

## Trends in Agricultural Production and Productivity in Bangalore Rural District

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### Abstract

The study covered four talukas of Bangalore Rural District. They are Doddballapura Devanahalli, Hosakote Nelamangala. The entire study comprised of variables such as size of farm, number of farmers involved in farming, social factors, agricultural experience, irrigation facilities available agricultural equipment used for cultivation, showing annual income earned, annual production level, their awareness about new technology influencing agriculture, benefits of adopting new techniques to increase agriculture productivity and the crops grown. What is the government's role in providing support systems for farmers to harness new technology? The crops that were mainly cultivated are food crops, horticulture crops, oil seeds, cereals, sericulture and pulses. Thus, major crops cultivated were finger millets, maize paddy, red gram, horse gram, field bean, cowpea, Bengal gram, fruits and vegetables grown as horticultural crops. Two hundred farms were sampled from the four talukas. The research gap has shown that farm size has little to do with the variation of yield of crop or productivity because factors such as size of the farm household tenancy and size of operational holdings have positive impact on the productivity though it does show larger farm sizes can show higher rate of yields per hectare of productivity results when given the same agricultural inputs. The inverse size productivity issue is not valid here and tenancy and household size, usage of latest techniques of production, choice of crops suited for cultivation, soil texture, multiple cropping patterns, water resources, electricity all impact the productivity of farms. Research methodology consisted of primary and secondary data. The findings showed that there was limited availability of irrigation facilities for farmers, the farmers also use higher doses of fertilizers and also shown higher inclination to adopt modern practices. such as modern tractors for ploughing. Shortage of extension services such as timely availability of credit facilities at low rate of interest and shortage of borewells has been established by the field study.

**Keywords:** Farm size, agricultural productivity, pulses, food crops, oilseeds.

### 1. Introduction

Modern agriculture looked to the current needs of food security nationally as well as the scaling down of imports of essential crops and increasing the exports of oilseeds and tea and other cash crops. Modern agronomy plant breeding agrochemicals such as pesticides and fertilizers and technological development have sharply increased yields. from cultivation but on the other side it has caused ecological damage and widespread negative human health effects. Agricultural food production and water management are increasingly becoming global issues that have fostered debates on a

number of fronts. Significant degradation of land and water resources the depletion of aquifers has been observed in recent years. and the effects of global warming on agriculture is still not understood. In this regard a study was undertaken in the four talukas of Bengaluru rural namely Doddballapur, Hosakote, Devanahalli and Nelamangala. The total sample size was 200 with 50 samples per taluk.

### 2. Review of Literature

- According to Ramaswamy (2013) agriculture contributes significantly to

export earnings and supplies raw materials to many industries. The expansion in the use of seeds fertilizers agro chemicals irrigation and agricultural machinery industry has occurred parallel with the growth in productivity in rice wheat cotton corn sunflower soyabean sugarcane and vegetables. While the public sector R&D extensions and seed supply has made substantial contribution to food and non-food crops production.

- Developments of the horticultural sector assume significance in view of the view of its capacity to provide livelihood sources to a large number of farmers and also help in ensuring food and nutritional security in view of the declaration of the agricultural growth rates that the state has been witnessing. Though area and production of horticultural crops has increased in the previous decade, its far from satisfactory as there was low productivity in fruits and horticulture has not received the thrust it deserves. (Srijana-2013)

### 3. Research Problem

All that is witnessed in our agricultural system ranges from poor farm yield to emergence of new crop and animal diseases, resistant plant weeds and pests that attack farm crops, old farm equipment's poor-quality fertilizers etc. The present study has made an attempt to assess the problems of low

productivity in four major talukas of Bangalore rural district, namely Doddballapur Devanahalli Hoskote and Nelamangala. This study also concentrated on studying the main factors responsible for achieving higher agricultural productivity in terms of crop yield in regional agricultural production patterns because of the existing widespread variation per hectare of cropped area within the existing agrarian structure in the sampled areas of Bangalore rural district.

### 4. Objectives

- To build a social profile of the sample respondents.
- To study the existing agricultural productivity patterns in the sampled four talukas of Bengaluru rural district.
- To identify the determinants of crop productivity in agriculture.

### 5. Research methodology

Both primary as well as secondary data was adopted for analysis. This was basically a primary study made with the intention of focusing on small farms' Productivity. In this regard what new agrarian techniques could be adopted what doses of fertilisers pesticides and water were to be infused in order to get the desired increasing returns to scale. Sampling design was simple random and descriptive analysis was used for analysing the survey results.

### 6. Data Analysis

**Table 1 Sample Characteristics by Taluka**

| Sl.no | Talukas     | samples | Age groups |        | gender |   | Marital status |     | Caste     |       | literacy  |           |
|-------|-------------|---------|------------|--------|--------|---|----------------|-----|-----------|-------|-----------|-----------|
|       |             |         | 25.-35y    | 35-45y | M      | F | Un-m           | m   | Non-sc/st | Sc/st | 10th std. | <10th std |
| 1     | Dodballapur | 50      | 10%        | 10%    | 20%    | - | 10%            | 10% | 10%       | 10%   | 10%       | 10%       |
| 2     | Devanahalli | 50      | -          | 20%    | 20%    | - | -              | 20% | 10%       | 10%   | -         | 20%       |
| 3     | Hosakote    | 50      | -          | 20%    | 20%    | - | -              | 20% | 10%       | 10%   | -         | 20%       |
| 4     | Nelamangala | 50      | -          | 20%    | 20%    | - | -              | 20% | 10%       | 10%   | -         | 20%       |

## 6.1. Field Survey 2025-August

### 6.1.1. Table Analysis.

The above table shows that among the sampled respondent's majority were falling between 35-45years and were married. No women farmers were there among the samples collected. Other than

Sc/St farmers the remaining non-Sc/St cultivators were from Gowdas, kurubas and other backward castes. The biggest surprise of the study was the majority of the samples collected were not educated up to SSLC or 10th STD.

**Table2 Agricultural Practices and Resource**

| Sl.no . | Sam pl. | Talukas      | Agri.exp. |     | Water |     |     |     | Agri.equi. |         | Agri.Y  |      |
|---------|---------|--------------|-----------|-----|-------|-----|-----|-----|------------|---------|---------|------|
|         |         |              |           |     | T*    | T** | W** | OT  | Ox en      | Tractor | 20k-50k | 1lkn |
| 1       | 50      | Dodballapura | 10-17yrs  | 20% | 20%   | 10% | 10% | 10% | 10%        | -       | 10%     | -    |
| 2       | 50      | Devanahalli  | 10-17yrs. | 20% | 10%   | 20% | -   | 10% | 20%        | 10%     | 10%     | -    |
| 3       | 50      | Hosakote     | 10-17yrs. | 30% | 20%   | 10% | -   | -   | 20%        | 10%     | 10%     | -    |
| 4       | 50      | Nelamangala  | 10-17yrs  | 30% | 20%   | -   | -   | -   | 20%        | 20%     | 10%     | -    |

## 6.2. Field Survey2025August

**Table 3 Perception of New Agricultural Practices**

| Sl.no. | Talukas        | Sampled respondents | Awareness of new Technology. |     | Impact of new technology* | Benefits of adapting new tech.** | Benefits provided under agri. Department*** |
|--------|----------------|---------------------|------------------------------|-----|---------------------------|----------------------------------|---------------------------------------------|
|        | All 04 talukas | All 200 respondents | All 200 respondents          |     | All 200 respondents       | All 200 respondents              | All 200 respondents                         |
|        |                |                     | Yes                          | No  |                           |                                  |                                             |
| 1      | Dodballapur    | 50                  | 20%                          | 10% | 30 %                      | 20%                              | 20%                                         |
| 2      | Devanahalli    | 50                  | 20%                          | 20% | 20%                       | 20%                              | 20%                                         |
| 3      | Hosakote       | 50                  | 20%                          | 30% | 20%                       | 10%                              | 20%                                         |
| 4      | Nelamangala    | 50                  | 30%                          | 10% | 20%                       | 20%                              | 20%                                         |

### 6.3. Field survey 2025 August

- 1) Increase in Efficiency, 2) Increase in Productivity, 3) Increase in the profit of the villages.
- 1) Protect plant and its resources 2) Improve farm animal and consumer livelihood 3) Worker's safety. 4) Decrease in the need to cut trees and forest land.
- 1) Information of farming practices pricing and markets, 2) Providing subsidies Loans at less rate of interest, 3) agrarian equipment benefits.

- **Table analysis:** Mechanization of agriculture brought about a huge increase in production of food crops, horticultural crops and vegetables. But on the flip side it hit the landless labor and sharecroppers hard.

With the mechanization of agriculture work on the fields were lesser and wages were at a all-time low. This to mass migration to cities and bigger towns in search of livelihood and sustenance.

### 7. Secondary data findings.

**Table 4 Horticultural Crops: Area & Production**

| Sl.no. | Horticultural crops | Area (H.A) cultivated | Production (MT) |
|--------|---------------------|-----------------------|-----------------|
| 1      | Fruit crops         | 12710                 | 167663          |
| 2      | Vegetable crops     | 8821                  | 165234          |
| 3      | Spices              | 567                   | 3119            |
| 4      | Plantation crops    | 3672                  | 1973            |
| 5      | Commercial crops    | 871                   | 3038            |
| 6      | Aromatic crops      | 2                     | 24              |

### 7.1. Source-Bengaluru Rural district At a Glance 2017-2018 Government of Karnataka.

The table shows the various crops grown under Horticulture Departments in Bangalore Rural district.

**Table 5 Major Crops Cultivated in the Four Talukas of Bangalore Rural District**

| Sl. No.         | Crops         | Area(ha) | Production(tons) | Productivity(kg/ha) |
|-----------------|---------------|----------|------------------|---------------------|
| <b>1Cereals</b> |               |          |                  |                     |
| 1               | Finger millet | 400227   | 115860           | 2756                |
| 2               | Maize         | 10511    | 54051            | 5504                |
|                 | Total         | 50538    | 169911           | 8260                |
|                 |               |          |                  |                     |
| <b>11PULSES</b> |               |          |                  |                     |
| 1               | Red gram      | 1197     | 1806             | 1156                |
| 2               | Horse gram    | 1601     | 1501             | 846                 |

|   |              |             |             |             |
|---|--------------|-------------|-------------|-------------|
| 3 | Field Bean   | 2621        | 4486        | 1390        |
| 4 | Cowpea       | 786         | 1000        | 518         |
| 5 | Bengal gram  | 39          | 193         | 497         |
|   | <b>Total</b> | <b>6244</b> | <b>8986</b> | <b>4967</b> |

### 7.2. Source; Bengaluru Rural district at a Glance-2014-15 Government of Karnataka.

The table above shows the various crops cultivated in the four districts of Bangalore rural district.

**Table 6 Area under principal crops: Cereals(ha)**

| SL.No. | Talukas     | Paddy | Ragi  | Maize | Cereals and Minor Millets |
|--------|-------------|-------|-------|-------|---------------------------|
| 1      | Dodballapur | 47    | 9837  | 12465 | 22355                     |
| 2      | Devanahalli | 36    | 5436  | 494   | 5976                      |
| 3      | Hosakote    | 425   | 9742  | 268   | 10435                     |
| 4      | Nelamangala | 140   | 10946 | 1331  | 12419                     |

### 7.3. Source: Bengaluru Rural district at a Glance 2017-18-Government of Karnataka.

The table above indicates the principal crops cultivated in Bangalore rural district.

**Table 7 Area under oilseeds (ha)**

| SL.No. | Talukas      | Groundnut  | Sunflower | Castor     | Mustard    | Niger seed | Sesamum  |
|--------|--------------|------------|-----------|------------|------------|------------|----------|
| 1      | Dodballapur  | 184        | 17        | 93         | 86         | 72         | 7        |
| 2      | Devanahalli  | 22         | 0         | 4          | 43         | 12         | 0        |
| 3      | Hosakote     | 12         | 0         | 34         | 89         | 45         | 0        |
| 4      | Nelamangala  | 79         | 3         | 102        | 91         | 79         | 1        |
|        | <b>Total</b> | <b>297</b> | <b>20</b> | <b>233</b> | <b>309</b> | <b>208</b> | <b>8</b> |

### 7.4. Source Bengaluru Rural district at a glance 2014-15-Government of Karnataka.

The table above indicates the oilseeds cultivated in the four talukas of Bengaluru rural district.

**Table 8 Water Demand of the various crops in Bangalore Rural District**

|         | Devanahalli | Dodballapur | Hosakote | Nelamangala | total  |
|---------|-------------|-------------|----------|-------------|--------|
| WD-2015 | 0.0550      | 0.0716      | 0.0656   | 0.0533      | 0.2454 |
| Wd-2020 | 0.0604      | 0.0788      | 0.0722   | 0.0586      | 0.2700 |

## 7.5. Source Bangalore rural district at a glance 2015,2020.

**Table 9 Agricultural Crop Share: 2015–2020**

|         | Fruits | Vegetables | Total Hortl.Crops | Cereals | Total. Field Crops | Total Crops |
|---------|--------|------------|-------------------|---------|--------------------|-------------|
| WD-2015 | 0.0708 | 0.0407     | 0.1225            | 0.1042  | 0.1229             | 0.2454      |
| WD-2020 | 0.0778 | 0.0448     | 0.1348            | 0.1147  | 0.1352             | 0.2700      |

## 7.6. Source: Bangalore Rural District 2015.2020

Table 7 &8 table shows that with the increase in the cultivation of various crops in all the four districts the water required for farming is also more. **In other words, it shows increasing returns to scale.**

## 8. Suggestions

- The agrarian reforms through the institutional changes in the distribution of ownership and operational land holdings and the land tenure system.
- To improve irrigation facilities agricultural extension services and the flow of institutional credit to the farm sector.
- Irrigation to be the main input in the farm sector.
- Development of agricultural infrastructures for enabling the farmers to utilize the potential of the existing land resources and crop varieties with the help of modern agricultural inputs and practices to get maximum possible output. It is necessary to strengthen the agricultural infrastructure both qualitatively and quantitatively.

## Conclusion

The study clearly demonstrates that the technological factors are relatively more influential and found to be more conducive towards achieving higher agricultural productivity in terms of crop yield per hectare. Adequate infrastructural facilities, including transport communication, banking credit and marketing are available to support agricultural activities. The government on its part has undertaken many initiatives like

National Food Security Mission and Pradhan Manthri Krishi Sinchayee Yojana to support these agricultural activities.

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