

## Gap in Adoption and Proposed Extension Strategy for Improving the Productivity of Maize Crop in Dahod District under ATMA Project

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### ABSTRACT

*ATMA project was launched in Gujarat in December, 2005. Initially I first phase, 8 districts were selected and Dahod is one of them. The Dahod district falls in middle Gujarat region of agro-climatic zone. The majority of population (71.00 per cent) is tribal,.Among farming community, 94.96 per cent farmers are belonging to schedule tribes from which 60.14 per cent falls under marginal farmers. The major crops of this region are Maize, Paddy, Gram and Wheat. The area under Maize cultivation during the year 2004-05 in Kharif (110880 ha.) and in Rabi (28200 ha.) having the productivity 1646 kg/ha and 2437 kg/ha, respectively, which is very less as compare to recommended productivity i.e. 3000 kg/ha. There was a wide gap in productivity of Maize crop. For developing the SREP. four villages viz.. Bhe. Vatli, Ved and Vanzaria were selected. The participatory data collection by the multidisciplinary team was conducted in the representative villages. The result shows that there was a full gap in seed treatment, micronutrient application and pest and disease management while method of showing, use of varieties, seed rate, application of organic manure and chemical fertilizers and weed management practices were found in partial gap category fulfill the gap in practices and yield, the farmers were proposed the extension strategies viz., Training, Demonstration, Soil testing and application of fertilizers as per recommendation and Training regarding pest and disease management.*

**Keywords:** Gap in adoption, Extension strategy, ATMA

### INTRODUCTION

Agricultural Technology Management Agency (ATMA) project was launched in Gujarat in December, 2005. Initially I first phase, 8 district were selected and Dahod is one of them. The Dahod district falls in middle Gujarat region of agro - climate zone. The majority of population (71.00 per cent) is tribal. This district is popularly know as "Adivasi Region" In Dahod district, 94.96 per cent farmers are belonging to schedule tribes among farming community from which 60.14 percent falls under marginal farmers having less than one hectare land.

### METHODOLOGY

Under ATMA project for developing the SREP the four AES of Dahod district were selected. From which four villages viz., Bhe, Vatli, Ved and Vanzaria were selected which was represented the identical situation of AES.

The participatory data collection by the multidisciplinary team (including AAU scientists and officers from all line departments) was conducted in the representative villages. The team was provided with a set of checklist and formats for collection of information. The information of Dahod district was collected in depth through Participatory Rural Appraisal (PRA) technique by multidisciplinary team during 17 to 26 July, 2006.

### RESULTS AND DISCUSSION

The major crops of this region are Maize, Paddy, Gram and Wheat. The area under Maize cultivation during the the year 2004-05 in Kharif (110880 ha.) and in Rabi (28200 ha.) having the productivity 1646 kg/ha and 2437 kg/ha, respectively, which is very less as compare to recommended productivity i.e. 3000 kg/ha. (An on 2006). There was a wide gap in productivity of Maize crop.

**Table 1 : Trend in area and productivity of maize in representative village of each aes in dhaod district**

| Sr. No. | Year | AES-1      |                      | AES-2      |                      | AES-3      |                      | AES-4      |                      |
|---------|------|------------|----------------------|------------|----------------------|------------|----------------------|------------|----------------------|
|         |      | Area (ha.) | Productivity (q/ha.) | Area (ha.) | Productivity (q/ha.) | Area (ha.) | Productivity (q/ha.) | Area (ha.) | Productivity (q/ha.) |
| 1       | 1985 | 140        | 11.0                 | 300        | 11.5                 | 125        | 12.0                 | 100        | 12.5                 |
| 2       | 1990 | 142        | 11.5                 | 355        | 12.0                 | 135        | 12.5                 | 105        | 12.5                 |
| 3       | 1995 | 148        | 11.5                 | 355        | 12.7                 | 130        | 13.0                 | 115        | 13.0                 |
| 4       | 2000 | 140        | 12.0                 | 350        | 18.5                 | 138        | 13.5                 | 121        | 13.5                 |
| 5       | 2005 | 150        | 16.0                 | 340        | 18.0                 | 337        | 13.0                 | 125        | 13.0                 |

The last 20 years' trend of maize productivity in representative villages was presented in Table 1 indicated that there was less increase in AES 3 and 4 while more increase in AES 1 and 2.

**Table 2 : SWOT analysis for maize crop maize**

| Strengths  |  | Weaknesses  |  |
|--|--|---|--|
| <ul style="list-style-type: none"> <li>◆ Knowledge of cultivating the crop</li> <li>◆ Cultivating traditionally</li> <li>◆ Experience in cultivating the crop</li> <li>◆ Grown in upland</li> <li>◆ Requires less rain-fall</li> </ul>   |  | <ul style="list-style-type: none"> <li>◆ Mono-crop</li> <li>◆ Following traditional practices</li> <li>◆ Nor risk bearing ability</li> <li>◆ Large number of farmers using traditional varieties</li> </ul> |  |
| Opportunities  |  | Threats   |  |
| <ul style="list-style-type: none"> <li>◆ Suitable for this condition</li> <li>◆ Good market facility</li> <li>◆ High yielding variety available</li> <li>◆ Lump sum income</li> <li>◆ Involvement of family labour</li> <li>◆ Low operational cases</li> <li>◆ Low pest and disease incidence</li> </ul> |  | <ul style="list-style-type: none"> <li>◆ Occurrence of drought</li> <li>◆ Incidence of diseases</li> <li>◆ Market fluctuations</li> <li>◆ Criminalization in society</li> </ul>                             |  |

The Table 2 represented the Strengths, Weaknesses, Opportunities and Threats for developing the strategy for improving the productivity of maize crop.

**Table 3 : Gap in adoption and farmer strategies for improving the production and productivity of the maize crop**

| Sr. No. | Items                | Exist          | Recommended        | Gap (*) | Specific Reasons (**) | Farmer Strategy (***) |
|---------|----------------------|----------------|--------------------|---------|-----------------------|-----------------------|
| 1       | Sowing / Planting    |                |                    |         |                       |                       |
|         | a Time               | June           | June               | N       | -                     | -                     |
|         | b Method             | Drilling       | Drilling, Dibbling | P       | 1                     | 1                     |
| 2       | Varieties            | Local + Hybrid | GM-4, GM-6         | P       | 1, 2, 7, 8            | 1, 2                  |
| 3       | Seed rate (Kg/ha)    | 50 Kg.         | 20 Kg.             | P       | 1                     | 1                     |
| 4       | Seed Treatment       | -              | 2-3 gm, Thirum     | F       | 1                     | 1, 2                  |
| 5       | Organic Manure T/ha. | 2              | 10                 | P       | 1                     | 1                     |

| Sr. No. | Items   | Exist                     | Recommended                               | Gap (*) | Sp. Reasons (**)      | Farmer Strat. (***) |
|---------|---|---------------------------|---|---------|-----------------------|---------------------|
| 6       | Fertilizer/nutrient (Kg./ha)<br>a Basal (N+P+K)<br>b Top dress (M+)   | 30:30:00                  | 100:50:00                                 | P       | 1, 5, 8               | 1, 2, 3             |
| 7       | Methods of fertilizers use<br>a Basal<br>b Top dress                  | Drilling<br>Broad casting | Drilling<br>Broad casting                 | N       | -                     | -                   |
| 8       | Micronutrient (specify):<br>a Dose (Kg/ha)<br>b Method of application | -                         | ZnSo <sub>4</sub>                         | F       | 1, 7, 8               | 1, 2, 3             |
| 9       | Pest Management   | -                         | IPM Approach                              | F       | 1, 7                  | 1, 4                |
| 10      | Disease Management  | -                         | -   | F       | 1, 5                  | 2, 4                |
| 11      | Weed Management<br>a Mechanical<br>b Herbicide                        | Hand Weeding<br>-         | H.W., Inter culturing<br>Atrazine, Pendi. | P<br>P  | 1, 5, 8<br>1, 5, 8    | 1, 2<br>1, 2        |
| 12      | Water Management :<br>a No. of irrigation<br>b Method of Irrigation   | -<br>-                    | -<br>-                                    | P<br>-  | 1,7<br>-              | 1,2<br>-            |
| 13      | Land Management :<br>a Salinity / Acidity<br>b Water logging          | -<br>-                    | -<br>-                                    | N<br>P  | -<br>1                | -<br>1              |
| 14      | Method of harvesting  | Hand Picking              | Hand Picking                              | N       | -                     | -                   |
| 15      | Average yield<br>a Grain (Q/ha)<br>b Fodder (T/ha)                    | 18<br>23                  | 30<br>31                                  | P<br>P  | 1, 2, 3, 5<br>6, 7, 8 | 1,2,3, 4            |

(\*)F = Full gap

P = Partial gap

N = Nil

(\*\*) Code for specific reasons for gap in adoption

(\*\*\*) Code for farmer proposed extension strategies

- 1 Lack of awareness / knowledge
- 2 Traditional Farming
- 3 Low fertile soil
- 4 Small land holdings
- 5 Non adoption of recommended method of practices
- 6 Rainfed condition.
- 7 Poor economic condition
- 8 Unavailability of inputs

- 1 Training
- 2 Demonstration.
- 3 Soil testing and application of fertilizers as per recommendation
4. Training regarding pest and disease management.

The Table 3 shown the existing gap in adoption of improved production technology in maize crop with their specific reasons and the proposed extension strategy.

The full gap was seen in maize crop production

practices were : (1)Seed treatment due to lack of awareness and traditional farming (2) Micronutrient application due to lack of awareness, poor economic condition and unavailability of inputs (3) Pest management due to Lack of awareness and

Poor economic condition (4) Diese management due to lack of awareness and non-adoption of recommended method of practices.

The partial gap was observed in maize crop production practices were : (1) Sowing method (2) Use of varieties (3) Seed rate (4) Organic manure application (5) Fertilizer application (6) Weed management (7) Water management (8) Water logging and (9) Yield of grain and

fodder.

For fulfilling the gap in crop production practices and improving the grain and fodder yield, the farmer suggested the proposed extension strategies were : (i) Training (ii) Demonstration (iii) Soil testing and application of fertilizers as per recommendation (iv) Training regarding pest and disease management

**Table : 4 Agriculture production system for maize crop**

| Sr. No. | Critical Gap                      | Strategic Issue   | Strategies  |
|---------|-----------------------------------|---|---|
| 1       | Use of traditional varieties      | Popularization of newly released HY resistant varieties | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 2       | No seed treatment                 | Adoption of seed treatment                              | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 3       | Imbalanced fertilizer use         | Use of balanced dose of fertilizer                      | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 4       | Poor weed management              | Proper and timely weed management                       | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 5       | Low plant population              | Proper plant population                                 | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 6       | Lodging problem in tall varieties | Adoption of dwarf HYVs                                  | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |
| 7       | IPM in Maize                      | Promotion of IPM system                                 | <ul style="list-style-type: none"> <li>• Demonstration</li> <li>• Exposure visits</li> <li>• Trainings</li> </ul> |

The Table 4 shown the critical gap of agriculture production system for maize crop were : (i) Use of traditional varieties (ii) No seed treatment (iii) Imbalanced fertilizer use (iv) Poor weed management (v) Low plant population (vi) Lodging problem in tall varieties (vii) IPM in Maize. To reducing the gaps and increasing the production in maize crops, the demonstrations will be arranged on farmers field, the training will be given to farmers and exposure visits should be arranged for farmers.

**CONCLUSION**

There was a full gap in maize production practices like seed treatment, micronutrient application and pest and disease

management while method of showing, use of varieties, seed rate, application of organic manure and chemical fertilizers and weed management practices were found in partial gap category. To fulfill the gap in practices and yield, the farmers were proposed the extension strategies viz., (1) Training (2) Demonstration (3) Soil testing and application of fertilizers as per recommendation and (4) Training regarding pest and disease management (5) Exposure visit.

**REFERENCE**

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