

POWER POINT PRESENTATION  
ON TIA, SAMPLING DESIGN  
AND RELEVANT INFORMATION  
ON CEREAL PRODUCTION IN  
2005

# Trabalho de Inquérito Agrícola 2007 (TIA)



Ministério da Agricultura

MICHIGAN STATE  
UNIVERSITY

MINAG



# **TIA - Basic Objectives**

- **Collect data on agricultural production, livestock and area cultivated**
- **Collect data on indicators used by ProAgri and the PARPA (PRSP)**

# Data collected

- **Household demographic information**
- **Crops grown and production and commercialization, including tree crops**
- **Cultivable land and area cultivated**
- **Livestock owned**
- **Use of inputs, animal traction, labor**
- **Access to information (extension, prices)**
- **Membership in associations, use of credit**

# **Additional data collected, selected TIA years**

- **Food security**
- **Income**
- **Morbidity**
- **Mortality**
- **Agricultural practices**

## **Sampling frame**

**based on the Agricultural Census of 1999/2000, the *Censo Agro-Pecuária* (CAP), which in turn is based on Population Census of 1997.**

# Coverage

Out of 138 districts ...

1996 66

2002, 2003 80

2005, 2006 94

CAP covered 136 districts

## Coverage, cont'd

- Survey includes **small, medium** and **large** landholders.
- Classification is based on cultivated land, number of livestock and (in 2005, 2006) number of trees.

# A smallholder has less than

- **10** hectares cultivated area
- **10** heads of cattle
- **500** goats, sheep, pigs
- **5000** chickens, ducks, etc.

**99 % are  
smallholders**

# Recent surveys by MINAG and sample size, small- and mediumholders

CAP	23.000
TIA 2002	4.908
TIA 2003	4.935
TIA 2005	6.149
TIA 2006	6.248

# Ex. Coverage of TIA 2006

**94** distritos

**656** U P A s

**6.248** small- and mediumholders  
representing

**3.4** million farmholdings

**WEIGHTING**

# **TIA FRAME** excludes major cities

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	1997	2002	2003	2005
<b>Population (000)</b>				
Nacional	15,278	18,082	18,521	19,436
Maputo/Matola	1,391	1,639	1,684	1,779
Beira Cidade	398	528	545	580
Nampula Cidade	303	363	371	386
<b>TIA FRAME</b>	<b>13,186</b>	<b>15,553</b>	<b>15,911</b>	<b>16,692</b>

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**Question: How do we calculate the number of households to use as expansion factors?**

**Published census data available for**

**population projections**

**but not**

**number of households**

# Initial calculations

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	1997	2002
TIA FRAME	13,186,121	15,552,886
Number of households	3,223,495	3,789,331
<b>Mean HH size</b>	<b>4.09</b>	<b>4.10</b>

# Questions raised about mean household size

- No change from 1997?
- Does it reflect the reality?

# Adjustments made...

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	2002	2003	2005
Population	15,552,886	15,911,683	16,691,757
Number of HHs	3,127,493	3,209,595	3,332,803
<b>Mean HH size</b>	<b>4.97</b>	<b>4.96</b>	<b>5.01</b>

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**Percentagem que praticam cereais, pequenas e médias explorações**

	2002	2003	2005
Milho	80.6	80.6	79.1
Arroz	34.4	26.2	19.4
Mapira	36.5	34.7	29.0
Mexoeira	7.8	5.8	5.4

Fonte: TIA

**Produção de cereais (toneladas), pequenas e médias explorações**

	2002	2003	2005
Milho	1,114,792	1,178,792	941,536
Arroz	93,362	117,483	64,635
Mapira	138,318	190,820	114,534
Mexoeira	12,184	21,609	15,285
Amendoim	101,074	40,854	92,943

Fonte: TIA

**Area por cultura (ha)**

	2002	2005*
Milho	1,459,254	1,749,534
Arroz	381,574	278,368
Mapira	317,350	364,370
Mexoeira	49,696	53,927

Fonte: TIA

### Rendimento de Cereais, 2002 e 2005

	2002			2005		
	Produção (toneladas)	Area (ha)	Rendimento (ton/ha)	Produção (toneladas)	Area (ha)	Rendimento (ton/ha)
Milho	1,114,792	1,459,254	764	941,536	1,749,534	538
Arroz	93,362	381,574	245	64,635	278,368	232
Mapira	138,318	317,350	436	114,534	364,370	314
Mexoeira	12,184	49,696	245	15,285	53,927	283

Fonte: TIA.

**% de explorações que tiveram perdas, Milho e Arroz**

	2002	2005
Milho	74	90
Arroz	66	92

Fonte: TIA.

**% de explorações que indicaram falta de chuva  
como causa principal das perdas**

	2002	2005
Milho	60	92
Arroz	53	91

Fonte: TIA.

**PREÇOS MEDIANOS DO GRÃO DE MILHO BRANCO (SIMA)**

<b>Mercado</b>	== 2004/05 marketing year ==				== 2005/06 marketing year ==			
	<b>Abr - Jun 2004</b>	<b>Jul - Set 2004</b>	<b>Out - Diz 2004</b>	<b>Jan - Mar 2005</b>	<b>Abr - Jun 2005</b>	<b>Jul - Set 2005</b>	<b>Out - Diz 2005</b>	<b>Jan - Mar 2006</b>
Maputo	5.08	4.44	5.08	<b>5.18</b>	5.18	6.35	7.02	<b>10.46</b>
Xai Xai	4.52	3.33	3.45	<b>4.29</b>	3.81	6.23	6.23	<b>9.35</b>
Chókwè	3.73	3.73	3.48	<b>4.97</b>	4.97	6.21	6.58	<b>12.42</b>
Maxixe	3.90	3.90	4.22	<b>4.42</b>	4.68	5.14	5.40	<b>10.39</b>
Massinga	3.90	3.64	3.90	<b>4.81</b>	4.68	4.81	7.62	<b>10.91</b>
Beira	2.52	2.60	3.35	<b>3.64</b>	2.94	5.04	6.45	<b>8.19</b>
Gorongosa	2.08	2.08	3.12	<b>2.49</b>	2.48	3.12	8.16	<b>7.14</b>
Manica	2.29	2.86	3.14	<b>3.43</b>	2.29	4.29	6.86	<b>8.00</b>
Chimoio	3.43	2.86	3.89	<b>3.43</b>	3.43	4.57	5.71	<b>7.43</b>
Tete	2.75	2.81	2.81	<b>3.32</b>	2.86	5.43	8.57	<b>10.57</b>
Mutarara	1.43	2.08	2.11	<b>2.60</b>	2.55	5.71	8.00	<b>8.71</b>
Angónia	2.86	2.86	2.34	<b>2.60</b>	2.34	4.16	6.23	<b>8.31</b>
Quelimane					4.40			
Mocuba	2.86							
Alto Molócuè	2.86			<b>2.86</b>	2.86	3.81	6.43	<b>7.29</b>
Nampula	3.09	3.43	3.43	<b>3.71</b>	2.86	4.29	6.86	<b>9.14</b>
Ribáuè	2.86	2.86	3.43	<b>3.43</b>	2.86	4.00	6.15	<b>8.00</b>
Nacala	2.86	2.86	4.29	<b>5.71</b>	3.43	4.29	6.29	
Pemba	3.12	3.43	4.00	<b>3.71</b>	3.43	4.76	6.86	<b>10.86</b>
Montepuez	3.43	3.43	3.43	<b>4.00</b>	3.43	4.00	6.86	<b>8.57</b>
Lichinga	2.57	2.57	2.86	<b>2.86</b>	2.29	4.29	5.43	<b>10.29</b>
Cuamba	2.00	2.57	2.86	<b>2.57</b>	2.29	4.57	7.43	<b>10.29</b>
Milange							10.00	<b>10.00</b>

Fonte: SIMA

MISCELLANEOUS INFORMATION  
GIVEN TO TIA EVALUATION  
TEAM

# **SURVEY MANAGEMENT**

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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**President of TIA** Director of the Directorate of Economics

**Survey Manager** Aurélio Mate, Chief of the Department of Economics

## **Committees**

Methodology and Training	Arlindo Miguel
Data Management	Luís Lopes
Operations	Felisberto Fumo
Logistics	Fernando Camisa

## **Technical Advisers**

Domingos Rufino Diogo  
Ellen Payongayong

## Technical Staff from MINAG (Central) Trabalho de Inquérito Agrícola

Name	Educ. Attain.	Dept	2002	2003	2005	2006
<b>Coordenation</b>						
Carlos Mucavel	M.S. Economics	DE	President	President		
Adriano Chamusso	Agronomy	DE			President	President
Domingos Diogo	M.S. Agronomy	DEST	Coordinator	Advisor	Advisor	Advisor
Aurélio Mate	Agronomy	DEST	Dep Coordinator	Coordinator	Coordinator	Coordinator
Dulce Chilundo	M.S. Comp. Science	DEST	Advisor	Dep Coordinator	Advisor	
Jesus Jeje	M.S. Agri. Econ.	DEST		Advisor		
Higino Marrule	M.S. Agri. Econ.	DAP	Advisor			
<b>Methodology &amp; Training Com.</b>						
Natércia Macuacua	Agronomy	INE	Head			
Maurício Sambo	Agronomy	DEST	Dep. Head*	Head*	Head*	
Delfina Cumbe	Agronomy	INE	Supervisor	Supervisor		
Arlindo Miguel	Agronomy	DAP	Supervisor	Supervisor	Supervisor	Head
Monasse Jorge	Vet. Medecine	DEST	Supervisor	Dep. Head*	Dep. Head*	Dep. Head*
Lidia Pedro	Lic. Geography	DEST			Supervisor	Supervisor
Olivia Govene	Agronomy	DAP	Supervisor	Supervisor		Supervisor
Guilhermina Rafael	Agronomy	DAP	Supervisor			
Guilhermina Canda	Agronomy	DPA			Supervisor	
Carlos Artur***	Agronomy	DPA				
Pedro Arlindo	M.S. Agri. Econ.	DEST-SIMA	Supervisor			
Inocência Banze	Agronomy	DEST-SIMA			Supervisor	
Hassane Rachide	Agronomy	DNEA			Supervisor	Supervisor
Luis Osvaldo	Lic. Soc. Science	DP		Supervisor	Supervisor	
Acubar Baptista	Vet. Medecine	DP				Supervisor
<b>Computer Science</b>						
Luis Lopes	Lic. Comp. Science	DEST	Head*	Head*	Head*	Head*
Horácio Matlombe	H.S. Diploma	DEST	Supervisor	Supervisor	Supervisor	Supervisor
Rafael Achicala	H.S. Diploma	DEST	Supervisor	Supervisor	Supervisor	Supervisor
Francisco Zezela	H.S. Diploma	DEST		Supervisor	Supervisor	Supervisor
Luis Manhique	H.S. Diploma	Contractual	Hardware			
Francisco Louvor	H.S. Diploma	DTIC/DE			Supervisor	
<b>Field operations</b>						
Felisberto Fumo	H.S. Diploma	DEST	Dep Coordinator*	Head*	Head*	Head*
Arlindo Mazivila	Agronomy	DEST	Supervisor	Supervisor		
Vicente Nhacule	H.S. Diploma	DEST	Supervisor	Supervisor	Supervisor	Supervisor
<b>Logistics</b>						
Fernando Camisa	H.S. Diploma	DEST	Head	Head	Head*	Head
Francisco Pinto	H.S. Diploma	Contractual	Dep. Head	Dep. Head	Dep. Head	
Pená da Costa	H.S. Diploma	DEST	Supervisor	Supervisor		
Benjamim Gimo	H.S. Diploma	DEST			Supervisor	Supervisor
Inácio Chimene	E.S. Diploma	DEST	Supervisor	Supervisor	Supervisor	Supervisor
Lourenço Mavie	E.S. Diploma	DEST	Supervisor	Supervisor	Supervisor	Supervisor
Venâncio Salustiano	H.S. Diploma	DEST				
<b>Other staff</b>						
Argentina Balate	Lic. Economics	DEST-SIMA				Supervisor
Diamantino Pinto	H.S. Diploma	DNEA				Supervisor
Benedito Cunguara	Agronomy	DAP		Supervisor		
Felisberto Maute	Vet. Medecine	Pecuária				Supervisor
Inocência Sigauque	Vet. Medecine	Pecuária				Supervisor
Tomas Siteo	Agronomy	Aviso Prévio				Supervisor
Jacinto da Graça	Agronomy	Aviso Prévio	Supervisor	Supervisor		
Rosalina Mahanzule	Agronomy	IIAM			Supervisor	
Halahala	Agronomy	Contractual				Supervisor
Paula Berta	H.S. Diploma	Contractual			Supervisor	Supervisor
Manuel Pungue	H.S. Diploma	Contractual			Supervisor	Supervisor
Bonifácio Amanze	H.S. Diploma	Contractual			Supervisor	Supervisor
J. Mapsanganhe	H.S. Diploma	Contractual			Supervisor	Supervisor

\* Also worked as supervisor.

\*\* Was head of committee and also worked as supervisor.

\*\*\*Worked as trainor and provincial supervisor (DPA).

Note: "Supervisors" refer to field supervisors reporting to MINAG. List excludes persons who worked only occasionally.

## **SURVEY STAFF**

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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Each province will have 1-3 supervisors from the Ministry of Agriculture (MINAG)

Each province will have 1-2 provincial supervisors from the Provincial Directorates of Agriculture (DPA)

Each province can have from 3-7 survey teams depending on the number of districts covered

A survey team is composed of

- 1 Team Supervisor (controlador)

- 3 Enumerators (inquiridor)

- 1 Data entry clerk (digitador)

In provinces where there is no field-based data entry, there are 4 enumerators instead of 3.

Each survey team is supposed to travel with 1 driver and vehicle.

There are a total of 49 survey teams for a total of

- 49 Team supervisors

- 147 Enumerators

- 49 Data entry clerks

The data entry clerks must also pass the tests given to enumerators and they should be able to conduct interviews themselves when necessary.

## **TRAINING**

### TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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The trainors and all MINAG *técnicos* who will work as supervisors complete a a one- to two-week training program in Maputo.

The provincial supervisors also participate in this training program.

The training is done by the Chief of Methodology and Training with assistance from the TIA advisers.

The trainors are then assigned to one or two training centers.

There are four training centers, one for the southern region, one for the Central region except Zambezia, Zambezia province and the northern region.

Each training center will have at least 2 main trainors, Zambezia will have at least 1.

# **SELECTION OF SUPERVISORS, ENUMERATORS, DATA ENTRY CLERKS**

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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The candidates are preselected at the DPAs based on their resumés and the results of a screening exam conducted by MINAG technicians.

Each province is supposed to bring to the training program an additional 2 to 5 persons on top of the number of positions they have to fill.

The enumerators attend a 12- to 16-day training program and are required to take 6 to 7 tests over the course of the program (implemented in 2005)

In addition they are required to take a test to show their proficiency in the use of GPS equipment. A candidate cannot work as an enumerator without passing this test.

Supervisors are selected based on test scores, leadership potential and overall conduct. The trainer and the provincial supervisors choose the team supervisors.

Data entry clerks are chosen based on their proficiency with computers. They are also given separate tests.

# TYPICAL IMPLEMENTATION OF SURVEY IN A VILLAGE

## TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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1. Village formalities
2. Village listing
3. Random selection of household, supervised by team supervisors
4. Assignment of households to be interviewed by the team supervisor
5. Households are interviewed.
6. Households' fields are measured if chosen for field measurement.
7. Enumerator brings finished interview to team supervisor for review.
8. Enumerator/team supervisor gives questionnaire to data entry for entry.
9. Data entry clerk does first entry of the questionnaire.
10. Data entry clerk does a second entry of the questionnaire (verification)
11. List of errors is generated.
12. Team supervisor and enumerator go over list to resolve inconsistencies.
13. The household is revisited if necessary.
14. Modifications are entered into the data entry application.

Other notes:

In 2006, spot-check procedures were more formalized.

At the end of the day, the provincial and MINAG supervisors are supposed to meet with the team to discuss the day's work.

Data files are sent to Maputo periodically.

## SAMPLE SIZE

### TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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#### Small- and Medium-Sized Farmers

Province	Sample size				Weighted			
	2002	2003	2005	2006	2002	2003	2005	2006
Niassa	277	263	337	342	172832	178533	186025	203806
Cabo Delgado	500	458	591	621	346034	372513	360762	366929
Nampula	604	569	785	845	674801	663072	732062	736043
Zambézia	724	682	781	824	721830	761120	765384	776815
Tete	587	664	721	686	274391	273257	287942	304228
Manica	478	532	505	544	214196	228714	212861	241048
Sofala	416	436	531	534	170672	176693	177001	192517
Inhambane	426	413	586	596	253875	260872	277370	262848
Gaza	552	602	865	815	224152	215343	252847	230983
Maputo	344	316	447	441	74709	79477	80549	80341
<b>Total</b>	<b>4908</b>	<b>4935</b>	<b>6149</b>	<b>6248</b>	<b>3127493</b>	<b>3209595</b>	<b>3332804</b>	<b>3395558</b>

## SURVEY STAFF, continued

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

	2002	2003	2005	2006
<b>Number of provinces covered</b>	10	10	10	10
<b>Number of provinces with field-based data entry</b>	2	3	9	10
<b>Number of districts covered</b>	80	80	94	94
<b>Sample size, small and medium farms</b>	4908	4935	6149	6248
<b>Number of technical staff in TIA</b>				
<b>Management</b>				
<b>or reporting directly to TIA Management</b>	<b>26</b>	<b>25</b>	<b>29</b>	<b>29</b>
President	1	1	1	1
Coordinator	1	1	1	1
Dep. Coordinator [Note 1]	1	1		
Advisors	2	2	2	1
Supervisors*	17	18	25	25
<i>DEST</i>	11	12	13	12
<i>Non-Dest, Agricultural Staff</i>	5	5	7	8
<i>Other Gov't Institution</i>	1	1	0	0
<i>Contractual</i>	0	0	4	5
Others	4	2	1	1
<b>Number of provincial supervisors (from the DPA (Direcção Provincial da Agricultura) [Note 2]</b>				
	20	20	20	20
<b>Number of district staff (from the DDA (Direcção Distrital da Agricultura) [Note 3]</b>				
	80	80	94	94
<b>Number of survey teams</b>	49	49	49	49
<b>Number of field supervisors, enumerators and data entry personnel</b>	245	245	245	245
<b>Number of data entry clerks, MINAG-based</b>	6	6		2

\* number of supervisors increased due to field-based data entry.

## LENGTH OF INTERVIEW

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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Percent distribution of households by length of interview  
Trabalho de Inquérito Agrícola

	2002	2003	2005	2006
<b>Includes income modules</b>	Yes	No	Yes	No
<b>1 hour or less</b>	18	36	18	43
<b>&gt; 1 hour to 2 hours</b>	40	42	41	41
<b>&gt; 2 hours to 3 hours</b>	26	15	25	12
<b>&gt; 3 hours</b>	16	7	16	4
<b>Mean length of interview</b>	1 hr 32 mins	1 hr 26 mins	1 hr 31 mins	1 hr 9 mins

## TIMELINESS (revised from April 28 presentation to include not only end date of survey but also start date)

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

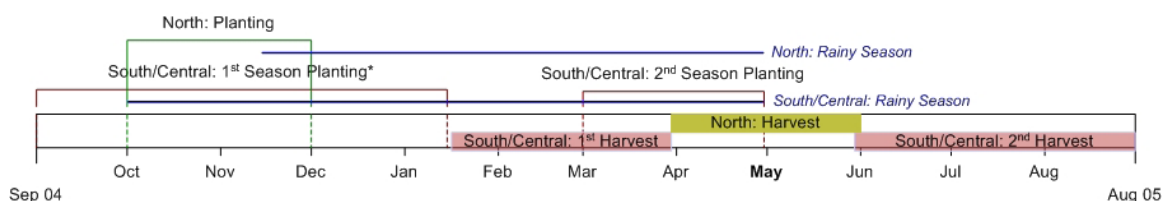
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### Survey reference period

Production data: past agricultural season

Livestock data: date of interview

### Agricultural calendar



Source: FEWSNet Mozambique Food Security Bulletin April 2005

### Survey calendar as planned

Survey planned to start in August of every year in the South, and 2 weeks later in the Center or North of the country. The survey is supposed to be completed in 6-7 weeks.

In 2005, the original start date planned was August 1. Data collection work could have started on September 5 in the South (training had been completed) but actually started September 14.

In 2006, the original start date planned was August 7. Data collection work started on September 10. Note that one week of the delay was due to the loss of the chief of methodology a few days before training (for trainors) was supposed to start.

### Actual survey end dates

TIA 2002 – Last interview conducted October 10, 2002

TIA 2003 – 70% completed by the end of November

2 provinces late in implementing

Last interview conducted December 30, 2003 for the province of Zambezia

TIA 2005 – 91.5% completed by the end of November.

Last interview conducted December 20, 2005

TIA 2006 – 99.5% completed by the end of November

Last interview conducted December 2, 2006

### What happened in 2003?

Decentralization of TIA funds. The provincial offices of agriculture (DPAs) controlled the disbursement of funds.

In 2007, funds allocated for training and data collection have been transferred to headquarters.

## DESCRIPTION OF WEIGHTING PROCEDURES (for a more detailed and complete discussion, please refer to Dr. Megill's documents)

TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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*Step 1. Prepare a file at the UPA level with the following variables. Note that though some variables are created from stratum-level data, they are merged into the UPA-level file*

### Identification variables

PROV	province id
DIST	district id
UPA	village id, corresponds to PSU in strata with 2-stage sampling, otherwise
ESTRATO3	stratum

### UPA-level variables

[1] NPEQLIST	number of <i>pequenas explorações</i> listed within the UPA
[2] NMEDLIST	number of <i>médias explorações</i> listed within the UPA, all of which are supposed to be interviewed
[3] NPM	= [1] + [2] npeqlist + nmedlist, number of <i>explorações</i> listed in the UPA
[4] PEQ06	number of <i>pequenas explorações</i> interviewed
[5] MED06	number of <i>médias explorações</i> interviewed

### Stratum-level variables merged in with the UPA-level file

[6] AF2006R	number of households within each stratum based on population projections and using number of households in 1997. Basically
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$$\text{number of hhs in 2006} = \left( \frac{\text{population projection 2006}}{\text{population 1997}} \right) * \text{number of households in 1997}$$

[7] POP2006R	projected population within each stratum
[8] NSEGMENT	number of UPAS within each stratum
[9] PEQ06ST	number of <i>pequenas explorações</i> interviewed within the stratum
[10] MED06ST	number of <i>médias explorações</i> interviewed within the stratum
[11] PEQMEMST	number of household members in <i>pequenas explorações</i> interviewed within the stratum
[12] MEDMEMST	number of household members in <i>médias explorações</i> interviewed within the stratum
[13] HHSIZEP	= [11] / [9] peqmemst / peq06st, average household size of <i>pequenas explorações</i> interviewed within the stratum
[14] HHSIZEPM	= ( [11] + [12] ) / ( [9] + [10] ) (peqmemst + medmemst) / (peq06st + med06st) average household size of <i>explorações</i> interviewed within the stratum

*Step 2. Compute basic weight for médias in the UPA*

$$[15] \text{BASWTGM} = [6] / ([8] * [3]) \\ \text{af2006r} / (\text{nsegment} * \text{npm})$$

*Step 3. Compute number of media explorações that were not interviewed at the UPA-level*

$$[16] \text{MEDINTM} = [2] - [5] \\ \text{nmedlist} - \text{med06}$$

*Step 4. Calculate an adjustment factor for médias at the UPA level (note all médias are supposed to be selected with certainty in the last stage).*

$$[17] \text{ADJFACM} = [2] / [5] \\ \text{nmedlist} / \text{med06}, \text{ in cases where there are no médias explorações, this variable is assigned a value of "1"}$$

## DESCRIPTION OF WEIGHTING PROCEDURES , continued

### TRABALHO DE INQUÉRITO AGRÍCOLA (TIA)

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*Step 5. Compute an adjusted weight for médias explorações for the UPA*

$$\begin{aligned} [18] \text{ ADWGTM} &= [15] * [17] \\ &\text{baswgtm} * \text{adjfacm} \end{aligned}$$

*Step 6. Compute expanded number of médias at the UPA level*

$$\begin{aligned} [19] \text{ NUMMED} &= [18] * [5] \\ &\text{adjwgtm} * \text{med06} \end{aligned}$$

*Step 7. Compute number of médias at the stratum level*

$$[20] \text{ TOTMEDST} = \text{sum}(\text{nummed}), \text{ by}(\text{estrato3})$$

*Step 8. Compute number of sample pequenas explorações that should have been interviewed at the stratum level*

$$[21] \text{ NSAMPP} = [8] * 8$$

*Step 9. Compute the number of unadjusted number of pequenas explorações within the stratum based on basic projection for number of households minus the expanded number of médias explorações and grandes explorações*

$$\begin{aligned} [22] \text{ AF2006P} &= [6] - ([20] + \text{TOTGRDST}) \\ &\text{af2006r} - (\text{totmedst} + \text{totgrdst}), \text{ (Note: TOTGRDST excluded at this point pending} \\ &\text{resolution of problems with grandes explorações)} \end{aligned}$$

*Step 9. Compute basic weight for pequenas explorações in the stratum*

$$\begin{aligned} [23] \text{ BASWGTP} &= [22] / [21] \\ &\text{af2006p} / \text{nsampp} \end{aligned}$$

*Step 10. Compute an adjustment factor at the UPA level for pequenas explorações not interviewed*

$$\begin{aligned} [24] \text{ ADJFACP} &= 8 / [4] \\ &8 / \text{peq06} \end{aligned}$$

*Step 11. Compute number of pequenas explorações at the stratum-level*

$$\begin{aligned} [25] \text{ POPADJP} &= [7] - (([20] + \text{TOTGRDST}) * [14]) \\ &\text{pop2006r} - ((\text{totmedst} + \text{totgrdst}) * \text{hhsizepm}) \end{aligned}$$

*Step 12. Compute basic weight for pequenas explorações at the stratum level.*

$$\begin{aligned} [26] \text{ FACEXPP} &= [25] / ([21] * [13]) \\ &\text{popadjp} / (\text{nsampp} * \text{hhsizep}) \end{aligned}$$

*Step 13. Compute adjusted weight for pequenas explorações, adjusting for noninterview.*

$$\begin{aligned} [27] \text{ FACEXPPA} &= [26] * [24] \\ &\text{facexpp} * \text{adjfacp} \end{aligned}$$

**A. Cereal production 2005 (tonnes), small- and medium-holders**

	Niassa	C Delgado	Nampula	Zambezia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo	Total
maize	121748	80363	102544	178811	173989	162199	52651	18013	40818	10400	941536
rice	1547	10765	6271	29528	235	742	3509	1560	9844	633	64635
sorghum	6596	30477	16710	12103	9256	22242	16531	369	249	0	114534
millet	379	344	600	2419	7101	1520	2164	135	623	0	15285

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**B. Area by cereal crop 2005 (ha)**

	Niassa	C Delgado	Nampula	Zambezia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo	Total
maize	189325	126017	157451	327776	281505	222637	109554	112912	191631	30726	1749534
rice	5878	38228	28119	158181	1591	3246	24943	5972	11789	423	278368
sorghum	22384	68503	50481	44441	41957	67455	57372	6686	5076	13	364370
millet	1755	1482	1668	5345	23424	5761	6810	2403	5274	3	53927

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**C. Cereal yield in tonnes (A/B)**

	Niassa	C Delgado	Nampula	Zambezia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo	Total
maize	0.643	0.638	0.651	0.546	0.618	0.729	0.481	0.160	0.213	0.338	0.538
rice	0.263	0.282	0.223	0.187	0.148	0.229	0.141	0.261	0.835	1.499	0.232
sorghum	0.295	0.445	0.331	0.272	0.221	0.330	0.288	0.055	0.049	0.000	0.314
millet	0.216	0.232	0.360	0.453	0.303	0.264	0.318	0.056	0.118	0.000	0.283

Notes: Rice refers to milled rice. Aviso Prévio may have paddy rice.