

# Paraguay - Good Growth Plan, 2014-2019

**Syngenta**

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## Identification

### SURVEY ID NUMBER

PRY\_2014-2019\_GGP-P\_v01\_EN\_M\_A\_OCS

### TITLE

Good Growth Plan, 2014-2019

### COUNTRY

Name	Country code
Paraguay	PRY

### STUDY TYPE

Agricultural Survey [ag/oth]

### ABSTRACT

Syngenta is committed to increasing crop productivity and to using limited resources such as land, water and inputs more efficiently. Since 2014, Syngenta has been measuring trends in agricultural input efficiency on a global network of real farms. The Good Growth Plan dataset shows aggregated productivity and resource efficiency indicators by harvest year. The data has been collected from more than 4,000 farms and covers more than 20 different crops in 46 countries. The data (except USA data and for Barley in UK, Germany, Poland, Czech Republic, France and Spain) was collected, consolidated and reported by Kynetec (previously Market Probe), an independent market research agency. It can be used as benchmarks for crop yield and input efficiency.

### KIND OF DATA

Sample survey data [ssd]

### UNIT OF ANALYSIS

Agricultural holdings

## Scope

### NOTES

Data was collected on the usage of inputs, such as crop protection products, chemical fertilizer, seeding rates, labor hours, machinery usage hours, and marketable crop yield on a per hectare basis.

### TOPICS

Topic	Vocabulary
Agriculture & Rural Development	FAO
Environment	FAO
Agricultural input efficiency	FAO

### KEYWORDS

Keyword
Input efficiency
Crop productivity
Agriculture
The Good Growth Plan

## Coverage

### GEOGRAPHIC COVERAGE

National Coverage

## Producers and sponsors

### PRIMARY INVESTIGATORS

Name
Syngenta

### PRODUCERS

Name	Role
Kynetec	Technical assistance

## Sampling

### SAMPLING PROCEDURE

#### A. Sample design

Farms are grouped in clusters, which represent a crop grown in an area with homogenous agro- ecological conditions and include comparable types of farms. The sample includes reference and benchmark farms. The reference farms were selected by Syngenta and the benchmark farms were randomly selected by Kynetec within the same cluster.

#### B. Sample size

Sample sizes for each cluster are determined with the aim to measure statistically significant increases in crop efficiency over time. This is done by Kynetec based on target productivity increases and assumptions regarding the variability of farm metrics in each cluster. The smaller the expected increase, the larger the sample size needed to measure significant differences over time. Variability within clusters is assumed based on public research and expert opinion. In addition, growers are also grouped in clusters as a means of keeping variances under control, as well as distinguishing between growers in terms of crop size, region and technological level. A minimum sample size of 20 interviews per cluster is needed. The minimum number of reference farms is 5 of 20. The optimal number of reference farms is 10 of 20 (balanced sample).

#### C. Selection procedure

The respondents were picked randomly using a "quota based random sampling" procedure. Growers were first randomly selected and then checked if they complied with the quotas for crops, region, farm size etc. To avoid clustering high number of interviews at one sampling point, interviewers were instructed to do a maximum of 5 interviews in one village.

BF Screened from Paraguay were selected based on the following criterion:

#### (a) smallholder soybean growers

Medium to high technology farms

Regions: - Hohenau (Itapúa) - Edelira (Itapúa) - Pirapó (Itapúa) - La Paz (Itapúa) - Naranjal (Alto Paraná) - San Cristóbal (Alto Paraná)

corn and soybean in rotation

first grow corn and soybean secondly

#### (b) smallholder maize growers

Medium to high technology farms

Regions: - Hohenau (Itapúa) - Edelira (Itapúa) - Pirapó (Itapúa) - La Paz (Itapúa) - Naranjal (Alto Paraná) - San Cristóbal (Alto Paraná)

corn and soybean in rotation

first grow corn and soybean secondly

## Data Collection

### DATES OF DATA COLLECTION

Start	End
2014	2019

### DATA COLLECTION MODE

Face-to-face [f2f]

## Questionnaires

### QUESTIONNAIRES

Data collection tool for 2019 covered the following information:

#### (A) PRE- HARVEST INFORMATION

PART I: Screening

PART II: Contact Information

PART III: Farm Characteristics

a. Biodiversity conservation

b. Soil conservation

c. Soil erosion

d. Description of growing area

e. Training on crop cultivation and safety measures

PART IV: Farming Practices - Before Harvest

a. Planting and fruit development - Field crops

b. Planting and fruit development - Tree crops

c. Planting and fruit development - Sugarcane

d. Planting and fruit development - Cauliflower

e. Seed treatment

#### (B) HARVEST INFORMATION

PART V: Farming Practices - After Harvest

a. Fertilizer usage

b. Crop protection products

c. Harvest timing & quality per crop - Field crops

d. Harvest timing & quality per crop - Tree crops

e. Harvest timing & quality per crop - Sugarcane

f. Harvest timing & quality per crop - Banana

g. After harvest

PART VI - Other inputs - After Harvest

a. Input costs

b. Abiotic stress

c. Irrigation

See all questionnaires in external materials tab

## Data Processing

### DATA EDITING

Data processing:

Kynetec uses SPSS (Statistical Package for the Social Sciences) for data entry, cleaning, analysis, and reporting. After collection, the farm data is entered into a local database, reviewed, and quality-checked by the local Kynetec agency. In the case of missing values or inconsistencies, farmers are re-contacted. In some cases, grower data is verified with local experts

(e.g. retailers) to ensure data accuracy and validity. After country-level cleaning, the farm-level data is submitted to the global Kynetec headquarters for processing. In the case of missing values or inconsistencies, the local Kynetec office was re-contacted to clarify and solve issues.

## B. Quality assurance

Various consistency checks and internal controls are implemented throughout the entire data collection and reporting process in order to ensure unbiased, high quality data.

- **Screening:** Each grower is screened and selected by Kynetec based on cluster-specific criteria to ensure a comparable group of growers within each cluster. This helps keeping variability low.
- **Evaluation of the questionnaire:** The questionnaire aligns with the global objective of the project and is adapted to the local context (e.g. interviewers and growers should understand what is asked). Each year the questionnaire is evaluated based on several criteria, and updated where needed.
- **Briefing of interviewers:** Each year, local interviewers - familiar with the local context of farming -are thoroughly briefed to fully comprehend the questionnaire to obtain unbiased, accurate answers from respondents.

- **Cross-validation of the answers:**

o Kynetec captures all growers' responses through a digital data-entry tool. Various logical and consistency checks are automated in this tool (e.g. total crop size in hectares cannot be larger than farm size)

o Kynetec cross validates the answers of the growers in three different ways:

1. Within the grower (check if growers respond consistently during the interview)
2. Across years (check if growers respond consistently throughout the years)
3. Within cluster (compare a grower's responses with those of others in the group)

o All the above mentioned inconsistencies are followed up by contacting the growers and asking them to verify their answers. The data is updated after verification. All updates are tracked.

- **Check and discuss evolutions and patterns:** Global evolutions are calculated, discussed and reviewed on a monthly basis jointly by Kynetec and Syngenta.
- **Sensitivity analysis:** sensitivity analysis is conducted to evaluate the global results in terms of outliers, retention rates and overall statistical robustness. The results of the sensitivity analysis are discussed jointly by Kynetec and Syngenta.
- It is recommended that users interested in using the administrative level 1 variable in the location dataset use this variable with care and crosscheck it with the postal code variable.

## Data Appraisal

### DATA APPRAISAL

Due to the above mentioned checks, irregularities in fertilizer usage data were discovered which had to be corrected:

For data collection wave 2014, respondents were asked to give a total estimate of the fertilizer NPK-rates that were applied in the fields. From 2015 onwards, the questionnaire was redesigned to be more precise and obtain data by individual fertilizer products. The new method of measuring fertilizer inputs leads to more accurate results, but also makes a year-on-year comparison difficult. After evaluating several solutions to this problems, 2014 fertilizer usage (NPK input) was re-estimated by calculating a weighted average of fertilizer usage in the following years.

## Access policy

### CONTACTS

Name	Affiliation	Email	URL
The Good Growth Plan team	Syngenta	goodgrowthplan.data@syngenta.com	<a href="#">Link</a>

### CONFIDENTIALITY

The users shall not take any action with the purpose of identifying any individual entity (i.e. person, household, enterprise, etc.) in the micro dataset(s). If such a disclosure is made inadvertently, no use will be made of the information, and it will be reported immediately to FAO

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- Any results derived from the micro dataset will be used solely for reporting aggregated information, and not for any specific individual entities or data subjects;
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#### CITATION REQUIREMENTS

The Good Growth Plan Progress Data - Productivity 2019. Dataset downloaded from <https://microdata.fao.org>.

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## Metadata production

#### DDI DOCUMENT ID

PRY\_2014-2019\_GGP-P\_v01\_EN\_M\_A\_OCS\_v01

#### PRODUCERS

Name	Abbreviation	Affiliation	Role
Office of Chief Statistician	OCS	Food and Agriculture Organization	Metadata producer

#### DDI DOCUMENT VERSION

DDI\_PRY\_2014-2019\_GGP-P\_v01\_EN\_M\_A\_OCS\_FAO

**Data Dictionary**

<b>Data file</b>	<b>Cases</b>	<b>Variables</b>
<b>crop_protection_country_PRY</b>	2991	32
<b>Farm_level_data_PRY</b>	354	32
<b>Fertilizers_PRY</b>	305	17
<b>global_farm_data_country_PRY</b>	354	226
<b>Q382_data_PRY</b>	1941	9
<b>seed_treatment_PRY</b>	380	28
<b>Location_PRY</b>	382	17