India - Good Growth Plan, 2014-2019

Syngenta

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Identification

SURVEY ID NUMBER
IND_2014-2019_GGP-P_v01_EN_M_A_OCS

TITLE
Good Growth Plan, 2014-2019

COUNTRY

Name	Country code
India	IND

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 India were selected based on the following criterion:

(a) Corn growers in Davanagere, Belgaum, Warangal, Kurnool (all = districts)
Location: Davanegere, Belgaum, Warangal, Kurnool
Average adapter of innovation
Mechanized tillage operation due labour shortage
Keeps animals for milk
Corn forage is used for animal feeding
Keep update on commercial market trend
Secondary source of Agriculture income is dairy
Relies on high fertilizer use. (Farmers who use >2 bags of urea and 1 bag of DAP per acre is considered as High fertilizer use growers)
Low use of crop protection products (aim for growers who don't use CPP, if not possible, low use --> UPDATED: maximum of 2 sprays!)
Traditional way of weed control (bullock drawn harrow followed by ridging)

(b) Cotton growers in WC & South

Location: Yavatmal , Akola, Aurangabad, Jalgaon, Warangal , Kurnool , Karimnagar (= all districts)
Commercial, normally traditional practices but a few always looks for new products. (Use hybrids and are interested in new products which deliver higher yields, with less disease and pests.)
Very particular about quality seed.
High expectation of profit from farming.
Good investment on inputs for getting maximum returns.
Some irrigation available but not sufficient, Manual operations.
Social and seeks knowledge from other fellow farmers and retailers. Western regions: I take all decisions in terms of cotton production by myself, without consulting fellow farmers, retailers, agronomists or sales representatives (based on answers of RF)
Use generic / branded chemistry
Dependent on retailers to fund his crop protection chemicals
Prefer Cotton hybrid which give good re flushing
Rotation with Bengalgram

(c) Rice growers in North & East
Location: Karnal, Ludhiana, Sri Muktsar Sahib, Patiala, Allahabad,Gorakhpur, Barabanki (North & East)
Commercial ,Average adapter of innovation.
Medium input cost. (Spend 300 - 500 Rs on fertilizers, About 400-500 Rs on CP products can be considered as moderate or medium input cost.)
Mechanized tillage operations due to shortage of labour.
Good use of CP products. (Use products of leading MNCs; new chemistry/new products etc)
Very particular about quality seeds.
Always look forward to new technologies that would reduce costs or increase profits.
High expectation of profits from farming.
Good investment on input for getting maximum returns.
Not aware about soil fertility issues.
Use generic chemicals
Dependent on commission agent for his recurring expenses or retailer to fund his inputs. = ALL BACKGROUND INFO
May or may not own a tractor.
High involvement of retailer/ commission agent on his decision of CP inputs
Rice wheat rotation.

(d) Rice growers in East
Location: Ranchi, Raipur (= west), Burdwan, Midnapore , Bhagalpur . (= East)
Late adapter of innovation . --> UPDATED: Western region (Raipur): BF is not late adapter of innovation (based on answer of RF)
Usage of hybrid Rice or traditional varieties . (Either Open Pollinated Varieties or certified hybrids is fine.)
Moderate usage of CP products . (The spend on CP products is relatively lower i.e. less number of sprays or lower dose of recommended CP products.) = ALL BACKGROUND INFO
Lack of resources (irrigation, finance) ,less educated ,traditional (= background info),low financial status .
Primarily dependent on farm for food and income. --> RF in Raipur (western region) says to not depend on his farm for income but BF will be recruited based on the original screening criteria above
not aware about soil fertility . --> UPDATED: in western region: BF are aware about soil fertility (based on answer of RF) --> UPDATED: Eastern region (Jharkhand & Bihar): BF are aware about soil fertility (based on answer of RF)
Depends on fertilizer for enhancing productivity.
Usage of generic chemistry.
May or may not own tractor.
High involvement of retailer on his decision of CP inputs . --> RF in Raipur (western region) says to take all decisions himself but BF will be recruited based on the original screening criteria above
Migrated farmers adopt technology . = ALL BACKGROUND INFO
Traditional cultivation practice. (This generally means OPV, little fertilizers and little chemicals.) = ALL BACKGROUND INFO
Conversion happening from OP to hybrid seeds in rainfed areas. = ALL BACKGROUND INFO

(e) Tomato growers
location: Nasik, Pune, Ahmednagar, Belgaum, Vadodara, Jaipur.
Early adapter of innovation.
Mechanized tillage operations due to labour shortage.
Very particular about quality Seeds.
Always look forward to new CP technologies to increase profit
Good crop knowledge & Use advance chemistry (Farmers who use newly launched, high performance CP products from leading MNCs can be considered as "Advance" or new chemistry products.). --> UPDATED: in Western regions: only have a

little bit of knowledge about this and use only a little bit (based on answers of RF)
Use of SYT tomato seeds & CP products. (only for RF, BF can use SYT products but not necessarily) = ALL BACKGROUND INFO, is asked in screening but nobody is screened out (!)
Keep updates on commercial market trend .
Irrigated farms
Has milch animals. --> UPDATED: in Western regions, not all should have livestock (based on answer of RF)
Brand loyalty
Commercially very active.
Knows market prices in leading cities.
Has relationship with market forces.
Keeps in touch with other progressive farmers, good retailers and company professionals.

(f) Soybean growers
location: Ratlam, Dhar, Hoshangabad, Washim
Follow traditional cultivation practices . (Usually the use of farm-saved seeds and varieties, do not use adequate fertilizers, follow traditional interculture practices etc.)
Limited technical knowledge.
Many use farm saved seed.
Mechanized tillage and spraying operation.
Use of tractor for sowing and threshing operations.
Low investment on input in comparison with actual requirement.
Farmers are members of co-operative society in some areas. = ALL BACKGROUND INFO
Soyabean wheat rotation
Some involvement of retailer/commission agent on his decision of CP inputs.

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 inconsistences, 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	Link

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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CITATION REQUIREMENTS

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

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The user of the data acknowledges that the original collector of the data, the authorized distributor of the data, and the relevant funding agency bear no responsibility for use of the data or for interpretations or inferences based upon such uses

Metadata production

DDI DOCUMENT ID
IND_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

Data Dictionary

Data file	Cases	Variables
crop_protection_country_IND	3618	32
Farm_level_data_IND	1283	32
Fertilizers_IND	2682	17
global_farm_data_country_IND	1284	338
Q382_data_IND	13059	9
seed_treatment_IND	1086	26
Location_IND	1284	18

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