b	B2621d		B2621f	B2621h	B2621j	B2621l	B2621n	B2621p		
		B2622b	B2622d		B2622f	B2622h	B2622j	B2622l	B2622n	B2622p		
		B2623b	B2623d		B2623f	B2623h	B2623j	B2623l	B2623n	B2623p		
	Kharif	B2621c	B2621e		B2621g	B2621i	B2621k	B2621m	B2621o	B2621q		
		B2622c	B2622e		B2622g	B2622i	B2622k	B2622m	B2622o	B2622q		
		B2623c	B2623e		B2623g	B2623i	B2623k	B2623m	B2623o	B2623q		
Parcel 3	Rabi	B2631b	B2631d		B2631f	B2631h	B2631j	B2631l	B2631n	B2631p		
		B2632b	B2632d		B2632f	B2632h	B2632j	B2632l	B2632n	B2632p		
		B2633b	B2633d		B2633f	B2633h	B2633j	B2633l	B2633n	B2633p		
	Kharif	B2631c	B2631e		B2631g	B2631i	B2631k	B2631m	B2631o	B2631q		
		B2632c	B2632e		B2632g	B2632i	B2632k	B2632m	B2632o	B2632q		
		B2633c	B2633e		B2633g	B2633i	B2633k	B2633m	B2633o	B2633q		

- *1. Canal Irrigation (1); Rain fed (2); Tubewell (3); Other (specify _____) (6)
 *2. Personal (1); rented from neighbor (2); rented commercially (3); free/ subsidized rate from landlord (4)
 *3. Drip Irrigation (1); Flood irrigation (2); Sprinkler irrigation (3); Furrow irrigation (4); other (specify _____) (4)

B28: During which month (s) did you face water scarcity in the past 12 months? _____

B7: Machinery Expense – Parcel 1

Light Equipment (Tick appropriate one)	Use of equipment/machinery (Enter crop code as above)												Who owns the equipment/ animal? *1	If equipment is shared, what % of costs does farmer pay?	Who are these costs shared with*2?	Year of Purchase	Value at year of Purchase (PKR)
	Parcel 1																
	Rabi				Kharif												
	Crop 1	Crop 2	Crop 3	Crop 4	Crop 1	Crop 2	Crop 3	Crop 4									
Hand Hoe	B71a	B71b	B71c	B71d	B71e	B71f	B71g	B71h	B71i	B71j	B71k						
Axe	B72a	B72b	B72c	B72d	B72e	B72f	B72g	B72h	B72i	B72j	B72k						
Scythe (Drati)	B73a	B73b	B73c	B73d	B73e	B73f	B73g	B73h	B73i	B73j	B73k						
Rake (kilna)	B74a	B74b	B74c	B74d	B74e	B74f	B74g	B74h	B74i	B74j	B74k						
Other	B75	B75b	B75c	B75d	B75e	B75f	B75g	B75h	B75i	B75j	B75k						
Heavy Machinery (Enter rental cost in PKR)																	
Draft animal power																	
Rotor weigh	B76a	B76b	B76c	B76d	B76e	B76f	B76g	B76h	B76i	B76j	B76k						
Plough (Gobal)	B77a	B77b	B77c	B77d	B77e	B77f	B77g	B77h	B77i	B77j	B77k						
Leveler (Dhallai)	B78a	B78b	B78c	B78d	B78e	B78f	B78g	B78h	B78i	B78j	B78k						
Khiria	B79a	B79b	B79c	B79d	B79e	B79f	B79g	B79h	B79i	B79j	B79k						
Loader	B710a	B710b	B710c	B710d	B710e	B710f	B710g	B710h	B710i	B710j	B710k						
Cultivator	B711a	B711b	B711c	B711d	B711e	B711f	B711g	B711h	B711i	B711j	B711k						
Reaper	B712a	B712b	B712c	B712d	B712e	B712f	B712g	B712h	B712i	B712j	B712k						
Thresher	B713a	B713b	B713c	B713d	B713e	B713f	B713g	B713h	B713i	B713j	B713k						
Tractor	B714a	B714b	B714c	B714d	B714e	B714f	B714g	B714h	B714i	B714j	B714k						
Generator	B715a	B715b	B715c	B715d	B715e	B715f	B715g	B715h	B715i	B715j	B715k						
Tubewell	B716a	B716b	B716c	B716d	B716e	B716f	B716g	B716h	B716i	B716j	B716k						

*1 & 2: Personal (1); landlord (free) (2), land lord rented (3), middleman/trader free (4), middleman rented (5) Rented from market (6)

B7: Machinery Expense – Parcel 2

Light Equipment (Tick appropriate one)	Use of equipment/machinery (Enter crop code as above)										Who owns the equipment/ animal? *1	If equipment is shared, what % of costs does farmer pay?	Who are these costs shared with*2?	Year of Purchase	Value at year of Purchase (PKR)
	Parcel 2														
	Rabi					Kharif									
	Crop 1	Crop 2	Crop 3	Crop 4	Crop 1	Crop 2	Crop 3	Crop 4							
Hand Hoe	B71a	B71b	B71c	B71d	B71e	B71f	B71g	B71h	B71i	B71j	B71k				
Axe	B72a	B72b	B72c	B72d	B72e	B72f	B72g	B72h	B72i	B72j	B72k				
Scythe (Drati)	B73a	B73b	B73c	B73d	B73e	B73f	B73g	B73h	B73i	B73j	B73k				
Rake (kilna)	B74a	B74b	B74c	B74d	B74e	B74f	B74g	B74h	B74i	B74j	B74k				
Other	B75	B75b	B75c	B75d	B75e	B75f	B75g	B75h	B75i	B75j	B75k				
Heavy Machinery (Enter rental cost in PKR)															
Draft animal power															
Rotor weigh	B76a	B76b	B76c	B76d	B76e	B76f	B76g	B76h	B76i	B76j	B76k				
Plough (Gobal)	B77a	B77b	B77c	B77d	B77e	B77f	B77g	B77h	B77i	B77j	B77k				
Leveler (Dhallai)	B78a	B78b	B78c	B78d	B78e	B78f	B78g	B78h	B78i	B78j	B78k				
Khiria	B79a	B79b	B79c	B79d	B79e	B79f	B79g	B79h	B79i	B79j	B79k				
Loader	B710a	B710b	B710c	B710d	B710e	B710f	B710g	B710h	B710i	B710j	B710k				
Cultivator	B711a	B711b	B711c	B711d	B711e	B711f	B711g	B711h	B711i	B711j	B711k				
Reaper	B712a	B712b	B712c	B712d	B712e	B712f	B712g	B712h	B712i	B712j	B712k				
Thresher	B713a	B713b	B713c	B713d	B713e	B713f	B713g	B713h	B713i	B713j	B713k				
Tractor	B714a	B714b	B714c	B714d	B714e	B714f	B714g	B714h	B714i	B714j	B714k				
Generator	B715a	B715b	B715c	B715d	B715e	B715f	B715g	B715h	B715i	B715j	B715k				
Tubewell	B716a	B716b	B716c	B716d	B716e	B716f	B716g	B716h	B716i	B716j	B716k				

*1 & 2: Personal (1); landlord (free) (2), land lord rented (3), middleman/trader free (4), middleman rented (5) Rented from market (6)

B7: Machinery Expense – Parcel 3

Light Equipment (Tick appropriate one)	Use of equipment/machinery (Enter crop code as above)										Who owns the equipment/ animal? *1	If equipment is shared, what % of costs does farmer pay?	Who are these costs shared with*2?	Year of Purchase	Value at year of Purchase (PKR)
	Parcel 3														
	Rabi					Kharif									
	Crop 1	Crop 2	Crop 3	Crop 4	Crop 1	Crop 2	Crop 3	Crop 4							
Hand Hoe	B71a	B71b	B71c	B71d	B71e	B71f	B71g	B71h	B71i	B71j	B71k				
Axe	B72a	B72b	B72c	B72d	B72e	B72f	B72g	B72h	B72i	B72j	B72k				
Scythe (Drati)	B73a	B73b	B73c	B73d	B73e	B73f	B73g	B73h	B73i	B73j	B73k				
Rake (kilna)	B74a	B74b	B74c	B74d	B74e	B74f	B74g	B74h	B74i	B74j	B74k				
Other	B75	B75b	B75c	B75d	B75e	B75f	B75g	B75h	B75i	B75j	B75k				
Heavy Machinery (Enter rental cost in PKR)															
Draft animal power															
Rotor weigh	B76a	B76b	B76c	B76d	B76e	B76f	B76g	B76h	B76i	B76j	B76k				
Plough (Gobal)	B77a	B77b	B77c	B77d	B77e	B77f	B77g	B77h	B77i	B77j	B77k				
Leveler (Dhallai)	B78a	B78b	B78c	B78d	B78e	B78f	B78g	B78h	B78i	B78j	B78k				
Khiria	B79a	B79b	B79c	B79d	B79e	B79f	B79g	B79h	B79i	B79j	B79k				
Loader	B710a	B710b	B710c	B710d	B710e	B710f	B710g	B710h	B710i	B710j	B710k				
Cultivator	B711a	B711b	B711c	B711d	B711e	B711f	B711g	B711h	B711i	B711j	B711k				
Reaper	B712a	B712b	B712c	B712d	B712e	B712f	B712g	B712h	B712i	B712j	B712k				
Thresher	B713a	B713b	B713c	B713d	B713e	B713f	B713g	B713h	B713i	B713j	B713k				
Tractor	B714a	B714b	B714c	B714d	B714e	B714f	B714g	B714h	B714i	B714j	B714k				
Generator	B715a	B715b	B715c	B715d	B715e	B715f	B715g	B715h	B715i	B715j	B715k				
Tubewell	B716a	B716b	B716c	B716d	B716e	B716f	B716g	B716h	B716i	B716j	B716k				

*1 & 2: Personal (1); landlord (free) (2), land lord rented (3), middleman/trader free (4), middleman rented (5) Rented from market (6)

C1: Labor Composition – Parcel 1

Season	Enter Crop Code	Activities	Household labor (please enter person code in no column) 1 day= 6-8 hours of work completed by 1 individual								Hired Labor 1 day= 6-8 hours of work completed by 1 individual.							
			Male		Female		Child (<16)		Male			Female			Child (<16)			
			No	days	No	Days	No	Days	Days	Days	Daily wage rate	No	Days	Daily wage rate	No	Days		
Rabi	Crop 1	Land Preparation	c11a	c11b	c11c	c11d	c11e	c11f	c11g	c11h	c11i	c11j	c11k	c11l				
		Planting	c12a	c12b	c12c	c12d	c12e	c12f	c12g	c12h	c12i	c12j	c12k	c12l				
		Watering	c13a	c13b	c13c	c13d	c13e	c13f	c13g	c13h	c13i	c13j	c13k	c13l				
		Weeding/pesticides	c14a	c14b	c14c	c14d	c14e	c14f	c14g	c14h	c14i	c14j	c14k	c14l				
		Harvesting	c15a	c15b	c15c	c15d	c15e	c15f	c15g	c15h	c15i	c15j	c15k	c15l				
	Post harvesting	c16a	c16b	c16c	c16d	c16e	c16f	c16g	c16h	c16i	c16j	c16k	c16l					
	Crop 2	Land Preparation	c17a	c17b	c17c	c17d	c17e	c17f	c17g	c17h	c17i	c17j	c17k	c17l				
		Planting	c18a	c18b	c18c	c18d	c18e	c18f	c18g	c18h	c18i	c18j	c18k	c18l				
		Watering	c19a	c19b	c19c	c19d	c19e	c19f	c19g	c19h	c19i	c19j	c19k	c19l				
		Weeding/pesticides	c110a	c110b	c110c	c110d	c110e	c110f	c110g	c110h	c110i	c110j	c110k	c110l				
		Harvesting	c111a	c111b	c111c	c111d	c111e	c111f	c111g	c111h	c111i	c111j	c111k	c111l				
	Post harvesting	c112a	c112b	c112c	c112d	c112e	c112f	c112g	c112h	c112i	c112j	c112k	c112l					
	Crop 3	Land Preparation	c113a	c113b	c113c	c113d	c113e	c113f	c113g	c113h	c113i	c113j	c113k	c113l				
		Planting	c114a	c114b	c114c	c114d	c114e	c114f	c114g	c114h	c114i	c114j	c114k	c114l				
		Watering	c115a	c115b	c115c	c115d	c115e	c115f	c115g	c115h	c115i	c115j	c115k	c115l				
		Weeding/pesticides	c116a	c116b	c116c	c116d	c116e	c116f	c116g	c116h	c116i	c116j	c116k	c116l				
		Harvesting	c117a	c117b	c117c	c117d	c117e	c117f	c117g	c117h	c117i	c117j	c117k	c117l				
	Post harvesting	c118a	c118b	c118c	c118d	c118e	c118f	c118g	c118h	c118i	c118j	c118k	c118l					
	Crop 4	Land Preparation	c119a	c119b	c119c	c119d	c119e	c119f	c119g	c119h	c119i	c119j	c119k	c119l				
		Planting	c120a	c120b	c120c	c120d	c120e	c120f	c120g	c120h	c120i	c120j	c120k	c120l				
watering		c121a	c121b	c121c	c121d	c121e	c121f	c121g	c121h	c121i	c121j	c121k	c121l					
Weeding/pesticides		c122a	c122b	c122c	c122d	c122e	c122f	c122g	c122h	c122i	c122j	c122k	c122l					
Harvesting		c123a	c123b	c123c	c123d	c123e	c123f	c123g	c123h	c123i	c123j	c123k	c123l	c123l				
Post harvesting	c124a	c124b	c124c	c124d	c124e	c124f	c124g	c124h	c124i	c124j	c124k	c124l	c124l					
Kharif	Crop 1	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l				
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l	c126l			
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l	c127l			
		Weeding/pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l	c128l			

		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l		
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l		
	Crop 2	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l		
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l		
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l		
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l		
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l		
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l		
	Crop 3	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l		
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l		
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l		
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l		
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l		
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l		
	Crop 4	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l		
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l		
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l		
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l		
Harvesting		c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l			
Post harvesting		c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l			

C1: Labor Composition – Parcel 2

Season	Enter Crop Code	Activities	Household labor (please enter person code in no column) 1 day= 6-8 hours of work completed by 1 individual								Hired Labor 1 day= 6-8 hours of work completed by 1 individual.							
			Male		Female		Child (<16)		Male			Female			Child (<16)			
			No	days	No	Days	No	Days	Days	Days	Daily wage rate	No	Days	Daily wage rate	No	Days		
Rabi	Crop 1	Land Preparation	c11a	c11b	c11c	c11d	c11e	c11f	c11g	c11h	c11i	c11j	c11k	c11l				
		Planting	c12a	c12b	c12c	c12d	c12e	c12f	c12g	c12h	c12i	c12j	c12k	c12l				
		Watering	c13a	c13b	c13c	c13d	c13e	c13f	c13g	c13h	c13i	c13j	c13k	c13l				
		Weeding/pesticides	c14a	c14b	c14c	c14d	c14e	c14f	c14g	c14h	c14i	c14j	c14k	c14l				
		Harvesting	c15a	c15b	c15c	c15d	c15e	c15f	c15g	c15h	c15i	c15j	c15k	c15l				
	Post harvesting	c16a	c16b	c16c	c16d	c16e	c16f	c16g	c16h	c16i	c16j	c16k	c16l					
	Crop 2	Land Preparation	c17a	c17b	c17c	c17d	c17e	c17f	c17g	c17h	c17i	c17j	c17k	c17l				
		Planting	c18a	c18b	c18c	c18d	c18e	c18f	c18g	c18h	c18i	c18j	c18k	c18l				
		Watering	c19a	c19b	c19c	c19d	c19e	c19f	c19g	c19h	c19i	c19j	c19k	c19l				
		Weeding/pesticides	c110a	c110b	c110c	c110d	c110e	c110f	c110g	c110h	c110i	c110j	c110k	c110l				
		Harvesting	c111a	c111b	c111c	c111d	c111e	c111f	c111g	c111h	c111i	c111j	c111k	c111l				
	Post harvesting	c112a	c112b	c112c	c112d	c112e	c112f	c112g	c112h	c112i	c112j	c112k	c112l					
	Crop 3	Land Preparation	c113a	c113b	c113c	c113d	c113e	c113f	c113g	c113h	c113i	c113j	c113k	c113l				
		Planting	c114a	c114b	c114c	c114d	c114e	c114f	c114g	c114h	c114i	c114j	c114k	c114l				
		Watering	c115a	c115b	c115c	c115d	c115e	c115f	c115g	c115h	c115i	c115j	c115k	c115l				
		Weeding/pesticides	c116a	c116b	c116c	c116d	c116e	c116f	c116g	c116h	c116i	c116j	c116k	c116l				
		Harvesting	c117a	c117b	c117c	c117d	c117e	c117f	c117g	c117h	c117i	c117j	c117k	c117l				
	Post harvesting	c118a	c118b	c118c	c118d	c118e	c118f	c118g	c118h	c118i	c118j	c118k	c118l					
	Crop 4	Land Preparation	c119a	c119b	c119c	c119d	c119e	c119f	c119g	c119h	c119i	c119j	c119k	c119l				
		Planting	c120a	c120b	c120c	c120d	c120e	c120f	c120g	c120h	c120i	c120j	c120k	c120l				
watering		c121a	c121b	c121c	c121d	c121e	c121f	c121g	c121h	c121i	c121j	c121k	c121l					
Weeding/pesticides		c122a	c122b	c122c	c122d	c122e	c122f	c122g	c122h	c122i	c122j	c122k	c122l					
Harvesting		c123a	c123b	c123c	c123d	c123e	c123f	c123g	c123h	c123i	c123j	c123k	c123l	c123l				
Post harvesting	c124a	c124b	c124c	c124d	c124e	c124f	c124g	c124h	c124i	c124j	c124k	c124l	c124l					
Kharif	Crop 1	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l				
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l	c126l			
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l	c127l			
		Weeding/pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l	c128l			

		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l			
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l			
	Crop 2	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l			
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l			
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l			
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l			
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l			
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l			
	Crop 3	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l			
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l			
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l			
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l			
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l			
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l			
	Crop 4	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l			
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l			
		Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l			
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l			
Harvesting		c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l				
Post harvesting		c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l				

C1: Labor Composition – Parcel 3

Season	Enter Crop Code	Activities	Household labor (please enter person code in no column) 1 day= 6-8 hours of work completed by 1 individual						Hired Labor 1 day= 6-8 hours of work completed by 1 individual.								
			Male		Female		Child (<16)		Male			Female			Child (<16)		
			No	days	No	Days	No	Days	Days	Days	Daily wage rate	No	Days	Daily wage rate	No	Days	
Rabi	Crop 1	Land Preparation	c11a	c11b	c11c	c11d	c11e	c11f	c11g	c11h	c11i	c11j	c11k	c11l			
		Planting	c12a	c12b	c12c	c12d	c12e	c12f	c12g	c12h	c12i	c12j	c12k	c12l			
		Watering	c13a	c13b	c13c	c13d	c13e	c13f	c13g	c13h	c13i	c13j	c13k	c13l			
		Weeding/ pesticides	c14a	c14b	c14c	c14d	c14e	c14f	c14g	c14h	c14i	c14j	c14k	c14l			
		Harvesting	c15a	c15b	c15c	c15d	c15e	c15f	c15g	c15h	c15i	c15j	c15k	c15l			
		Post harvesting	c16a	c16b	c16c	c16d	c16e	c16f	c16g	c16h	c16i	c16j	c16k	c16l			
	C	Land Preparation	c17a	c17b	c17c	c17d	c17e	c17f	c17g	c17h	c17i	c17j	c17k	c17l			

Kharif		Planting	c18a	c18b	c18c	c18d	c18e	c18f	c18g	c18h	c18i	c18j	c18k	c18l				
		Watering	c19a	c19b	c19c	c19d	c19e	c19f	c19g	c19h	c19i	c19j	c19k	c19l				
		Weeding/ pesticides	c110a	c110b	c110c	c110d	c110e	c110f	c110g	c110h	c110i	c110j	c110k	c110l				
		Harvesting	c111a	c111b	c111c	c111d	c111e	c111f	c111g	c111h	c111i	c111j	c111k	c111l				
		Post harvesting	c112a	c112b	c112c	c112d	c112e	c112f	c112g	c112h	c112i	c112j	c112k	c112l				
	Crop 3	Land Preparation	c113a	c113b	c113c	c113d	c113e	c113f	c113g	c113h	c113i	c113j	c113k	c113l				
		Planting	c114a	c114b	c114c	c114d	c114e	c114f	c114g	c114h	c114i	c114j	c114k	c114l				
		Watering	c115a	c115b	c115c	c115d	c115e	c115f	c115g	c115h	c115i	c115j	c115k	c115l				
		Weeding/ pesticides	c116a	c116b	c116c	c116d	c116e	c116f	c116g	c116h	c116i	c116j	c116k	c116l				
		Harvesting	c117a	c117b	c117c	c117d	c117e	c117f	c117g	c117h	c117i	c117j	c117k	c117l				
	Post harvesting	c118a	c118b	c118c	c118d	c118e	c118f	c118g	c118h	c118i	c118j	c118k	c118l					
	Crop 4	Land Preparation	c119a	c119b	c119c	c119d	c119e	c119f	c119g	c119h	c119i	c119j	c119k	c119l				
		Planting	c120a	c120b	c120c	c120d	c120e	c120f	c120g	c120h	c120i	c120j	c120k	c120l				
		watering	c121a	c121b	c121c	c121d	c121e	c121f	c121g	c121h	c121i	c121j	c121k	c121l				
		Weeding/ pesticides	c122a	c122b	c122c	c122d	c122e	c122f	c122g	c122h	c122i	c122j	c122k	c122l				
		Harvesting	c123a	c123b	c123c	c123d	c123e	c123f	c123g	c123h	c123i	c123j		c123k	c123l			
	Post harvesting	c124a	c124b	c124c	c124d	c124e	c124f	c124g	c124h	c124i	c124j		c124k	c124l				
	Crop 1	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l			
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l			
		Watering	c127a	C127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l			
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l			
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l			
		Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l			
	Crop 2	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l			
		Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l			
		Watering	c127a	C127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l			
		Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l			
		Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j		c129k	c129l			
Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j		c130k	c130l					
Crop 3	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j		c125k	c125l				
	Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j		c126k	c126l				
	Watering	c127a	C127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j		c127k	c127l				
	Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j		c128k	c128l				

Crop 4	Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l		
	Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l		
	Land Preparation	c125a	c125b	c125c	c125d	c125e	c125f	c125g	c125h	c125i	c125j	c125k	c125l		
	Planting	c126a	c126b	c126c	c126d	c126e	c126f	c126g	c126h	c126i	c126j	c126k	c126l		
	Watering	c127a	c127b	c127c	c127d	c127e	c127f	c127g	c127h	c127i	c127j	c127k	c127l		
	Weeding/ pesticides	c128a	c128b	c128c	c128d	c128e	c128f	c128g	c128h	c128i	c128j	c128k	c128l		
	Harvesting	c129a	c129b	c129c	c129d	c129e	c129f	c129g	c129h	c129i	c129j	c129k	c129l		
	Post harvesting	c130a	c130b	c130c	c130d	c130e	c130f	c130g	c130h	c130i	c130j	c130k	c130l		

C3: Off-farm employment for members of household

Person Code	No. of days (6-8 hours) worked off-farm	Daily wage paid (in PKR)
C31a	C31b	C31c
C32a	C32b	C32c
C33a	C33b	C33c
C34a	C34b	C34c
C35a	C35b	C35c
C36a	C36b	C36c
C37a	C37b	C37c
C38a	C38b	C38c

C4: Marketing and Transport Channel:

Where do you sell your produce *	What is middleman's commission? In %	Is there a metaled road to the market (Yes/No)	Cost for transport (In PKR) (Rent + fuel) (Conditional on farmer marketing own produce)	Cost of packaging (PKR) (Conditional on farmer marketing own produce)	How long have you sold produce through this marketing channel (years)?	How far is it to the market where you sell your harvest? (km)
C41a	C41b	C41c	C41d	C41e	C41f	C41g

*Local Market (1); Urban Market (2); Middle man (3); Govt. Agents (4); Landlord (5)

Table B15. Livestock production, consumption, prices etc. (2012)

Type of Animal *1	No. of Animals		No of animals born or bought in 2012		Ownership		Home consumption [Nos./Yr] *2	No. of animal sold [2012]			Who did you sell it to? *3	Monthly earning from animal produce (PKR) *4	Total feeding and veterinary cost (PKR/ yr)	Grazing cost (PKR/ yr)	Own Labour (Hours/ yr)	Hired Labour (PKR/ yr)	No of cultivable land from parcels tha is instead used as enclosure for animals
					Own	Shared		Nos. Sold	Farmer's Price (PKR)	Market Price (PKR)							
B151	B151a	B151b	B151c	B151d	B151e	B151f	B151g	B151h	B151i								
B152	B152a	B152b	B152c	B152d	B152e	B152f	B152g	B152h	B152i								
B153	B153a	B153b	B153c	B153d	B153e	B153f	B153g	B153h	B153i								
B154	B154a	B154b	B154c	B154d	B154e	B154f	B154g	B154h	B154i								
B155	B155a	B155b	B155c	B155d	B155e	B155f	B155g	B155h	B155i								
B156	B156a	B156b	B156c	B156d	B156e	B156f	B156g	B156h	B156i								
B157	B157a	B157b	B157c	B157d	B157e	B157f	B157g	B157h	B157i								

*1 (1) Cows (2) Buffalo (3) Goats (4) Sheep (5) Camels (6) Horses (7) Asses (8) Mules (9) Others

*2 including for sacrifice, gifting, marriages, religious and other festivals

*3 neighbor, local market, urban market, middleman, other _____

*4 Includes milk, butter, and leftovers sold for preparation

Section D: Institutional Arrangements

D1: Type and source of household credit

Credit Source		Loan in past year (In PKR)		Interest rate/ year		What is the repayment time? (In months)		Any collateral for the loan? *1		Where did you primarily spend this loan?*2		How long have you dealt with this loan provider (in years)		If applied but not received the loan, what are the reasons for your ineligibility? *3	
D11	Bank	D11a		D11b		D11c		D11d		D11e		D11f		D11g	
D12	Micro finance institutes	D12a		D12b		D12c		D12d		D12e		D12f		D12g	
D13	Farmer associations	D13a		D13b		D13c		D13d		D13e		D13f		D13g	
D14	Land lord	D14a		D14b		D14c		D14d		D14e		D14f		D14g	
D15	Relative or Friend	D15a		D15b		D15c		D15d		D15e		D15f		D15g	
D16	Local Lender	D16a		D16b		D16c		D16d		D16e		D16f		D16g	
D17	Middleman	D17a		D17b		D17c		D17d		D17e		D17f		D17g	

*1 Land (1); share of output (2); use of farmers labour (3); other (specify) (4)

*2 Buy inputs (seeds, fertilizer, machinery) (1); invest in irrigation (2); buy food/clothing/medical care (3); education/training (4)

*3 incomplete identification documents (1), lack of collateral (2), insufficient income/ employment for repayment (3), default on previous loans (4).

D2: Have you received any other loans in the past 5 years? _____ in PKR

D3: Village characteristics

How many people live in your village?		How far are you from the centre of the village?		No. of relatives in village	
D3a		D3b		D3c	

D4: Village Profile

Facilities		Tick as appropriate
D41	School	
D42	Dispensary/ hospital	
D43	Shop/market	
D44	Public Transport	
D45	Telephone network	
D46	Internet access	
D47	Electricity supply	
D49	Farmer association	
D410	Agricultural extension office	
D411	Agricultural NGO/ CBO	

Next 3 questions only to be answered by those farmers who trade through a middleman

D5: When did you agree to trade through a middleman?		Tick as appropriate	: Would it be a problem for you to switch to a different middleman if you felt the terms of your contract were not satisfactory? (Yes/No)		Have you switched middleman before? (Yes/no)	
D51	Just before harvest		D6		D7	
D52	Just after harvest					
D53	During crop preparation					

D8: Have you received any of the following types of subsidies during last 12 months (give amount (PKR) per year)

Source		Seed Subsidy		Fertilizer Subsidy		Other	
D81	Government	D81a		D81b		D81c	
D82	NGO	D82a		D82b		D82c	
D84	Private sector sources	D84a		D84b		D84c	
D85	Other (Pls. specify)	D85a		D85b		D85c	

D9: Do you get information or advice from agricultural extension workers or other sources on crop production technology?

Source		How many visit each season	How much do you pay annually for this service?		Did you implement any of the advice received on production techniques/ equipment? (Yes/ No)	If yes, was it useful? (Yes/ No)	If not, what was the reason for not implementing their advice*		
D51	Govt. agricultural extension services	D51a		D51b		D51c		D51d	D51e
D52	Local farmer associations	D52a		D52b		D52c		D52d	D52e
D53	NGOs/ CBOs	D53a		D53b		D53c		D53d	D53e
D54	Research institute	D54a		D54b		D54c		D54d	D54e
D55	Neighbor or Relative	D55a		D55b		D55c		D55d	D55e
D56	print Media	D56a		D56b		D56c		D56d	D56e
	Radio/ TV								
D57	Landlord	D57a		D57b		D57c		D57d	D57e
D58	Middleman	D58a		D58b		D58c		D58d	D58e

*Too expensive (1); want to stick with known methods (2); unsure about how to use new technologies (3); Unable to use new technologies without landlords permission (4); lack of infrastructure to support new technologies (e.g. inadequate irrigation) (5); Other (6)

Section E: ADAPTATION

E1: How long have you been a farmer? _____ (in number of years)

E2: Changes in Rainfall and Temperature:

Change in Rainfall		Have you noticed any change over the last 15 years? Tick as appropriate		Change in Temperature		Have you noticed any change over the last 15 years? Tick as appropriate	
E21	No change in the rain	E21a		E21b	No change in temperature	E21c	
E22	Less rain	E22a		E22b	More Hot days	E22c	
E23	More rain	E23a		E23b	less Hot days	E23c	
E24	Change in the onset rainy seasons	E24a		E24b	Change in night time temperature	E24c	
				E25b	Increase in cold spells	E25c	
					Change in onset of hot season		

E4 Extreme Events

Events		Have you experienced any of the following events in the past 15 years? Yes/ No		How would you rate the <u>frequency</u> of this event over the last 15 years?*1		How would you rate the <u>severity</u> of the of this event over the past 20 years?*1		Loss of asset, property, income, food shortage, decline in consumption? (Y/N)	
E41	Floods/ flash floods	E41a		E41b		E41c		E41d	
E42	Wind/ Dust storm	E42a		E42b		E42c		E42d	
E43	Drought	E43a		E43b		E43c		E43d	
E45	Hail storm	E45a		E45b		E45c		E45d	

* 1: Increasing (1); Same (2); Decreasing (3)

E3: Rainfall

Which month did the rainy season begin in the past 15 years?		In which month did the rainy season begin this year?		How would you characterize the amount of rain relative to past 15 years? *1		In which month in this year's rainy season did you get the most rain?	
E31		E31a		E31b		E31c	

*1 more (1); same (2); less(3)

E5: Past Flood Experience

Were you affected by flooding in any of the following years? Yes=1, No=2			Did this affect your harvest? Yes=1, No=2		What % of harvest across all crops was lost?		Any other loss? *1		How did you cope with losses?*2	
E51	2012		E51a		E51b		E51c		E51d	
E52	2011		E52a		E52b		E52c		E52d	
E53	2010		E53a		E53b		E53c		E53d	

*1 Loss of livestock (1), loss of housing/ storage/ animal shed (2), loss of family member (3), loss of any other asset (machinery, vehicle, etc) (4)

*2 Took out a loan to cover expenses (1); Sold off farm assets (machinery, livestock) (2); Relied on savings (3); Worked as a labourer/other work away own farm (4); Financial support from relatives/local villagers (5); Government/NGO assistance (6); Other (specify) (7)

E6: Adaptation actually undertaken

Adaptation Measures		How has your household adapted to cope with climatic changes?		Go to Question:
E61	Altering the timing of "cropping activity" (e.g. harvest date)	E61a		E7
E62	Shift in cropping pattern (e.g. crop portfolio)	E62a		E8
E63	Altering agricultural input	E63a		E9
E64	Investment in soil conservation	E64a		E10
E65	Investment in water conservation	E65a		E11
E66	Diversification of Income	E66a		E12
E67	Public/ Household infrastructure incl. water defenses			E13
E68	No Adaptation	E67a		-
	Other, specify _____	E68a		-

E7: Altering the timing of cropping activity:

Which activities have you shifted		Which plot/crop?		Previous time of the activity (month)		Current time of the activity (Month)		If you do not plan to continues this? Please explain your reason for discontinuation? *1	
E71	Delayed Sowing	E71a		E71b		E71c		E71d	
E72	Early Harvesting	E72a		E72b		E72c		E72d	
E73	Late Harvesting	E73a		E73b		E73c		E73d	

* 1 lack of money (1), lack of information (2); shortage of labor (3); Has little/no effect on crop outputs (4) Lower returns (5) Other (specify) (6) ...

E8: Shift in cropping patterns

What crop did you swap?				When did you start to change (Year)		What is the change in the income?		Did you incur any additional cost of change? In PKR		If you do not plan to continues this? Please explain your reason for discontinuation *1	
Previous		New									
		E81		E81a		E81b		E81c		E81d	

* 1 lack of money (1), lack of information (2); shortage of labor (3); Has little/no effect on crop outputs (4) Lower returns (5) Other (specify) (6) ...

E9: Change in Agricultural Input due to climate change:

Which agricultural input did you change?		When did you start to change (Year)?	How did you change?*1	Did you incur cost of change? (In Rs.)	If you do not plan to continue this? Please explain your reason for discontinuation *1		
E91	Fertilizers	E91a	E91b	E91c	E91d		
E92	Seed	E92a	E92b	E92c	E92d		
E93	Pesticides	E93a	E93b	E93c	E93d		
E94	Labor	E94a	E94b	E94c	E94d		
E95	Water	E95a	E95b	E95c	E95d		

*1. Increase (1); Reduce (3); Different variety of input (seed, fertilizer etc.)

2. lack of money (1), lack of information (2); shortage of labor (3); Has little/no effect on crop outputs (4) Lower returns (5) Other (specify) (6)

E10 Soil Conservation Management

Have you used crop residue (Mulching), green manure, or cover crop before this season to provide organic matter to the soil? Y/ N		Did you use zero tillage, and direct sowing for soil preparation? Y/ N	Have you implemented contour planting to reduce soil erosion? Y/ N	Have you used shelter belts for improved soil-water retention and to reduce erosion? Y/ N	
E101		E101a	E101b	E101c	

E11: Water Management/ conservation:

Alteration of irrigation use, including amount, timing to conserve water? Y/ N		Adoption of supplementary water sources such as rainwater harvesting? Y/ N	Construction of flood defense infrastructure? Y/ N	Construction of bunds around fields, or land leveling to preserve water and maximize water uptake of the crops? Y/ N	Adoption of water-efficient methods to conserve soil moisture (e.g. Furrow irrigation)? Y/ N	
E111		E111a	E111b	E111c		

E12: Diversification of Income of household members:

Shift source of Income		Change in Income	How many household members shifted to this livelihood			
E121	Livestock, fishing, etc	E121a	E121b	E121c		
E122	Off farm job	E122a	E122b	E122c		
E123	Private business (store)	E123a	E123b	E123c		
E124	Share Crop/ Lease your land	E124a	E124b	E124c		
E125	Move to urban area	E125a	E125b	E125c		
E126	Other (specify)	E126a	E126b	E126c		

E30: Recent infrastructure developments in past 15 years

Has your village witnessed public infrastructure construction with bearing to agriculture? (Y/N)	What infrastructure was built? *1
E281	E281a

*1: Dam/ Canal (1); Electricity lines (3); Roads (4); Tubewell (5); Rain water harvest tanks/ ponds (6); Flood defense infrastructure (7); other, specify_____

E6: Adaptation actually undertaken

Adaptation Measures		Kindly list 3 most important reasons other than climate change for applying these measures	
E61	Altering the timing of "cropping activity" (e.g. harvest date)	E61a	
E62	Shift in cropping pattern (e.g. crop portfolio)	E62a	
E63	Altering agricultural input	E63a	
E64	Investment in soil conservation	E64a	
E65	Investment in water conservation	E65a	
E66	Diversification of Income	E66a	
E67	Public/ Household infrastructure incl. water defenses		
E68	No Adaptation	E67a	
	Other, specify_____	E68a	

*1. Change in price or availability of input such as seed, fertilizer, water (1); Household factors: food and fodder self-sufficiency (2); Market Price of output/ higher expected return (3); Change in agricultural contract/ terms (4); Other_____ (5)

F3: Household assets owned: quantity and value (2012)

Type of assets		Quantity	Approx. Value (Rs.)	
Electronic Appliance	TV	F31a	F31b	
	Radio	F32a	F32b	
	Other: _____	F33a	F33b	
Communication	Telephone	F34a	F34b	
	Internet	F35a	F35b	
	Mobile Phone	F36a	F36b	
Motorized Transportation: (Truck, car, etc.)		F37a	F37b	
Generator		F38a	F38b	

Section F. HOUSEHOLD INCOME:

F1 Kindly provide information on all kinds of income to this households during the last one year (in Rs.)

Annual Income

F1a.	Wages (kind, yearly) approximate value in Rs.	[] [] [] [] [] [] []
F1b.	Farm income	
F1c.	From business (shops, factory etc.)	[] [] [] [] [] [] []
F1d.	From handicrafts	[] [] [] [] [] [] []
F1e.	Remittances from other household members & relatives	[] [] [] [] [] [] []
F1f.	Sale of property/ other asset	[] [] [] [] [] [] []
F1g.	Land rental	[] [] [] [] [] [] []
F1h.	Livestock	[] [] [] [] [] [] []
F1i.	Other sources (gift, zakat, charity etc.)	[] [] [] [] [] [] []
F1j	TOTAL YEARLY INCOME: (in Rs.)	[] [] [] [] [] [] [] [] [] []

F2. Kindly provide information on monthly expenditure (in Rs.) of this household

F2a.	on food items bought / consumed	[] [] [] [] [] [] []
	Wheat	[] [] [] [] [] [] []
	Fodder	[] [] [] [] [] [] []
	Vegetable	[] [] [] [] [] [] []
	Rice	[] [] [] [] [] [] []
	Pulses	[] [] [] [] [] [] []
	Meat	[] [] [] [] [] [] []
	Other nutritional items _____	[] [] [] [] [] [] []
F2b.	on purchase of clothing and other items	[] [] [] [] [] [] []
F2c.	on health care (doctors/provider's fees and purchase of medicines)	[] [] [] [] [] [] []
F2d.	Miscellaneous	[] [] [] [] [] [] []

F2e TOTAL MONTHLY EXPENDITURE: (in Rs.) [] [] [] [] [] [] []