

ENVIRONMENTAL AND PRODUCTIVITY MANAGEMENT OF MARGINAL SOILS IN THE PHILIPPINES

I. POLICY AND APPROACH

- 1.1 Is the current “Medium-term Agricultural Development Plan” maintaining the “Key Production Area” approach?

The present mandate that dictates agricultural development programs is Republic Act 8435 or the Agriculture and Fisheries Modernization Act of 1997 (AFMA). In AFMA the approach to development is through the SAFDZ. The Key Production Area (KPA) approach forms part in the identification of the SAFDZ.

- 1.2 This policy seems to prioritize advantaged areas and to put available resources in those areas first. Is there any policy regarding support to disadvantaged areas such as the target area of the project?

Yes, the MAKAMASA for Upland and Marginal Areas addresses the concern of the diasadvantaged areas such as the upland and marginal areas.

- 1.3 Where are the priority areas according to the current “Medium-term Agricultural Development Plan”?

To ensure the continuity of the MTADP, the DA is formulating the AFMP in which the priority areas are the SAFDZ and the watershed areas that support the protected areas for agriculture.

2. IMPLEMENTING INSTITUTION

- 2.1 The budget for SRDC has been regularized or integrated with the BSWM annual budget.
- 2.2 The SRDC is a facility of the Department of Agriculture managed and operated by the BSWM. The SRDC shall be the center of excellence for soils and soil-related research and development.
- 2.3 See attached annex A (latest organogram and staff allocation table of SRDC)

3. REGARDING THE PROJECT CONTENT

I: Soil Environment Information System

- (1) *What are the differences between the activities and expected outputs of this Project Content I of EPMMA and those of the SRDC Project Phase II?*

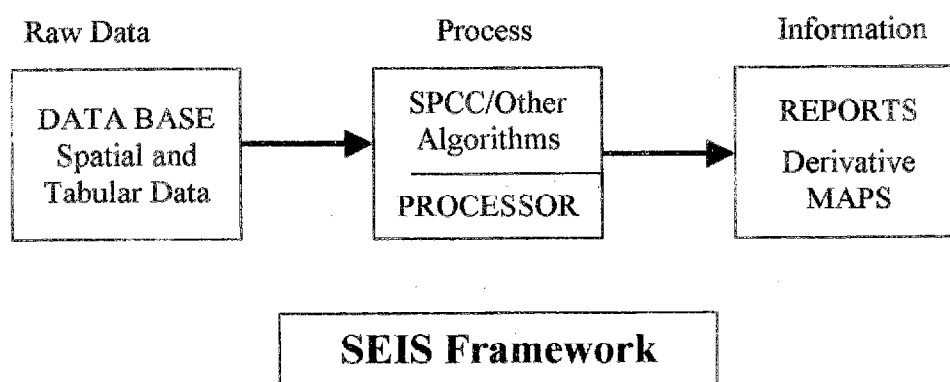
SRDC II was concerned with the development of a method or procedure for evaluating the productivity level/crop suitability of a piece of

land given its characteristics (landscape, selected physical/chemical properties, and climatic factors).

On the other hand, SEIS aims to put into one unified system the various data items (quantitative/qualitative, spatial/tabular) relative to a given area or land parcel. The information/data items are linked in one way or another for easy data manipulation and processing. SEIS is more than just a data storage system. It is a system that will convert raw data into information which can be easily and conveniently accessed for planning and decision-making purposes.

- (2) *Please specify the outputs of SRDC II which would be utilized or be the basis of the activities of this Project Content I of EPMMA.*

In particular, the SPCC rating scheme shall form part of the SEIS. The SEIS framework indicating the role of SPCC is shown in the diagram below:



- (3) *Followings are our understanding on the concrete activities of this Project Content I of EPMMA, taking soil erosion case as an example. Please correct if there are any misunderstandings.*
- a. *"Inventory and data banking of natural resources" refers to collection of data on topography, vegetation (crop type), and soil type.*
 - b. *"Development of soil, water, land resources information technology and analysis" refers to establishment of a simulation model for soil erosion such as USLE.*
 - c. *"Management of soil, water and land resources" refers to evaluation of soil erosion, and simulation of soil erosion under application of target technique such as contour farming and others listed in Sub-content 5, "Assessment of the impact of conservation systems on soil productivity and environmental quality" of Project Content II, "Soil and Water Management research"*

a. Soil, water and land resources inventory and data banking of the marginal areas of the country.

- ✓ Data generation through soil survey and laboratory analysis of the marginal areas (re agriculture) of the country. (Specify regions/provinces that are doable within the project time frame).
- ✓ Map digitization and encoding of other relevant soil/land attributes. Priority will be given to the marginal areas that will become the focus of EPMMA.

b. Development of soil, and water and land resources information technology and analysis.

- ◆ Design and development of a computer-based land resource information system including hardware (network configuration) and software (data structures, algorithms, e.g. simulation models, USLE, etc.) considerations.
- ◆ Setting up of the database utilizing the data generated in (a). It is basically loading into the system whatever data is generated I (a).
- ◆ Generation of derivative maps and information for planning and decision-making purposes. The derived maps are the results of simulation/modeling using GIS/Remote Sensing technologies and other mathematical methodologies.
- ◆ Undertaking of a project benefit monitoring and evaluation on selected techno-demo areas. The activities will include among other things:
 - (i) Socio-economic survey (gathering of benchmark information)
 - (ii) Monitoring of the changes (if any) on the socio-economic characteristics of the sample respondents
 - (iii) Analysis of the impact of the project

c. Management of soil, water and land resources

- ♣ Development of guidelines for environmentally sustainable agriculture
- ♣ **Comments:** Logically, this sub-component of SEIS should be under "Technology Demonstration and Promotion"

QUESTIONNAIRE ON EPMMA FROM MR. SANO

1. Implementing Body

(1) Programs implemented by BSWM

- 1) Please list all the on-going programs / projects implemented by BSWM
- 2) Among these program / projects which are carried out through coordination with other relevant government agencies?
- 3) Regarding the coordinated program / projects identified above, please clarify the concrete way of coordination, and role or function of each government agencies.
- 4) Do you also have program / projects of which LGUs are the partner?
- 5) If you have programs / projects coordinated with LGUs, how do you maintain the coordination with the LGUs?
- 6) Please list up names and contents of programs / projects which is jointly done by soil management division and water management division of BSWM.

2. BFS

These questions are based on the understanding that EPMMA project will have a similar approach for the establishment of “demonstration farms” with BFS.

1) What kind of technologies are used in BFS?

Fertilizer use and efficiency technology.

2) What is the reason you have started BFS?

To formulate location specific alternative fertilizer recommendations to replace the traditional national recommendation.

3) Please provide the action plan for BFS

BFS is an operational research carried out in several phases:

- ❖ Adaptation
- ❖ Verification
- ❖ Piloting

The processes involved in the formulation and implementation of the project are the following:

- ❖ Review and compilation of existing data and information
- ❖ Formulation of initial protocol for combined organic and inorganic fertilizer formula
- ❖ Collection and analysis of soil, water, and plant tissue samples
- ❖ Sequential on-farm trials and reformulation
- ❖ Conduct of farmers’ field days
- ❖ compilation and evaluation field results
- ❖ monitoring and evaluation

- 4) *Why is there no representation from the local farmers in the committee?*
The concept of BFS was discussed with farmers' groups. Likewise, non-government organizations (NGOs) were invited to participate during the conceptualization of the project.
- 5) *If you don not have representation from the local farmers, how do you confirm the real needs of the local farmers?*
The farmers organizations and the NGOs can represent individual farmers because they have the same interests.
- 6) *How do you explain the "demonstration farms" to the local farmers?*
Through the use of local dialects, and the conduct of farmers' meetings. Farmers' field days were also encouraged to show-case the technology to other farmers.
- 7) *Please provide a detailed budget for BFS.*
Please see attached sheet. (Annex B)
- 8) *Is there any portion of the budget which is provided by LGUs or Barangays?*
Sometimes they shoulder the food for the farmers' field days.
- 9) *What is the role of the BSWM staff at the "demonstration farm"?*
The BSWM staff provide the fertilizer formula, collects the soil, water and plant tissue samples for laboratory analysis, monitor and evaluate the techno-demo farm, facilitate the provision of inputs, and coordinate with the LGUs.
- 10) *If a LGU or a selected farmer refuses the cooperation for the establishment of a demonstration farm, what will you do? Or is it obligatory to participate in the BFS once selected.*
Only farmers and LGUs willing to cooperate and participate in the techno-demo are selected.
- 11) *How is the impact of BFS so far?*
Rice yields in the techno-demo farms increased with the adoption of the BFS technology. Farmers are now adopting the BFS technology because the yields obtained from the BFS techno-demo sites are consistently higher than those obtained from the farmers' field. As a result of the BFS, closer ties were established among the farmers, the LGUs, DA Ruffs, and BSWM.
- 12) *Please explain about the monitoring mechanism for BFS.*
In each location, core and outreach sites are usually established. In the core site, intensive characterization of the crop phenological nutrition is done and is correlated to the soil, water, and plant tissue test values. Agronomic and yield data are also gathered. In the outreach sites, only soil characteristics and yield data are gathered.

- 13) *What are the lessons learned from the implementation of BFS so far?*
That yield increase could be obtained if the appropriate fertilizer recommendations are followed.

3. “Demonstration farm” of EPMMA

Demonstration Farm of EPMMA

1) In General

1. What are the criteria for the selection of the *demonstration farm* ?
 - (a) Preferably an Agrarian Reform Community (ARC) or with existing farmer/association.
 - (b) Crop yield and farm income is low to very low.
 - (c) Must be accessible and visible to the general public.
 - (d) Area is representative of the general condition of the major pedo-ecological zone upland area.
 - (e) Farmers, farmer leaders and the local government are interested and willing to collaborate with the Project.
2. What are the reasons of selecting the proposed three(3) *demonstration farms* ?
 - (a) Existence of Research Centers where technologies have been developed.
 - (b) Area is a representative of the general land condition of marginal areas.
 - (c) Availability of land for major pedo-ecological zone i.e. lowland/upland/hillyland/highland expansion.
 - (d) Accessible and has no problem on peace and order.
3. Do these three *demonstration farm* have typical characteristics of “Problem Soil”? *Yes!*
4. Please specify which technology developed by the SRDC Project will be applied to each *demonstration farms* .
 - (a) Use of appropriate crops and management practices suited for the area.
 - (b) Use of various hedgerow types for erosion control.
 - (c) Residue management techniques for increased yield and soil fertility build-up.
 - (d) Use of appropriate kind and amount of fertilizer.
 - (e) Water harvesting technique and efficient use of water.
5. Which section of the BSWM has the overall responsibility of the activities at the three(3) *demonstration farms* ?

There will be complementation among all the Divisions of the BSWM. Considering the main problem in the sites which is soil erosion, the Soil Conservation and Management Division will have the overall responsibility.

(2) “Demonstration Farm” at Tanay Research Station

1. Who is the responsible persons in the station for the *demonstration farm* activities?

The Chief of the Soil Conservation and Management Division, assisted by the Center Chief.

2. Please provide information on staff allocation ?

Staff allocation of the Tanay Station:

- (1) Center Chief
- (1) Supervising Agriculturist
- (1) Senior Agriculturist
- (2) Agriculturist II
- (2) Heavy Equipment Operator
- (2) Laboratory Aide
- (1) Clerk

NOTE : Researchers from the BSWM main office conduct research studies at the Station.

3. Please specify the budget of the Station in detail.
4. Please specify the budget items and the staff members that are designated for the activities of the *demonstration farm* .

(a) Staff

Chief of Soil Conservation and Management Division
Center Chief
One(1) Supervising Agriculturist
Two(2) Agriculturist II
Emergency Labor

(b) Budget

The Project will have a budget of ₱ 293,900,000.00 for three sites for a five-year period. This is roughly ₱ 9,593,000.00 per site per year .

3. What kind of outreach activities targeting local farmers have been done by the station? Is it regular activities or just occasional activities?

Farmers are invited for field visit at the Center - a regular activity since 1998; Farmers' Training; Farmers Field Day, etc.

6. What kind of technology is interesting to the farmers?

Low-cost production technology of food crops i.e. use of chicken manure, small farm pond development, use of hedgerow for erosion control.

7. What is the highest priority problem of the local farmers?

Low-yield, insufficient capital, unstable price of agricultural products.

Questionnaire for Farmer at Tanay Station

1. What do you grow in your field?

Rootcrops, upland rice, perennial crops like Citrus, mango and cash crops

2. How many hectares of field do you have?

Average of three hectares

3. How many family members do you have including you?

Seven (7)

4. How many of you including you are working in the field?

Four (4)

4. Did you graduate a university or a college?

No

5. How did you learn on agriculture?

Experience

7. How was the last season harvest?

Moderate, for family consumption

8. If the last year harvest was bad, do you think what was the main reason of the good harvest?

9. If the last season was bad, do you think what was the main reason of the good harvest?

Due to El Niño

10. If the last year harvest was bad, did you do anything to supplement your income?

Yes, I resorted to charcoal making, *etc.*

11. How do you expect your annual income this year?

Hopefully better

12. What do you want to grow next year?

Same crops

13. If you want to grow a different crop this year. What is the reason to change the crop? Do you know how to grow it. Are you confident that you can grow it.

I do not intend to grow other crops, but if somebody will introduce new crops (free planting materials), I will do so.

14. What is the reason you have come to this station?

To gain additional knowledge on farming techniques.

15. How did you know about this station?

Through invitation and information from fellow farmers.

18. What have you learnt from this station?

Importance of soil conservation

19. What was the most impressive thing about the experiment at this station?

Use of hedgerow particularly the income generating crops and the high density planting of mango inter-cropped with pineapple.

20. Is the exhibition of the station easy to understand?

Yes

21. Do you think you can apply the technology demonstrated here?

Perhaps, if I can have additional capital

22. If you have already applied the technology?

Not yet

23. If you are interested in applying the technology demonstrated here, Do you think what would be difficult for the application of the new technology?

Lack of capital and availability of planting materials.

24. What kind of government support you want most?

Technical support and if possible, planting materials.

25. Did you get any support from any support from extension workers?

No

26. What do you expect most from the BSWM?

Technical assistance particularly on soil conservation

27. What is the No. 1 request to BSWM?

Technical assistance particularly on soil conservation

28. What do you expect most from LGUs and extensioners?

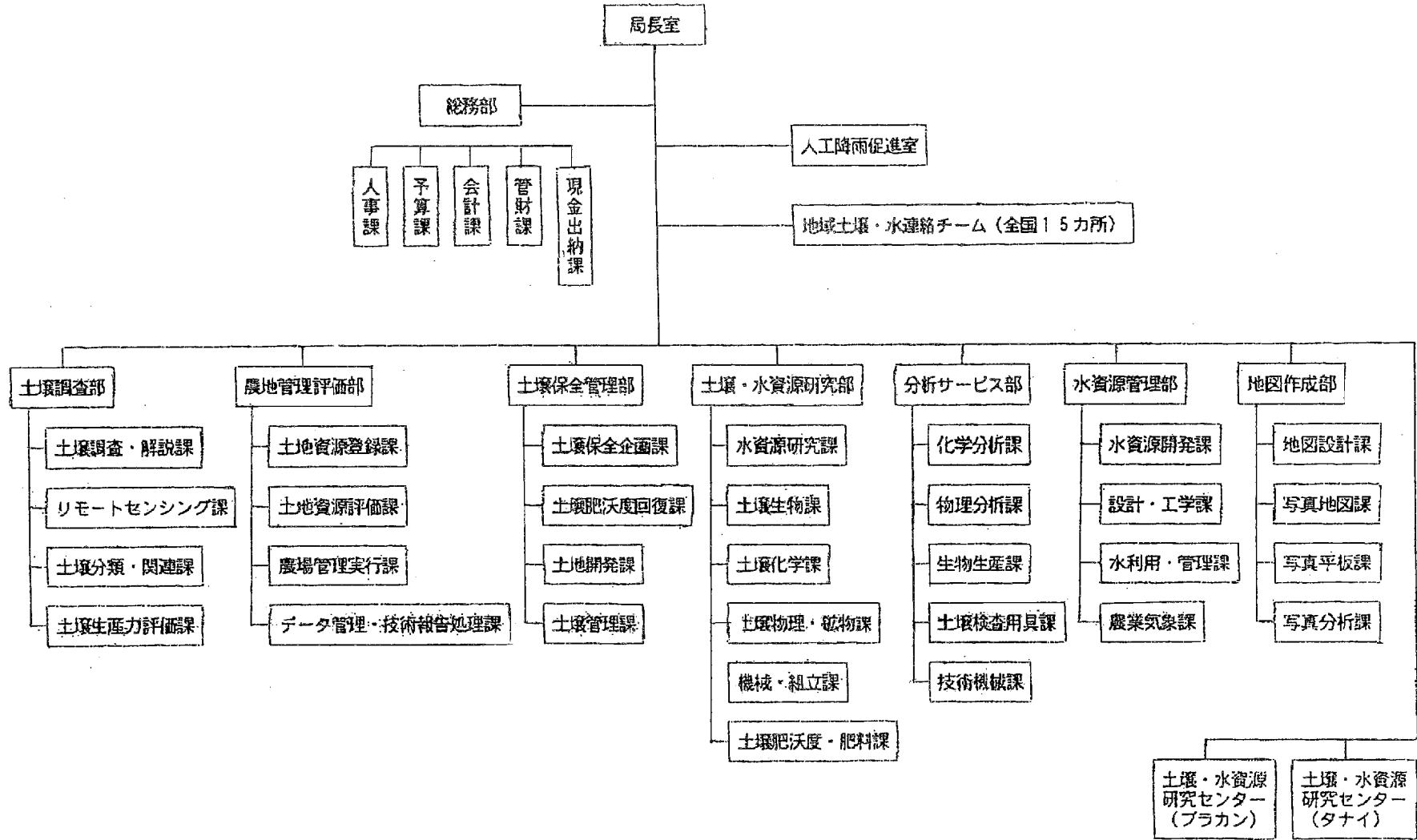
Financial aide and technical assistance.

29. What is the no. 1 request from the LGUs and extensioners?

Subsidize farm materials, e.g. fertilizer, chemicals.

30. What kind of technology you want to learn most?

Soil conservation farming system



農業省土壤・水管理局組織図

「フィリピン農民参加によるマージナルランドの環境及び生産管理」テクノデモファーム候補地プロフィール

テクノデモファーム候補地	中央ルソン ブラカン州サンイルデフォンソ町ブルスカン村	南部ルソン リサル州タナイ町サンバロック村アゴホ	北部ミンダナオ ブキドノン州インパスグオン町インタパス村
テクノデモファーム候補地の位置	土壌・水管理局 → ステーション (63km 車で2時間) ステーション → 候補地 (11km 車で15分)	土壌・水管理局 → ステーション (53km 車で1時間30分) ステーション → 候補地 (15km 車で20分)	マニラ → カガヤンデオロ市 (飛行機で1時間30分) カガヤンデオロ市 → ステーション (83km 車で1時間30分) ステーション → 候補地 (22km 車で30分)
土地面積	全土地面積： 788 ha 農業地域： 720 ha	全土地面積： 3,000 ha 農業地域： 3,000ha	全土地面積： 7,886 ha 農業地域： 385 ha
人口	1,315 人 (1996 年)	2,000 人	1,850 人
平均年間所得	農業所得：11,514 ペソ 農業外所得：24,000 ペソ	農業所得：26,000 ペソ 農業外所得：ペソ	農業所得：30,000 ペソ 農業外所得：24,000 ペソ
気候	熱帯モンスーン 年間降雨量：2,000 mm/年 平均気温：22℃～31℃	熱帯モンスーン 年間降雨量：2,350 mm/年 平均気温：21℃～31℃	熱帯降雨林 年間降雨量：2,400 mm/年 平均気温：18℃～33℃
土壌分類	アルティソル*	アルティソル	アルティソル
地形	台地 海拔 50m～150m	傾斜地 海拔 350m	起伏地 海拔 1,300m
栽培作物	水稲、トウモロコシ、マングビーンズ、 サツマイモ、キャッサバ	ココナッツ、マンゴー、トウモロコシ、 キャッサバ、柑橘、野菜、サツマイモ	ジャガイモ、キャベツ、白菜、トマト、 トウモロコシ
農家の積極性	積極的	積極的	積極的
関係機関	農地改革省／農地改革コミュニティ(ARC)	生活共同体	農水省／農業組合
水資源	井戸、ため池	川	湧き水
電気	有り	なし	有り
治安	比較的良好	比較的良好	比較的良好
病気（マラリア等）	特になし	特になし	特になし
農家の分布	道路に沿って存在	集団的に存在	集団的に存在

*アティソル：下層で粘土の集積が著しく、有機物に乏しく、保水力・保肥力の小さな粘土が優勢な土壌である。侵食による土壌流失を受け易く、低肥沃な赤色黄土である。