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PARTICIPATORY EVALUATION OF CLUBROOT DISEASE MANAGEMENT STRATEGIES ON CRUCIFERS (1) – ASSESSMENT FOR LEVEL CHANGE CONSEQUENT TO PARTICIPATION

ABSTRACT

In the search for sustainable clubroot disease management approach, this research involved three stages. The pre-assessment stage determined the initial knowledge level of the farmer-respondents on farm research and clubroot disease management in Atok and Buguias, Benguet via semi-structured interview. The participatory field research stage assessed the appropriate disease management based from the experiments conducted on-station and at the farmer-researchers' field for two cropping seasons. At this stage, the farmer-respondents were given the opportunity to observe the experiments and gather data. Finally, the post-assessment identified changes in knowledge levels on research stages by the farmer-respondents based on agreed criteria like growth depression, clubroot severity, yield and additional benefits in adopting a technology.

Farmers' knowledge in the two locations positively changed on the cause of clubroot disease and management means using compost and radish bait crop. On research, positive significant changes on knowledge levels occurred on the reasons for conducting research and the parts earlier found to be very difficult to change is easiness identifying the problem, setting up plan to address the problem as well as gathering, analyzing and interpret-ing data for the farmer-respondents of Atok but not all cases for those of Buguias.

The extent of involving farmers in developing clubroot disease management technologies is greatly influenced by the farmers' perceptions, values and aspirations particularly in their desire to gain more knowledge

and skills in conducting research to solve a problem and manage clubroot disease and profit after knowing and trying a good treatment against club-root disease.

All activities involved in the process necessitate having the farmer-researchers as main experimenters, end-users and disseminators of tech-nologies for developing sustainable technologies.

Clubroot disease, caused by Plasmodiophora brassicae, was chosen as an avenue for participatory problem solving, as it is one of the identi-fied problems in the Barangay Natural Resources Management Planning in Atok and Buguias, Benguet.

INTRODUCTION

Clubroot disease, caused by Plasmodiophora brassicae, is one of the most serious diseases in all crucifer-growing areas in the Northern Philip-pine Highlands (Tad-awan, 1986, Tad-awan, 2000). It attacks all Brassica species being grown commercially like head cabbage, Chinese cabbage, broccoli, mustard, pechay and radish. The disease has been identified as a major disease problem under the Barangay Natural Resources Management Planning (BNRMP) of Atok and Buguias.

Helping farmers solve their clubroot disease takes into account awareness on what farmers know about the disease and what they are doing about it.

With the generated baseline information about the level of aware-ness of the farmers concerning the disease and research, field experiments were conducted at the farmer-researchers' farms comparing farmer's prac-tice from alternative technologies. Information generated from the experi-ments was the basis for farmers to decide which technology to adopt as management measures against clubroot disease. Their exposure on the ex-periment would also help them in doing future research.

This study aimed to evaluate clubroot disease management strate-gies through participatory approach. Specifically, the study aimed to deter-

mine changes in knowledge levels of the farmer participants on clubroot disease and its management as well as their research capabilities consequent to their involvement in participatory research.

METHODOLOGY

Pre-assessment of farmers' knowledge

Farmer-researchers and research sites in Buguias and Atok were identified. The farmer-participants were involved in a number of activities including as respondents in pre- and post-interviews, lectures regarding clubroot disease management, discussions as well as in data gathering to determine effective clubroot management. From the farmer-participants, farmer-researchers were selected following selection criteria especially on their willingness to conduct field research and these conducted clubroot dis-ease management studies with the research facilitators at their own farms (Tad-awan, 2000).

The initial farmers' knowledge and perceptions on clubroot disease and experimental capabilities among identified farmer participants were de-termined using semi-structured interview schedule.

Post-assessment of farmers' knowledge

Similar interview schedule used in the pre-assessment augmented with appropriate questions was used to assess the knowledge on clubroot disease and research capabilities of the respondents after participating in the research process.

After presentation of the results of the on-farm trials and ben-efits derived from adopting a technology with the farmer partici-pants, a post-assessment was done and the results were compared with the pre-assessment data and level changes (as in knowledge) were noted.

Where appropriate, chi square ($\chi 2$) and sign (T) tests were used.

Differences on the results of the pre- and post-assessments were taken for the two farmer-groups. Comparison was made on the differences

of level of change between these two groups.

RESULTS AND DISCUSSION

Change in knowledge resulting from involvement in participatory research

Change in knowledge on the disease causal agent. Not one of the farmer-respondents in Atok initially identified the causal agent of clubroot disease as a protozoan, as should be (Alexopoulos and Mims, 1996). In-stead, most attribute the cause as a fungus. However, after exposure to the participatory field experiments and lectures, about 94% (especially from those earlier with no idea on the pathogen) identified the real causal agent (Fig. 1). In Buguias, 66% of the farmer participants had change in knowl-edge on the causal agent mainly due to the intervention activities by the research; as likewise noted by Tad-awan (2000).

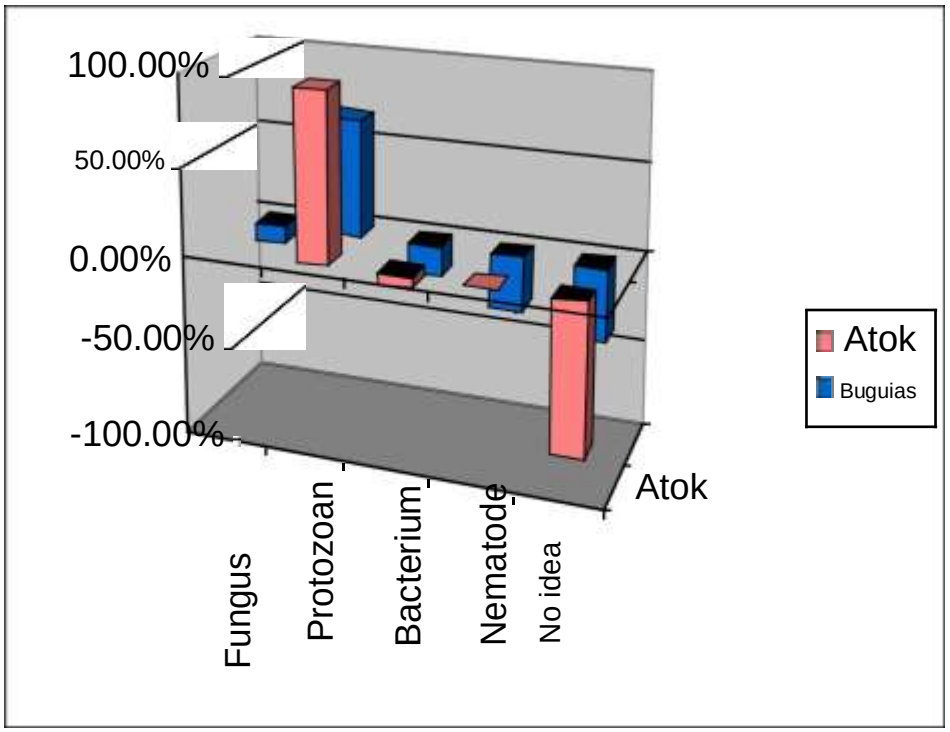

Fig. 1. *Change in knowledge on the causal agent of clubroot disease*

Change in knowledge on the means of disease spread. Majority of the farmer-participants in Atok identified means of spread of the disease during the pre-assessment stage as infected seedlings and contaminated wa-ter. During the post-assessment stage, a change in knowledge occurred par-ticularly on washing farm tools and boots earlier used at infested areas after knowing its importance (Fig. 2).

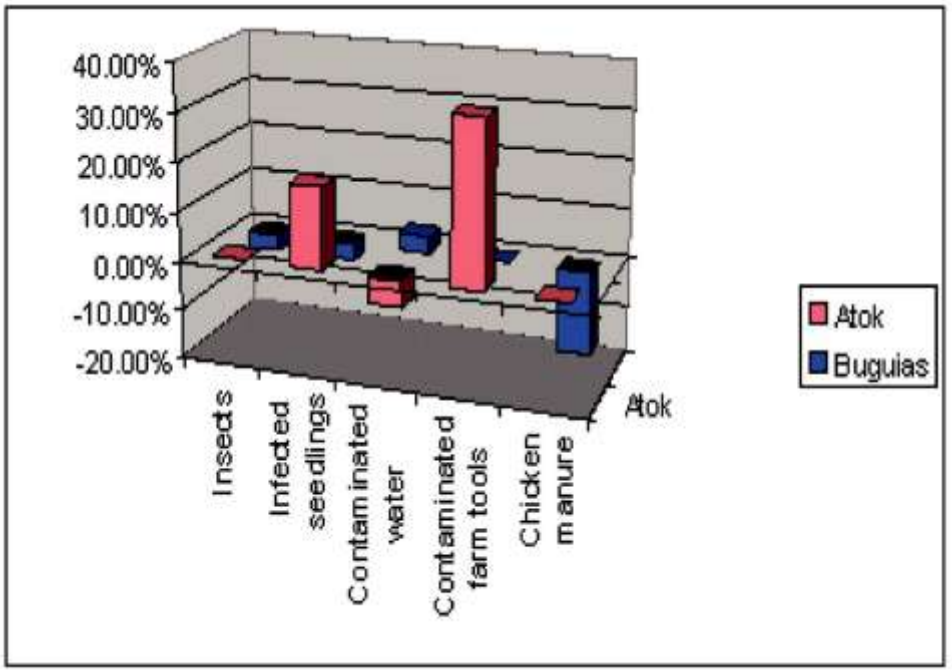

Fig. 2. *Change in knowledge on the means of disease spread*

Change in knowledge on the means of disease control. Consequent to joining the participatory research, the farmer-participants in Atok included use of bait cropping of the pathogen with radish followed in order by use of compost, use of disease-free seedlings and local quarantine (Fig. 3). The use of lime to raise the pH to 7.3 was earlier popularized (Tad-awan, 2000), thus, no significant change in knowledge on its use against clubroot control was observed. Likewise, for the Buguias group, bait cropping and use of compost were identified changes as clubroot control means. They also identified sanitation as an important component of their management strategies as they have observed on the field experiments.

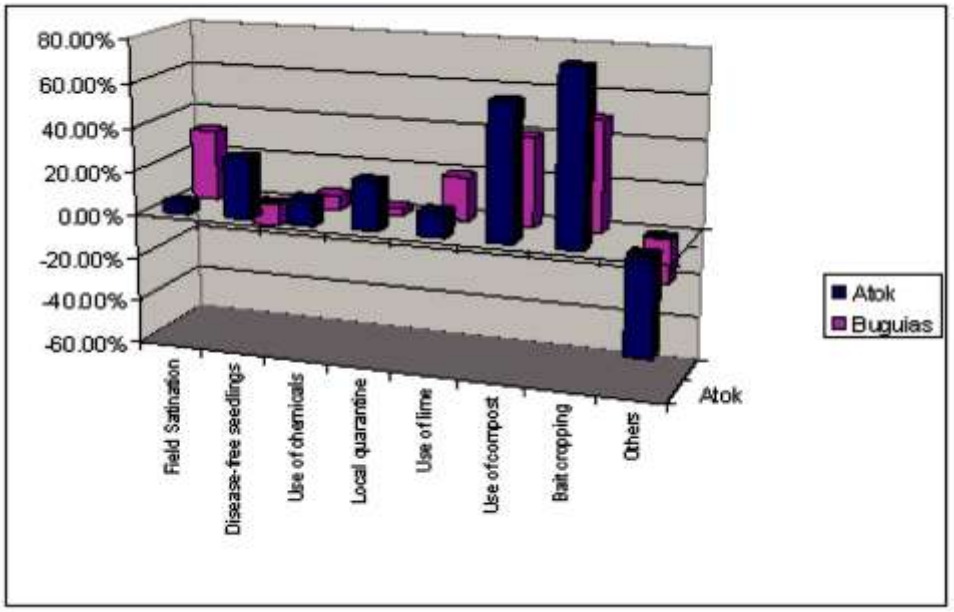

Fig. 3. *Change in knowledge on the means of disease control*

Level change in research experience. Positive changes were noted among the farmer-participants in terms of research experience as a result

of getting involved in the participatory research. More of the Atok group claimed to have gained field research experience (most for the first time) through this participatory research than the Buguias group of farmer-participants (Fig. 4).

Level change in conducting on-farm research. The farmer-participants percieved a change of difficulty to easy level of conducting research as a result of getting involved in the participatory research (Fig. 5).

Except for identifying the research problem and disseminating research results, which are greater changes that took place among the Buguias farmer-participants than those of the Atok farmer-participants, other research components were basically similar for both of the farmer-participants.

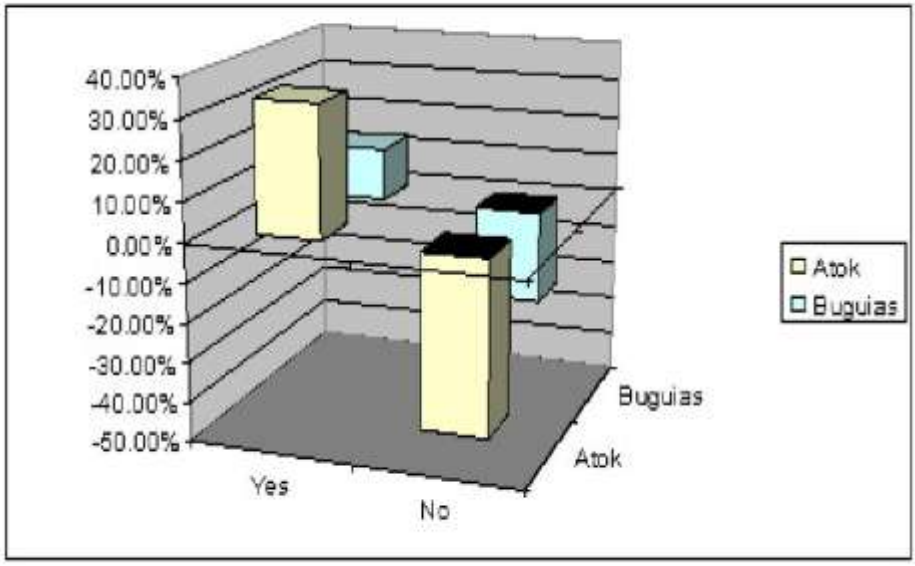

Fig. 4. *Change in research experience*

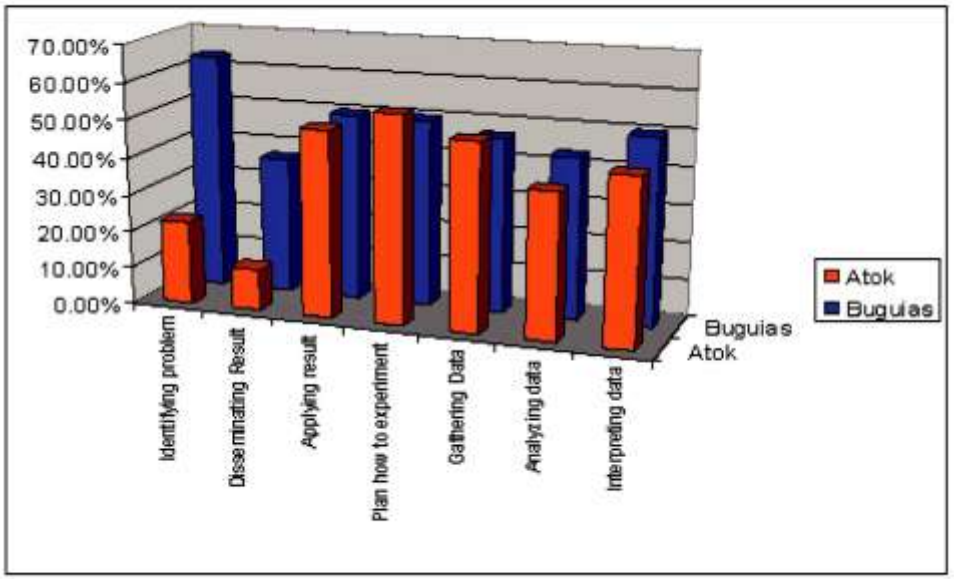

Fig. 5. *Level change (from difficult to easy) on the research components*

Ranking treatment effectiveness

Liming to raise soil pH to 7.3 followed by transplanting potted seed-lings ranked first by all the evaluators (Table 1). This is followed by plant-ing radish as bait crop and incorporating fresh radish and other Brassica as into the soil to effect bio-fumigation as found to have some degree of control (FAO, 2005).

Table 1. Rank of treatments according to effectiveness

TREATMENT	ATOK	BUGUIAS	RESEARCH FACILITATOR	OVER-ALL RANK
Untreated	5	6	6	6
Farmer's Practice	2	4	3	3
Liming + potted seedlings	1	1	1	1
Potted Seedlings	3	3	5	4
RBC + BCRI + PS	4	2	2	2
Compost + potted seedlings	6	5	4	5

P = 0.5000 P =1.000

Such ranking resulted from the presentation of the farmer-research-ers as to order of effectiveness of results as validated from their own obser-vation especially during the field days.

Since the probability values are greater than 0.01 when relating the ranking of the treatments' effectiveness of both the Atok and Buguias group with those of the researcher facilitators, a close ranking of both farmer groups to those of the farmer researcher facilitators.

Choice criteria for clubroot management strategy

In the over-all ranking, the effectiveness of the treatment is the num-ber one criterion for selecting what management strategy to use (Table 2). Conversely, the familiarity of the treatment was last. The cost of the treat-ment was the prime consideration of the Atok farmers in their choice of a management strategy but the effectiveness of the treatment was the main basis among the Buguias farmers.

A close relationship exists between both the farmers' groups and

research facilitators on the criteria for choice of the treatments since the probability values are greater than 0.01.

Table 2. Criteria for choosing the management strategy

RESPONSE	ATOK	BUGUIAS	RESEARCH FACILITATOR	OVER-ALL RANK
Effectiveness of the treatment	2	1	1	1
Familiarity of the treatment	4	4	4	4
Ease of administering treatment	3	2	3	3
Cost of effectiveness	1	3	2	2
	P = 1.000	P =1.000		

SUMMARY, CONCLUSION, AND RECOMMENDATION

CONCLUSIONS

Positive changes in knowledge levels of the farmer-participants on clubroot disease and its management as well as their research capabilities result consequent to their involvement in participatory research.

Participatory evaluation of disease management options with farmers is a good strategy of infusing knowledge of conducting field research towards developing sustainable technologies.

RECOMMENDATIONS

The participatory process of evaluating technologies as done in this Project is highly recommended for other technologies. The time of technology adoption can be shortened as farmers already make their conclusions from the given technologies, either as farmer's practice/innovation or as alternative technologies.

Alternative technologies as options to be presented to farmers should be better than the farmers' practice to warrant credibility of the research facilitators.

Concerted efforts for adoption of technologies necessitate involvement of farmers' groups and local government units as support system component.

Further studies need to be conducted to find better ways of involving farmers solve their own farm problems.

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