

Management and Engineering in Rural Areas Sustainability Issue and Gap Analysis of Productivity of Different Crops and Resources

Girish Deshmukh^{1*}, Minaxi Bariya², Smit Lende³ and Ramchandra Khileri⁴

¹PG Scholar, Junagadh Agricultural University, Junagadh, Gujarat

²SMS Junagadh Agricultural University, Junagadh, Gujarat

^{3,4}PG Scholar, Junagadh Agricultural University, Junagadh, Gujarat

E-mail: *251girish@gmail.com

Abstract—A sustainable farming system is a system in which natural resources are managed so that potential yield and the stock of natural resources do not decline over time. However, each of the components of sustainable agriculture is complex and some quantifiable measures are needed to check whether a farming system is sustainable or not. The sustainability issue of the crop productivity is fast emerging. The agricultural productivity attained during the 1980s will not be sustained during the 2020s and has posed a challenge for the researchers to shift the production function upward by improving the technology index. The yield gap analysis of major field crops and enterprises was compiled by KVK (Krishi Vigyan Kendra) team by identifying different farming situations with respect to personal interact with progressive farmers. This study was carried out with following objectives To reduce the yield gap in important crops and increase production and productivity in agriculture and allied sectors through focused and holistic initiatives and To maximize income of farmers in agriculture and allied sectors. It calls for an examination of issues related to the trends in the agricultural productivity, particularly with reference to individual crops grown in the Gujarat states of Amreli district under the Junagadh Agricultural University, Junagadh, Gujarat. KVK have adopted total fifteen no. of villages from which nine villages selected for the study, in which popular one crop is demonstrated with improved practices in each village.

Keywords: Sustainability, gap analysis, productivity, resources

1. INTRODUCTION

A sustainable farming system is a system in which natural resources are managed so that potential yield and the stock of natural resources do not decline over time. However, each of the components of sustainable agriculture is complex and some quantifiable measures are needed to check whether a farming system is sustainable or not. The yield gap analysis of major field crops and enterprises was compiled by KVK(Krishi Vigyan Kendra)s team by identifying different farming situations with respect to personal interact with progressive farmers in the district. This study was carried out with these following objectives :1. To reduce the yield gap in important crops and increase production and productivity in

agriculture and allied sectors through focused and holistic initiatives. To maximize income of farmers in agriculture and allied sectors.

2. RESEARCH METHODOLOGY

Researcher is working in the KVK (Krishi Vigyan Kendra) at Amreli district under the Junagadh Agricultural University, Junagadh, Gujarat. KVK have adopted total 15 no. of villages from which nine villages selected for the study, in which popular one crop is demonstrated with improved practices in each village.

Table 1: Selected villages with crop demonstrated

Sr. No	Village	Taluka (Block)	Crop
1	Mota bhandariya	Amreli	Groundnut
2	Sanosara	Amreli	Cotton
3	Ponjapadar	Liliya	Gram
4	Godhavadar	Liliya	Sorghum
5	Boradi	Dhari	Maize
6	Kathrota	Dhari	Green Gram
7	Gigasan	Dhari	Sesame
8	Mota agariya	Rajula	Pearl millet
9	Pipavav	Rajula	Wheat

3. RESULTS AND DISCUSSION

Table 2: Sustainability issue and gap analysis productivity of different crops and resources

No	Factors/ Constraints Leading to gap	Strategies	Approach and methodology	Performance indicators/ output
1	Groundnut			
a	Imbalance use of fertilizer due to lack of knowledge	To popularize the integrated nutrient management practices	Creating awareness and adoption of INM through demonstration, training, etc.	Improvement in soil health, productivity, enhancement (8-10%)

b	Weed problem due to lack of knowledge about scientific weed management	To popularize integrated weed management	Creating awareness and adoption of IWM through demonstration, training, shibir, literature etc.	Reduction in weed menace, labour, saving, increase in productivity (15-20%)
c	Non availability of improved varieties of seeds	Establishment of seed selling centers	Creating awareness for quality seeds	Timely sowing, quality seeds and better harvest (10-15%)
2 Cotton				
a	Imbalance use of fertilizer due to lack of knowledge	To popularize the integrated nutrient management practices	Creating awareness and adoption of INM through demonstration, training, shibir, literature etc.	Improvement in soil health, productivity, enhancement (9-12%)
b	Weed problem due to lack of knowledge about scientific weed management	To popularize integrated weed management	Creating awareness and adoption of INM through demonstration, training, shibir, literature etc.	Reduction in weed menace and increase in productivity (10-15%)
c	Insect pest problem due to lack of knowledge of insect and their management problem	Integrated pest Management	Creating awareness and adoption of INM through demonstration, training, shibir, literature etc	Management of insect pests leads to increased yield (5-7%)
d	Reddening of cotton due to micronutrient deficiency	Spraying of potassium nitrate and other micronutrients	Creating awareness and adoption of INM through demonstration, training, shibir, literature etc	Increase in productivity (10-15%)
e	Non availability of seed selling center of Gujarat seed corporation	Establishment of seed selling counters by Gujarat State seed certificate Agency at taluka level or strengthening co-operative structures	Creating awareness for quality seeds and establishment of seed selling counters	Timely sowing of quality seeds leads to better harvest (3-5%)

3 Gram				
a	Use of inferior quality seeds of local variety due to lack of awareness	Increase seed replacement ratio and quality seed productivity through seed village. Create awareness for proper storage of seed	Create awareness about the importance of improved variety as worthiness of variety through demonstration. Supplying seeds as mini kits. Innovates for seed production at village level	Increased area under improved variety
b	Less adoption of seed treatment due to lack of awareness and non-availability of seed treatment material leading to wilt problem	Popularize the importance of seed treatment with fungicides/bioprostaticides for managing wilt diseases	Educating and motivating farmers about importance of seed treatment and adoption through demonstrations, training, shibirs and field days,	Reduction in seed borne diseases.
4 Sorghum				
a	Use of inferior quality seeds of local variety due to lack of awareness	Increase seed replacement ratio and quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about improved variety as worthiness of variety through demonstration. Supplying seed as mini kits. Innovate the progressive farmers for seed production at village level.	Increased area under improved variety
5 Maize				
a	Use of inferior quality seeds of local variety due to lack of awareness	Increase seed replacement ratio and quality seed production through seed village. Create seed awareness for proper storage of seeds	Create awareness about improved variety as worthiness of variety through demonstration. Supplying seed as mini kits. Motivate the progressive farmers for seed production at village level.	Increased area under improved variety
6 Green gram				
a	Problem of viral diseases due to use of susceptible local seeds, poor management practices	Popularize tolerant varieties of green gram and management practices	Creating awareness and increase adoption of tolerant varieties of green gram and disease management practices through demonstration, training, Shibir	Increased production of pulses

7 Sesame				
a	Low germination due to improper placement of seed and lack of knowledge about that of	To popularize scientific package of practices	Creating awareness through demonstration ,training,shibir,literature etc	Increased yield (5-8%)
b	Low adoption of improved package practices due to lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices through demonstration,training,field days,shibir,literature etc	Increased in the production (10-12%)
c	Insect pest and disease problem due to lack of knowledge of their management options	Integrated pest and disease management	Creating awareness and adoption of IPM through demonstration, training, Shiber,literature etc.	Management of insect pest and disease lead to increased yield ()
d	Maintain plant population and land configuration High seed rate and sowing in flat land	Thinning and sowing on ridge and furrow	Creating awareness and adoption thinning and land configuration through demonstration, training, shibir,literature etc.	Increased in yield (2-5%)
8 Pearl millet				
a	Low adoption of improved package of practices due to lack of awareness	To popularize scientific package of practices	Creating awareness and adoption of scientific package of practices by means of extension of tools	Increase in the production
b	Insect pest and disease problem due to lack of knowledge of their management options	Integrated pest and disease management	Creating awareness and adoption of IPM through demonstration, training, shibir,literature etc.	Management of insect pest and disease leads to increased yield
c	Maintain plant population and land configuration high seed rate and sowing in flat land	Thinning and sowing on ridge and furrow	creating awareness and adoption and land configuration through demonstration, training, shibir,literature	Increase in yield

9 Wheat				
a	Use of inferior quality seed due to lack of awareness	Increase seed replacement ratio & quality seed production through seed village. Create awareness for proper storage of seeds	Create awareness about the importance of improved variety through demonstration. Innovate the progressive farmer for seed production at village level	Increased area under improved variety (5%)
b	Limited irrigation facility due to lack of knowledge of critical stages	Application of water at critical stages	Create awareness about critical stages through demonstration	Increase in yield (10-12%)
c	Weed problem due to lack of knowledge about scientific weed management	To popularize integrated weed management	Creating awareness through demonstration, training, shibir,literature etc.	Reduction in weed menace and increase in productivity (5-7%)

4. CONCLUSION

The sustainability issue of the crop productivity is fast emerging. The productivity attained during the 1980s has not been sustained during the 1990s and has posed a challenge before the researchers to shift the production function by improving the technology index. It has to be done by appropriate technology interventions, judicious use of natural resources and harnessing biodiversity. During the Green Revolution era, large investments were made on research and development for the irrigated agriculture. The promotion of HYV seed - fertilizer - irrigation technology had a high pay-off and rapid strides of progress were made in food production.

References

- [1] Kumar P. and Mittal S., 2006. Agricultural Productivity Trends in India: Sustainability Issues. *Agricultural Economics Research Review* Vol. **19** (Conference No.) 2006 pp 71-88.
- [2] Comprehensive District Agriculture Plan Amreli District July, 2012.