

資料 - 3 PROGRESS REPORT

PROGRESS REPORT
OF
THE ATA - 140 JAPANESE COOPERATION
IN THE SOUTH SULAWESI PROVINCE

IN THE PILOT TESTS ON
AFFORESTATION,
GRASSLAND IMPROVEMENT,
CITRUS DEVELOPMENT

(JULY 1979 - JUNE 1981)

JUNE 22, 1981.

THE RADP/ATA - 140 SOUTH SULAWESI PROJECT

UJUNG PANDANG.

P R E F A C E

This report is a summary of the Annual Progress Report for the period from June 1979 through July 1980 and the Interim Report of Project Activities from July 1980 through June 1981.

Contents of this report have basically been described by the Team in the Annual Progress Report on Phase III (i.e. report of the first year of pilot test implementation) and in the Interim Report of the period July 1980 - June 1981 (i.e. an interim report of the second year of ATA-140 Pilot Test implementation comprising the Pilot Tests on Afforestation, Grassland Improvement and Citrus development, in cooperation with the Japanese Government through JICA).

This summary is meant to enable the reader to have a quick description of the Japan-aided projects by a quick glance, particularly concerning the ATA-140 Pilot Tests respectively in Jeneponto and Enrekang, during the two years, and the measures required for the one-year prolongation, namely during the period from July 1981 through June 1982, and the follow-up management after the expiry of the RADP/ATA-140 Cooperation.

This report is thus expected to be of use.

Ujung Pandang, June 22, 1981.

The Ministry of Agriculture,
South Sulawesi Regional Office.

The ATA-140 Project Co-manager,
Mono Syamsuddin.

1. Introduction

1.1. The ATA-140 Pilot Test Project being implemented in South Sulawesi on the basis of the R/D of June 18, 1979 as a follow-up of the RADP/ATA-140 Cooperation was commenced in July 1979 to last 2 years, comprising respectively:

- Pilot Tests on Afforestation and Grassland Improvement, located at the Buntu Barana Village in the sub-district of Alla of Enrekang district, and
- A pilot test on Citrus Improvement at the Tino village in Batang Subdistrict of Jeneponto district.

The three of them serve as trial performances as to the extent to which the models of afforestation, grassland improvement and Citrus cultivation are feasible of development, while on the other hand to support the planning of the implementation projects in the effort of their development.

1.2. Accordingly, the ATA-140 Pilot Tests belong rather to the phases of planning than to the implementation. Therefore these pilot test tests would still yield a feasibility study to verify the level of feasibility.

1.3. Consequently,

- the pilot tests on afforestation and grassland improvement located on the mountainous area of Enrekang district at elevations of 800 to 1000 m. above sea level serve to test the extent to which the regional potency may be developed integratedly, while at the same time converting the critical area into a productive one;
- the pilot test on Citrus development in suitable regions such as Jeneponto serves as a trial in the planning of Citrus fruit quality improvement, stabilization of seasonal fruit-bearing (in order to avoid fruitbearing fluctuations which are disadvantageous to farmers) and improvement of the marketing system.

1.4. On the base of the approaches above, it is obvious that the ATA-140 project ought to be coordinated by the Planning Bureau of the Ministry of Agriculture at Central level, while at provincial level by the Ministry's Regional Office.

1.5. For a more extensive utilization of the pilot test, it is equipped with a multipurpose training center which serve to extend skill,

to motivate farmers and/or local community leaders concerning performances to be developed, as well as to receive and detect problems as feedback to the planning of its development.

2. Framework of Pilot Test Establishment

2.1. The framework of activities in the ATA-140 pilot tests comprises essentially 6 main activities, namely:

- 1). Surveys for design.
- 2). Constructions.
- 3). Sowing and raising seedlings on the nursery;
- 4). Transplantation, planting and cultivation
- 5). Investigation/observations.
- 6). Farmers' or local community leaders' training.

2.2. The 6 activities may be categorised in 3:

- 1). The category of surveys for the designing and construction is a separate activity.
- 2). The category of Nursery establishment, planting, Investigation and farmers' training belong to another category of activities requiring a relatively long time in the operation.
- 3). Training activities.

2.3. There are two targets to be achieved through the pilot test establishment:

- 1). Intermediate target.
 - 2). Functional target.
- 1). Intermediate target comprises:
 - a). Completion of facilities for the Training Center, nursery and orchard in the pilot test Citrus development.
 - b). Completion of facilities for the Training Center, nursery, trial forest and pilot ranch in the Pilot Test of Afforestation and Grassland Improvement.
 - 2). Functional target, i.e.:
 - a). Making the pilot test a place of practical training for farmers and/or community leaders and of practical observation to officers in the effort of skill transfer and motivation.
 - b). Making it a seed and seedling centers for citrus develop-

ment, grassland improvement and afforestation plant development,

- c). Making the pilot test a place of information exchange and data collection for an integrated regional development planning.

3. Pilot Test Operational Activities;

3.1. Organization:

- The cooperation in pilot test implementation is supported by the experts' and counterparts' teams.
- The experts' Team is coordinated by a Liaison Officer since the Team Leader M.S. Kikkawa himself has left for Tokyo due to illness.
- The counterparts' team is coordinated by a project co-manager, who is a staff of the Regional office for the Agricultural Ministry, simultaneously coordinating the smooth run of cooperation between the counterparts' and the experts' teams, and the field operation.
- The pilot tests are led by respective experts according to the pilot test concerned:
 - 1). The pilot test on afforestation is led by Mr. T. Takaku, expert in forestry.
 - 2). The pilot test on grassland improvement is led by Mr. F. Harada, expert in animal husbandry.
 - 3). The pilot test on citrus development is led by Mr. H. Miura, expert in citriculture.
- Each expert is assisted by one or more counterparts originating from agencies related to the pilot test concerned, e.g.:
 - 1). The South Sulawesi Animal Husbandry Service which assigned 2 staff members as full-time counterparts, i.e.:
Ir. Kala' and Ir. Syata, to accompany the expert in animal husbandry, in accomplishing pilot test activities for grassland improvement.
 - 2). The Food Crop Agricultural Service, Assigning Mr. Dollah Mando, its staff member, as counterpart to the Citrus expert.
- The organization for the pilot test implementation is described in the attached Chart of Organization.

3.2. Performances and achievements in the 2 years' activities.

- According to the R/D of June 18, 1979, the ATA-140 pilot test has been started since July 1979 to expire by June 1981.
- At the Joint Committee held at the Deptan.s Planning Bureau in Jakarta on July 3, 1981, attended by the Japanese Team from Tokyo, it has been agreed upon to prolong the cooperation for another year, thus to terminate by June 1982.
- The detail design in the context of pilot test implementation has been completed within the 2-nd quarter of F.Y. 1979/1980, while the three long-term experts have just arrived in UP on December 17, 1979, assigned to conduct the pilot tests for 2 years' term.
- Activities performed during the 2 years of pilot tests are e.g.:
 - 1). The pilot Test on Afforestation.

- o Two facility components established for the pilot test on afforestation:

- a. T.C. facilities, comprising:

- * 30-men capacity dormitory;
 - * 30-men capacity classroom cum office;
 - * C type house;
 - * 120 m² large storage cum trainer staff housing;
 - * provision of equipment for the dormitory, classroom and office;
 - * establishment of a water facility;
 - * construction of a generator-house;
 - * Construction of a 2,250 m. long gravel road to the T.C. site; and A bailey bridge construction.

Those facilities are entirely financed through the regional budget, except for the classroom and dormitory which are financed through the funds of the Agricultural Personnel Training Center in the context of one-time training within F.Y. 1981/1982 to last 15 days for 30 farmers.

- b. Facilities for the 1 ha. nursery inside the 10 ha. trial forest, and trial forest cultivation comprising the following:

- * 712.4 m. long road ballasting;
 - * 545 m. long manenry drainage;

- * installation of 205 m. long sprinkler system;
- * installation of a water pump cum water pond for the sprinkler;
- * preparation of a 1 ha. nursery bed;
- * construction of the potting houser;
- * planting various forestry crops, estate crops and horticulture on the trial forest;

These activities are financed by the JICA aid.

2). The pilot Test on Grassland Improvement.

Facilities established in the context of the pilot test on Grassland Improvement at the 500 ha. plot of land to serve as pilot ranch at Buntu Barana, comprising the following:

- o construction of a 1,703 m. unpaved road;
- o construction of a 300 m. long concerted drainage;
- o construction of a 4,822.8 m. long barbed wire hedge at the sides of the inspection road and at 3 paddocks;
- o grass and legume seedling establishment;
- o grass and legume trial planting for grassland improvement;
- o construction of barbed wire hedge with live hedgeposts around the 500 ha. large pilot ranch;
- o construction of livestock isolation paddock;
- o establishment of paddocks for research in rotational grazing;
- o establishment of accessory paddock and livestock drinkwater troughs.

These establishments are financed on JICA's aid funds, except for the isolation paddock, accessory paddock and drinkwater trough.

3). The Pilot Test on Citrus development.

3 facility components are established in the pilot test on Citrus development, comprising:

a. Facilities for the T.C.:

- * a 30-men capacity dormitory;
- * a 30-men classroom;
- * C-type house;
- * provision of dormitory - classroom - office equipment;
- * establishment of water facility;

- * construction of a generator-house.

b. Facilities for the maintenance of the 3 ha. orchard:

- * construction and graveling of 755 m. long road;
- * construction of a 292 m. long masonry drainage;
- * installation of 333 m. long spinkler irrigation system;
- * construction of 895 m. long barbed wire hedge with live posts;
- * installation of water pump cum water pond for the sprinkler;
- * construction of a tractor garage cum field equipment storage.

These are financed by the JICA aid.

c. Facilities for the 0.4 ha. nursery, comprising:

- * installation of barbed wire hedge with teak posts;
- * nursery establishment;
- * provision of nursery equipment.

These are financed by national and regional budgets.

4). Of the various activities performed in the establishment of the 3 pilot tests, most pronounced to the farmers is the effort of Citrus development, wherein demonstrations have been given to Citrus farmers concerning:

- * tree pruning;
- * pest/disease control;
- * fertilizer application;
- * grafting and budding; and
- * Citrus contest performance.

5). Until June 1981 only intermediate targets have been achieved, and these will require 2-3 months to be completed, e.g.:

The pilot test on afforestation will be completed by August

- * 1981, by which time the training for farmers and/or community leaders will be able to be commenced.

- * The Pilot Test on Citrus development will be completed by October 1981, by which time the training for Citrus farmers may also be commenced.

3.3. Measures required for the third year in the context of the prolongation.

- 1). There are 3 component activities to be performed at each pilot test during the 1 year prolongation period; those are:
 - a. Proceeding with the uncompleted works, both being worked at and being planned but not accomplished yet.
 - b. Conducting new activities which are urgent for the perfection of the pilot tests, and opening training courses.
 - c. Maintenance of the already established means and device for the pilot test.
- 2). The 3 components required at each pilot test are:
 - (i) Pilot Test on Afforestation.
 - a. Follow-up activities are:
 - * Completion of the C-type house estimated to be completed by early August 1981.
 - * Construction of a 120 m² equipment storage, estimated to be completed in early September.
 - * Completion of the provision of dormitory equipment, classroom annex office and C-type house, anticipated to be completed by the end of July.
 - * Improvement of water facility at the T.C. and the nursery for Fiscal Year 1982-1983.
 - * Improvement of equipment for the meteorologic station for F.Y. 1982-1983.
 - * Provision of various seedlings for F.Y. 1982-1983.
 - * Completion of 1 training for F.Y. 1981/1982 at the end of August.
 - * Completion of planting at the pilot forest.
 - b. Proposed new measures comprising the following:
 - * Construction of a terrace model of 3 ha. in the pilot forest planting area.
 - * Trial planting of annual intercrops at the pilot forest (3 ha.).
 - * Demonstrations of fertilizer application and pest & disease control.
 - * Intensive research and/or observation of the growth of plants on the pilot forest.

- * Conducting two training courses on regional budget and two on regional budget.

- * Performing film shows concerning the techniques of soil conservation in Japan.

c. Maintenance consists of:

- * Maintenance of infrastructure within the training compound.

- * Maintenance of infrastructure within the pilot forest compound including the nursery bed.

- * Maintenance of pilot forest plants.

- * Maintenance of equipment.

- * Maintenance of the 2,250 meter access road to the pilot site.

(ii) Pilot Test on Grassland Improvement.

a. Follow-up activities are:

- * Construction of equipment storage annex guards post of 144 m² in the pilot ranch.

- * Construction of a 36 m² water reservoir and refinery.

- * Excavation of the water reservoir.

- * Expansion of planting with *Brachiaria decumbens*.

- * Completion of 10 paddocks.

- * Installation of a meteorological station.

- * Completion of the 3,500 m. access road to the pilot ranch, expected to be completed in early August 1981.

b. Proposed new activities:

- * Conducting trainings for slaughter-livestock raisers: twice on regional budget and twice on national budget.

- * Film shows on grassland improvement relating to soil conservation.

- * Completion of equipment for field maintenance.

c. Maintenance consists of:

- * Maintenance of infrastructure within the pilot ranch.

- * Maintenance of equipment.

- * Maintenance of plants.

(iii) Pilot Test on Citrus Improvement.

a. Follow-up activities are:

- * Completion of grafting.

- * Completion of the orchard.
 - * Performance of a Citrus contest.
 - * Completion of the dormitory, classroom cum office, at a 30-men capacity, anticipated to be completed in September 1981.
 - * Equipping the meteorological station.
 - * Raising 50,000 Citrus seedlings for stocking.
 - * Provision of organic and inorganic fertilizers and pesticides.
 - * Demonstrations on pruning, fertilizer application and pest/disease control.
 - * Performance of a Citrus contest.
 - * Construction of a storage annex house, 120 m2.
- b. Proposed new activities, consisting of:
- * Trainings, twice on regional budget and twice on national budget.
 - * Film shows concerning Citriculture including its marketing.
 - * Equipping field investigation.
 - * Intensive research on ecological effects on plant growth in the pilot orchard.
- c. Maintenance, consisting of:
- * Maintenance of infrastructure within the pilot orchard.
 - * Maintenance of the training compound.
 - * Maintenance of the nursery and the orchard.
 - * Maintenance of equipment.

5. Obstructions

5.1. There are 2 major sources of problems in the implementation of the ATA-140 Pilot Tests in South Sulawesi:

- 1) That not all of the provision of means and device required for the pilot test establishments are made by the Government of Japan concurrently with the operational plan, but rather burdened on the Indonesian side, while the greater part of the burden rests on the Regional Administration; thereby they have to be conducted step by step; the gradual process, in

turn, leads to delays during the 2 years' efforts for the achievement of intermediate targets in the context of pilot test establishment; for example the constructions of the bridge, access road, dormitory, classroom and some equipment are undue within the 2 years.

- 2). That the program of these pilot test activities are actually longranged in nature, since the objects have long-ranged aims, such as the Citrus and afforestation developments, of which the crops are not annual ones but rather perennial, whereas the time provided for their implementation is relatively short, i.e. for merely 2 years and afterwards prolonged by one more year, hence the fact that the output gained during the 2 years are merely to the extent of intermediate target.

5.2. Consequently, it is obvious that the implementation of the pilot tests will call for additional time in order to achieve its functional targets such as mentioned previously.

6. Conclusions and recommendations.

6.1. Conclusions.

- 1). Management of the pilot tests established in Jeneponto and Enrekang should be integrated between the Regional Office of the Ministry of Agriculture and the agencies related closely with regional agriculture development, the pilot tests being a series of trials as to which extent the activities on one hand, and on the other to support the planning of implementation projects concerning with the development of these pilot tests.

- 2). In spite of the fact that Jeneponto and Enrekang are both critical areas, they are of different conditions in their farming.

Consequently the pilot test organizations should be adapted to the objectives of the pilot tests themselves.

Furthermore, in spite of the relatively similar aims of the pilot tests in Jeneponto and in Enrekang, i.e. to convert the region from its critical condition into a productive one, the farm type and the commodity in which the developmental activity is oriented are different, and therefore the agencies

involved in the organization of these pilot tests will also be different from each other.

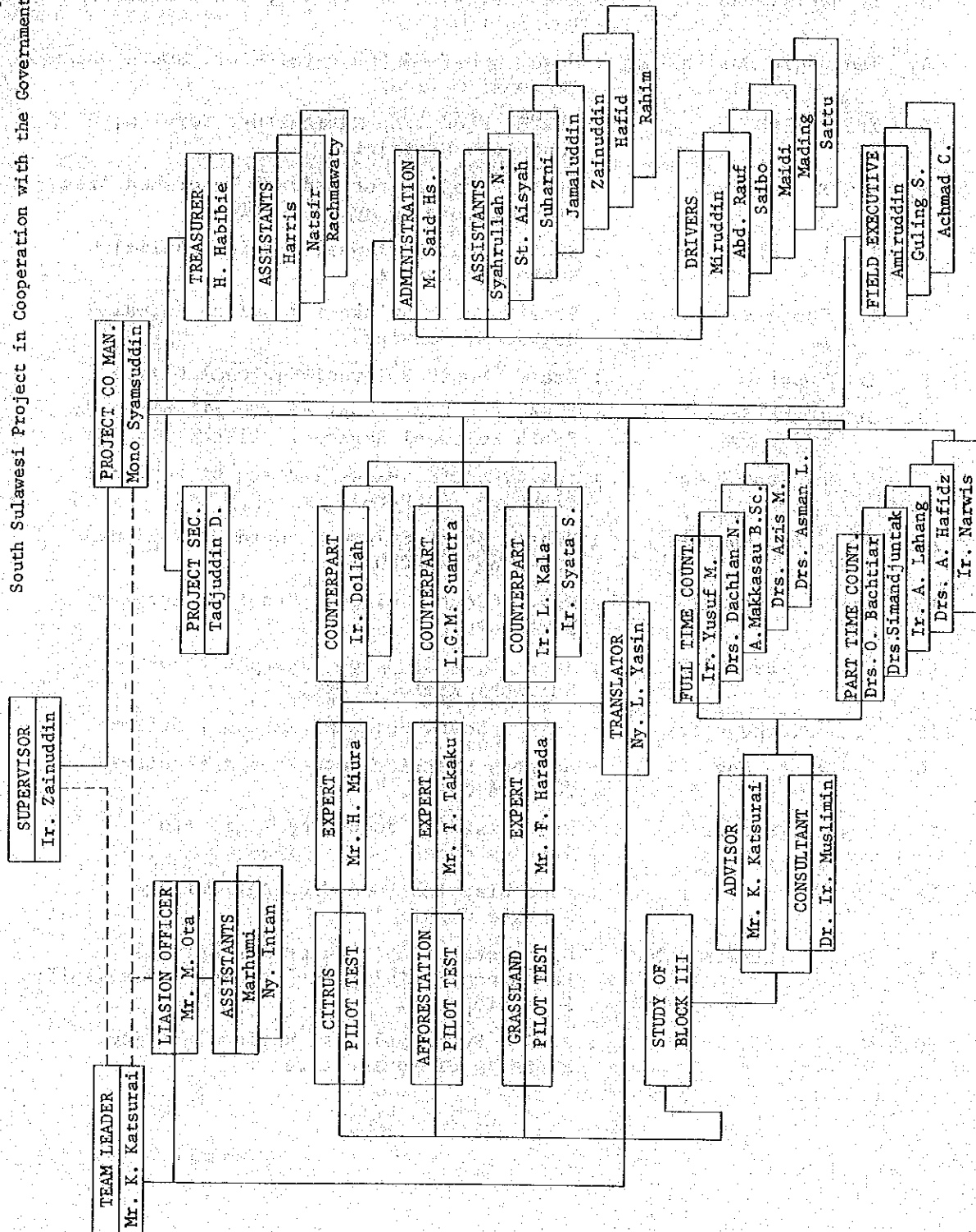
- 3) The pilot test in Jeneponto functions to motivate farmers in converting the region into a productive one, particularly in the development of Citrus farming into a cultivation.
- 4) The one in Enrekang functions to motivate farmers and/or community leaders toward the maintenance of natural resources and to lead them toward a more productive utilization thereof.

6.2. Recommendations.

- 1) The one year's prolongation of the ATA-140 cooperation in the pilot test establishments respectively in Jeneponto and Enrekang is in fact insufficient from the viewpoint of its urgency, and it should rather be more than 1 year. Therefore it would better be reviewed and reconsidered by both parties.
- 2) Toward the expiry of the Indonesia-Japan cooperation in the pilot test implementation above, agencies to be involved in the management of the pilot tests should be the followings:
 - a. At national level:
 - * The Deptan's Bureau of Planning in relation to the coordination of regional agriculture development;
 - * The Directorate for Production Upbuilding under the Directorate General of Food Crop Agriculture in relation to the restoration and promotion of Citrus and horticulture production in general.
 - * The Directorate of Program Establishment and Restoration under the Directorate General of Forestry in relation to the planning and establishment of the restoration of critical areas and soil conservation.
 - * The Directorate of Program Establishment under the Directorate General of Animal Husbandry in relation to the planning of grassland improvement in the context of increasing animal husbandry population and production.
 - b. At provincial level:
 - * The Deptan's Regional Office as coordinator in relation to integrated regional agricultural development.
 - * The Food Crop Agricultural Service as executive in relation to the operation of food crop production increase.

- * The Animal Husbandry Service as executive in relation to animal husbandry production increase.
 - * The Project for the Saddang Watershed Area Afforestation Planning (DAS Saddang Project) in relation to the Planning of the DAS Saddang afforestation.
 - * The Deputy II Regional Secretary in relation to the provision of Regional Budget in the context of pilot test maintenance and development.
- 3). Budget allocation from the national to the provincial level is coordinated by the Deptan's Bureau of Planning, whereas its allocation for the pilot test operation is coordinated by the Deptan's Regional Office.
 - 4). Planning and Operation in the management of Citrus development, Afforestation and Grassland Improvement are conducted by the Agricultural Extension Service, the DAS Saddang Project and the Animal Husbandry Service, while the pilot test fostering and development are conducted by the Deptan's Regional Office.

Chart of Organization of the Regional Agriculture Development/ATA-140
South Sulawesi Project in Cooperation with the Government of Japan.



1. Ir. Zainuddin : Chief, South Sulawesi Regional Office, Ministry of Agriculture.
2. Mono Syamsuddin : Head, Department of Regional Data, South Sulawesi Regional Office, Ministry of Agriculture.
3. H. Babiebie BBA : Head, Finance Department, South Sulawesi Regional Office.
4. Tadjuddin Dullah : Head, Non-feed Sub Department, South Sulawesi Regional Office.
5. Ir. Dollah : Staff, Food Crop Agriculture Service, Jenepono District.
6. I.G.M. Suantra : Staff, Project for Saddang Watershed Area Afforestation & Reforestation.
7. Ir. L. Kala' : Staff, South Sulawesi Province Animal Husbandry Service.
8. Ir. Syata S. : Staff, South Sulawesi Province Animal Husbandry Service.
9. Ir. Yusuf M. : Staff, South Sulawesi Regional Office.
10. Drs. Dachlan N. : Head, Sub Department of Miscellaneous Data, South Sulawesi Regional Office.
11. A. Makkasau B.Sc. : Staff, South Sulawesi Board of Regional Planning (BAPPEDA).
12. Drs. Azis Mattola : Staff, South Sulawesi Board of Regional Planning (BAPPEDA).
13. Drs. A. Kulman : Staff, South Sulawesi Province Agrarian Directorate.
14. Drs. O. Bachtiar : Head, Food Crop Sub Department South Sulawesi Regional Office.
15. Drs. Simandjuntak : Staff, South Sulawesi Regional Office.
16. Ir. A. Lahang : Soppeng District Food Crop Agriculture Service Chief.
17. Drs. A. Hafidz : Wajo District Food Crop Agriculture Service Chief.
18. Ir. Narwis : Bone District Food Crop Agriculture Service Chief.
19. Dr. Ir. Muslimin M. : Director, UNHAS' Center for Natural Resources & Living Environment Investigation & Development.
20. M. HS. : Staff, South Sulawesi Regional Office, Ministry of Agriculture.

資料一 4 INTERIM REPORT (調査団の中間報告書)

INTERIM REPORT
OF
JICA'S TECHNICAL GUIDANCE TEAM
FOR THE SOUTH SULAWEST
REGIONAL AGRICULTURE DEVELOPMENT PLANNING
(ATA-140) PROJECT

JUNE 26, 1981

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1. Introduction

Following the recommendations made by the Japanese Technical Guidance Team led by Dr. S. Kanatsu last year, the JICA's Technical Guidance Team led by Mr. K. Uesugi has made a review of the past one year's activities of the Regional Agriculture Development Planning/ATA-140 Project through hearings from the Project Team and officials concerned and through observations of the three pilot test project sites.

Consequently, the Team has reaffirmed the necessity of the prolongation of the Japanese cooperation by one more year as recommended by the former Team.

It is very grateful that the Project's executive bodies of both countries have officially agreed on the extension of the Record of Discussion and the Plan of Operation.

Based upon the above recognition, the Team has also made some technical comments and recommendations of the Project's activities for the coming one year as final stage of the Japanese cooperation to secure a successful handing-over of the Project to the Indonesian side.

2. Team Members and Its Schedule

1). Team Members are as follows:

ASSIGNMENT	NAME	PRESENT POSITION
Team Leader	Mr. Ken UESUGI	Head, Division of Technical Cooperation, Department of Agricultural Development Cooperation, JICA.
Citrus Improvement Planning	Mr. Isao IWAGAKI	Senior Researcher, Okitsu Branch, Fruit Tree Research Station, MAFF.
Grassland Improvement Planning	Mr. Koichi NAKASIMA	Research Coordinator, Agriculture, Forestry and Fisheries Research Council, MAFF
Forest Improvement	Dr. Takanobu FURUKOSHI	Head, Breeding Division, Kanto Forestry Breeding Institute, MAFF
Coordination	Mr. Shun-ichi TATEISHI	Staff, 1-st Training Division Training Affairs Department, JICA.

2). The Team's Schedule:

June 15 (Mon.) evening : Arrive at Jakarta (JL 711)
16 (Tue.) morning : Courtesy Call on the Planning Bureau
etc.
17 (Wed.) morning : Ditto
afternoon : Arrive at UP by GA 784 (16:10)
18 (Thu.) 8:00 : Courtesy call on Kanwil, BAPPEDA and
Food Crop Agriculture Service
10:00 : To the Citrus Pilot Test site in
Jeneponto
12:00 : Courtesy call on the Bupati of Jeneponto
12:30 : To Bantaeng
13:00 : Lunch
14:00 : Observation at the site
16:00 : Back to UP.
18:30 : Arrive at UP.
19 (Fri.) 8:00 : Courtesy Call on the Governor's Office
10:00 : To Enrekang - Desa Buntu Barana
20 (Sat.) Observation at the site and
21 (Sun.) the DAS Saddang Project Office
22 (Mon.) morning : Courtesy call on the Bupati of Enrekang
Return to UP
23 (Tue.) : Report making
24 (Wed.) morning : Meeting with the Project Team
25 (Thu.) morning : Back to Jakarta (9:00)
26 (Fri.) morning : Meeting with authorities concerned in
JKT
27 (Sat.) morning : Report to the Japanese Embassy, JICA
Office
evening : Return to Japan by JL 712

3. The Team's Technical Comments and Recommendations

3.1. Feasibility Study.

The first draft of Feasibility Study on the technology being developed through the three pilot tests has been made, with the assistance of Mr. T. Takama, short-term expert from JICA, in March this year.

In the coming year, although much difficulty is anticipated in getting precise data, more realistic project plan should be formulated at first, using improved technology to be developed by the Pilot Tests and then a feasibility study thereon be conducted. The Team recommends the Project Team to conduct Feasibility Study on the following projects, considering the necessity of farmers' participation in the development project.

1). Citrus Development:

- a. Existing orchard improvement project
- b. New orchard establishment project

2). Afforestation:

Afforestation project laid emphasis on fuel wood.

3). Grassland Improvement:

Mini-ranch Project.

These projects to be prepared cannot help being based on the assumption with some conditions, because the results of the Pilot Tests will be obtained after a couple of years. Therefore, the projects above will be a kind of model which can be actually implemented after a more detailed future study.

3.2. Transfer of Technology.

Through training in Japan and on-the-job training, the methodology of project formulation and planning technique has been transferred to Indonesian counterparts as scheduled.

Indonesian counterparts are requested to play a positive role in executing the project activities during the coming one year.

Japanese experts have to transfer every activities of the Pilot Test to Indonesian Counterparts intentionally.

3.3. Pilot Tests.

3.3.1. Citrus Improvement.

- 1). For the purpose of collecting Citrus varieties, seedlings are grown in the nursery plot. Some Ponkan and Tankan varieties, selected through the first Citrus Contest as the qualified mother trees for the future, are used as scion varieties. With emphasis on Tannin, rootstock trials are on the way. Pilot Test field planting was completed by April 1981. Periodical observation and cultural practices are being conducted.

Using a grower's orchard adjacent to the pilot test, ecological studies to collect information on Citrus culture in the area are also conducted.

- 2). Field trials in the pilot test with its function as model orchard can stimulate and encourage farmers in South Sulawesi for modern ways of Citrus cultivation. The Evaluation Team would like to recommend that the personnel in charge of the pilot test provide a program of cultural practices for the prevailing local orchard. Instructions on training and pruning of Citrus trees, fruit thinning, fertilizer application, disease and pest control, and irrigation as far as it is possible may help growers. Schematic replacement of damaged trees in the tropical condition where tree life is comparatively short should be taken into consideration.
- 3). Observation on the distribution of insect pests was conducted by Mr. Y. Sakagami, short-term expert on insect control. Citrus leaf miners, scale insects, *Diaphoria citri* and others were identified. Some effective chemicals that may be used for the major Citrus pest control were also suggested.

3.3.2. Grassland Improvement.

Selection of suitable pasture plant species, production of seed seedlings, evaluation of native grassland productivity and its fertilizer response, etc. were successfully conducted and grassland improvement is still under way by the use of proposed technology.

Work schedule of the Pilot Test is as follows:

a). Grassland improvement:

Further native grassland is to be improved with the proposed techniques, i.e. the combination of strip cultivation and legume tree afforestation. However, the soil condition is so unfavorable that it requires one more year to reach conclusion.

b). Expansion of forage propagation nurseries:

Forage propagation cuttage must be produced at the site where the paddock was formerly located and the soil is

supposed to be fertile enough. The counterpart is also going to cultivate the new species which he himself brought from Japan.

c). Evaluation of grazing capacity of improved grasslands:

After the establishment of the improved grasslands, grazing capacity must be evaluated by way of introducing cattle into the prepared rotational block.

d). Practical training in rotational grazing:

With the completion of paddocks and drinking facilities, the trail for rotational grazing is to be commenced. In order to attain an efficient cattle production, the present cattle head would better be divided into the two groups of the different types: that for reproduction and that for heifer.

More intensive cattle management is required: checking on each individual, curtailing sterile or aged ones, giving more attention to sanitation and medicine.

e). Conservation of critical areas:

Critical areas are widely found in the project site, and those areas should be protected by excluding cattle. The results obtained by the pilot test on afforestation are to be applied for soil conservation in the field of animal husbandry, too.

3.3.3. Afforestation.

1). Introduction:

Forestry has various functions; however, it takes quite a long time. Activities of this pilot test project are limited for 2 years, therefore, miscellaneous activities necessary for the forestry project are to be restricted to certain matters. The staff, both Japanese and Indonesian, would have to tackle with the constructions of nursery, forest road, training center and meteorological station. However, pilot test activities have already started and data collection is now undergoing steadily.

2). Progress of the past one year:

i). Nursery:

Nursery facilities, such as the nursery bed watering

system, shading net etc. were completed with the model infrastructure construction. The nursery has 12 nursery terraces, at an effective area of 2,400 m² among them; the nursery bed can produce about 50,000 seedlings, and it included a raising bed and an experimental one. Other features are the potting house, warehouse and the road. The seedlings planted out on the pilot test forest for this year were prepared from the temporary nursery bed.

ii). Pilot Test forest:

Having predicted the rainy season to start from December, according to hearing from people, planting out was conducted from December to June; however, it did not rain much in December and January; the survival ratio for the planted trees during the two months was accordingly low due to the scarce rainfall.

Species raised in the nursery, such as Giant Ipil-ipil, *Albizia falcata*, *Tectona grandis*, *Pinus cribea*, *P. merkusii*, *Duro zibethinus*, Cacao, Cinnamon, *Cassia siamea* and *Eucalyptus deglupta*, were planted out in the pilot test forest in accordance with the topographical features, i.e.: ridges, slopes (convex & concave) and critical area in order to study the growth rate, starting from the ridge top down to the riverside. Measurement of the height and growth of the planted trees was conducted twice and will be going on periodically.

iii). Meteorological survey:

In order to study meteorological characteristics in this region, meteorological observation was started. The daily rainfall and temperature have been recorded since February 1980. Furthermore, a new meteorological station was constructed at the pilot center area, and since February 1981 records have been kept concerning:

- * maximum & minimum thermometer;
- * self-registering thermo-hygrometer;
- * self-registering rain-gauge; and
- * rain-gauge totalizer.

3). Activities for another one year:

i). Fundamental survey:

Meteorological and ecological surveys should be conducted continuously. For the meteorological survey, a wind velocity and direction atmospheric pressure will be added.

A long-range observation system will be established.

ii). Nursery establishment:

Seedlings raised in 1980 have been planted out on the Pilot Test Forest. For this year, other obtainable seed seeds will be collected and raised from August this year and prepared for planting out in 1982. Materials for shading and potting will be improved and various tests such as fertilizer application on the base of the nursery technique will be conducted in order to get fundamental information from the viewpoint of technical matter in nursery management. The nursery will also serve as a field for training.

iii). Pilot test forest:

From the experience in last year's planting, and result results of 17 months' meteorological observation in this region, precipitation ranges around 1,500-2,000 mm. Judging from the monthly rainfall distribution, it is appropriate to start planting out in February and to end in June at the latest.

Accordingly, the second raising of seedlings will be started in August 1981 and planting out should be completed by June next year. After planting in the Pilot Test forest, fertilizing test and various surveys for pest and disease control will be conducted. Periodical measurement of the growth rate of planted trees and constant observations for damages by pests and diseases are especially required. These results become the basic data in determining the suitable tree species in this region.

iv). Other matters:

After the above-mentioned activities for one year, meteorological facilities, nursery equipped with water-

ing system and possible of raising 50,000 seedlings per year, a pilot test forest of 10 ha. and miscellaneous data reprovided and transferred to the Indonesian side. Establishment of a system is very important to continue these facilities and techniques semi-permanently.

Moreover, these facilities and data will contribute to the establishment of an agro-forestry system expected by local people in the future.

The Watershed Area idea is furthermore very excellent. This pilot test should be cooperated with the DAS Saddang Project.

The success of this pilot test after the expiry of the R/D depends on the Indonesian coordination such as concerning administrative measures, budget allocation, and the understanding of forestry.

4. Conclusions.

- 1). Judging from the progress of project activities, the Team concluded that the term of the Japanese cooperation should be extended by one more year, that is, from June 24, 1981 to June 23, 1982.
- 2). The important points to be fully considered during the final stage of Japanese cooperation are summarized as follows:
 - a). Feasibility study on more realistic project plan assuming farmers' participation should be conducted.
 - b). Through the above feasibility study and pilot test as well as trainings in Japan, transfer of technology on project formulation and planning techniques should be intensified to accomplish the aim of the project.
 - c). Three pilot tests should be implemented as has been fixed in the revised Plan of Operation to establish the technical foundation necessary for farmers training and for the formulation and implementation of regional agriculture development project in the future.
 - d). The Team strongly hopes for the continuation of the Pilot Tests by the Indonesian side alone after the expiry of the Japanese cooperation, and wishes Indonesian authorities concerned to take the necessary measures.

資料一 5 供与機材リスト

昭和54年度

項	品名および仕様	数量	単価	金額
A	エンレカン用(林地改良・草地改良)		円	円
	1. アングルドーザー 重量(11.88 ton), 出力106 ps 以上 全長4,555%×全巾2,340×高2,860程度 発坂能力30°程度, パワーシフト(トルクフロー) アタッチメント; ヘッドガード トウイングウインチ 固定式マルチリッパ スペアパーツ 本体価格の15% モデル 小松D53A	1		21,276,600
	2. 小型トラック 2 t 以上, 右ハンドル, 3人乗り ディーゼルエンジン, スペアパーツ 本体価格15% (モデル:日産キャブオール)	1		1,400,000
	3. フォークリフト 最大荷重0.8 t 以上, 最大揚高2.5 m 以上 10.5 ps 以上, フォーク長さ770%程度 車輻重量1,360 kg 程度 スペアパーツ 本体価格10% (モデル:小松FGO8)	1		950,000
	4. トラクター(畑地用) 28 ps 以上ディーゼル 4輪駆動 スペアパーツ 本体価格10% (モデル:クボタ L295) アタッチメント	1		1,782,000
	① カルチベーター	1		2,000,000
	② デスクブラウ MDP261C-G 26×1			
	③ リヤグレーダー			
	④ ダンプトレーラー HD10, 1 t			
	⑤ ブロードキャスター 150 ℓ, MBC/50A			
	⑥ ボトムブラウ			

項	品名および仕様	数量	単価	金額
	⑦ デスクハロウ 16×16 MOH1616B		円	円
5.	スプレイヤー 液体容量 9.5ℓ 背負式 220×235×715mm ステンレス製 (モデル:有光 SA-8S)	2	20,000	40,000
6.	ブッシュカッター 重量 6.5kg, ガソリンエンジン 30.5cc 燃料タンク 0.7ℓ 防振ハンドル付, 電子点火装置付 (モデル:富士ロビン NBO3-2D)	4	41,000	82,000
7.	チェーンソー 空冷ロータリー・エンジン 本体乾燥重量 7.4kg スペアパーツ 10% (モデル:丸水製作所 MC-350AVE)	2	70,000	140,000
8.	灌水装置 噴射パイプ 50φ×4,000mm アメス付 60本 (AP-15) 立上り水栓 50φ 4コ アメスエルボ (ABC-L) 6本 アメスプラグ (ABC-P) 6本 パイプフット (PF) 66コ ホースセット 6本立用 (ES-B) 1セット 図面あり (モデル:エイワスプリンクラー)	1式		800,000
9.	ベルトコンベアー 10m×0.35m, トラフ角 20°以上 ガソリンエンジン 3~4ps, クラッチ型, スペアパーツ 本体価格 10% (モデル:トヨーコンベア SA-E)	1		350,000
10.	熱風乾燥機 熱風循環式 2.4kw, 最高 200℃ ステンレス式 110V 単相 (モデル:いすゞ SFT-16S)	1		250,000
11.	自記雨量計 転倒ます型, 受水φ 20cm	1		400,000

項	品名および仕様	数量	単価 円	金額 円
	最小目盛1%以下 雨量寸法200mm/mm, 電源DC12V程度 1ヶ月用。気象庁検定付 付属品(自記紙2年分, ケーブル150m) (モデル: いすゞ3-1570)			
12.	自記温度湿度計 バイメタル式 -20℃~+40℃±1℃ 最少目盛1℃(温度), 1%(湿度) 幹電池式(1ヵ月巻) 気象庁検定付 付属品: 自記紙2年分) (モデル: 木屋OT-114)	1		750,000
13.	キヤリバー(輪尺) 60cm ケース付 45cm ケース付 (八島農機研究所)	2 2	15,000 12,000	30,000 24,000
14.	測高器 木高測定用 誤差±1% カールライズ(Blume Leiss)社 (日本林業技術協会)	2	60,000	120,000
15.	天秤 上皿桿秤(無鍾式) ① 秤量10kg 感量5g 1台 (モデル: 木屋1041-G) ② 秤量5kg 感量2g 1台 (モデル: 木屋1041-F) ③ 秤量500g 感量0.2g 1台 (モデル: 木屋1041-C) ④ 秤量1kg 感量0.5g 1台 (モデル: 木屋1041-D)	1式		200,000
16.	シェイドネット 寒冷紗 支柱50本付 (木屋)	5	26,000	130,000

項	品名および仕様	数量	単価	金額
	17-1. ズィーフィーポット 径 6cm, 高さ 6cm × 3,000 コ 径 8cm, 高さ 8cm × 200 コ 径 10cm, 高さ 8cm × 200 コ (木屋)	1式	円	30,000 円
	17-2. 自己風速計 1カ月巻, 16方位, 2~40mm/S 乾電池式, 気象庁検定付 用紙 2年分 (竹田理化 3429)	1		900,000
	18. 発電機 100V/110V 1.5KVA, ガソリンエンジン, スペアパーツ 本体価格 10% (モデル: デンヨー GR5S)	2	530,000	1,060,000
	19. 発電機 100V/110V, 7.5KVA ディーゼルエンジン スペアパーツ 10% (モデル: デンヨー DBF7.5Y)			
	20. 一輪車 最大荷重 130kg 容量 3才 (村松製作所)	5	7,000	35,000
	21. スコップ 差込型, 丸型, #2, Y柄	10	1,000	10,000
	22. ハンドオーガー S151 径 10cm (丸東製作所)	2	10,000	20,000
	23. 高枝切鋏 ヒモ付き (三条製作所)	1		5,000
	24. 移植むて 長さ 20cm, 柄つき (三条製作所)	5	400	2,000
	25. 剪定鋏 (ハサミ) 175H (三条製作所)	2	1,500	3,000
	200H //	2	2,000	4,000

項	品名および仕様	数量	単価	金額
26.	ナタ 刃渡 30 cm	5	6,000 円	30,000 円
27.	ジョロ 容量 5 ℓ (三条製作所)	3	2,000	6,000
28.	工具一式 トネ印サービスキット C-1	1式		8,000
29.	森林肥料 N = 10, P = 6, K = 5 30 kg N = 8, P = 9, K = 5 30 kg (日本化成肥料協会)	1		4,000
	農薬 タチガレン粉剤 24 kg (農薬工業会)	1		25,000
30.	顕微鏡及び撮影装置 照明装置付 (110V), 3眼, 対物レンズ: ×4-×100 5個 接眼レンズ (HEPBIWF 10X) 1対 標準付属品及び収納箱付 写真用接眼レンズ (FK 3.3X) 1コ カバガラス, スライドガラス 各 300枚 (モデル: オリンパス, BHB-413SP/PM-10-M/EMM-7)	1式		530,000
31.	バイク 180 cc 20 ps 以上 スペアパーツ 本体価格 10% (モデル: ホンダ CB-185T)	2	390,000	780,000
32.	脱穀機 機種用, 400W TS型 (木屋)	1		250,000
33.	唐箕 坪刈用, 200W B-3BM型 (木屋)	1		280,000
34.	肥料 化成肥料, 20 kg 13-13-13, 2 ton 100袋	1式		160,000
35.	除草剤 デブレート粒剤 S 50% 5 kg入 (農薬工業会)	10	1,000	16,000

項	品名および仕様	数量	単価	金額
36.	ものさし 竹製1m	3	2,000	6,000
37.	くわ 平ぐわ	5	6,000	30,000
38.	かま 185cm 両刃	5	4,000	20,000
39.	牛銜機 可搬式 FK30-3 (富士平工業)	1		310,000
40.	保足棒 ときわ式移動保足棒補助セット (富士平工業)	1		160,000
41.	牧柵支柱 VA4段型175cm 埋込深50cm 100本(1ha分) 牧柵支柱 160cm 40本(1ha分) 打込み機 1コ(東伸製鋼)	1式		200,000
42.	ワンタッチ扉(東伸製鋼)	8	20,000	160,000
43.	プロテクトケージ 2.4m×2.4m×1.5m(h), 鉄製, 金鋼張り 組立式 (東伸製鋼)	20	139,150	2,783,000
44.	散粒機 背負動力兼機(散粒, 散粉, ミスト兼用) タンク容量13ℓ, ガソリンエンジン 2.8ps程度, 10.4kg (有光MD-40DX)	1		50,000
45.	保管庫 両開き, 引出付 180×88×38cm (モデル: ライオンNo.362)	2	32,000	64,000
46.	耳標用具セット 短冊型耳標用, 木箱入り, FN275 (富士平)	1		50,000
47.	耳標 ロンスタータッグ, 牛用 FN290-1, 500型, 白色, No.1-200 (富士平)	4包	12,000	48,000

項	品名および仕様	数量	単価	金額
	48. 組立ポットハウス プレハブ, 10m×10m, 壁面なし (フォレストエンジニアリング)	1棟	円	円 1,500,000
B	ジェネボンド(かんきつ)			
	1. 不整地走行車 6輪駆動, 500kg積載 薬剤散布用, 200ℓ, 収かく, 施肥, ダンプタイプ スペアパーツ本体価格の20% (モデル: 三菱重工DG50)	1台		1,500,000
	2. 小型トラック 2t以上, 右ハンドル, 3人乗り, ディーゼルエンジン, スペアパーツ本体価格15%(別添11参照) (モデル: 日産キャブオール)	1台		1,400,000
	3. バイク 1,800cc, 20ps以上 スペアパーツ本体価格10% (モデル: ホンダCB-185T)	1台		390,000
	4. 動力噴霧機 圧力21-35kg/cm ² , 吐水量40~50ℓ/min スペアパーツ本体価格の10% (モデル: 有光CS-51MK)	1台		340,000
	5. 背負動力噴霧機 タンク容量20ℓ (有光工業SD-5KX)	1台		54,000
	6. タンク プラスチック製200ℓ用, 60×81×48cmふた付 (竹田理化)	2	20,000	40,000
	7. ブッシュカッター 重量6.5kg, ガソリンエンジン30.5cc 燃料タンク0.7ℓ, 防振ハンドル付, 電子点火装置付 (モデル: 富士ロビンNB03-2D)	2台	40,000	80,000
	8. 動力耕耘機 10ps以上 ディーゼル スペアパーツ本体価格10%	1式		620,000

項	品名および仕様	数量	単価 円	金額 円
	アタッチメント： ロータリー装置 プラウ リッジャー、トレーラー（0.5t） （モデル：久保田鉄工K120）			
9.	チェーンソー 空冷ロータリーエンジン 本体乾燥重量7.4kg スペアパーツ本体価格10% （モデル：丸山製作所MC-350AVE）	1		61,000
10.	フラッシュライト 防水式 単1×4 電池20コと予備球1コ付（日立W-1402）	2	5,000	10,000
11.	スコップ 剣先、丸型	各10	2,000	20,000
12.	ツルハシ 両先、柄つき	5	3,000	15,000
13.	備中鍬 柄つき	5	6,000	30,000
14.	平鍬 柄つき	5	6,000	30,000
15.	フォーク 5本ツメ	5	1,400	7,000
16.	カケヤ	3	2,000	6,000
17.	レーキ ガーデンレーキ	5	1,000	5,000
18.	脚立 アルミニウム製、2.1m×4.3m、0.9m×1.8m	各5	33,000	165,000
19.	一輪車	5	7,000	35,000
20.	巻尺 50m（スチール製）	2	10,000	20,000
21.	張線器	2	21,000	42,000
22.	灌水ホース φ50mm、25m、ゴム製	5	38,000	190,000
23.	灌水ホース 塩化ビニール、φ50mm、50m	5	15,000	75,000

項	品名および仕様	数量	単価	金額
24.	ホース巻取器 φ50mm 50m用	5	34,000	170,000
25.	ジョロ 園芸用4ℓ(真ちゅう製)	5	5,800	29,000
26.	ハスロ φ50mmホース用	5	600	3,000
27.	エバフロー灌水チューブ 点滴型, 散水型50m(三井石油化学工業)	各10	3,000	30,000
28.	ポリバケツ 10ℓ, 13ℓ, 20ℓ	各10	4,000	40,000
29.	剪定鋸 (三条製作所)	10	2,000	20,000
30.	剪定鋏 (三条製作所)	10	2,500	25,000
31.	芽接ぎナイフ ゾーリングン型	10	600	6,000
32.	切出しナイフ	10	4,000	40,000
33.	接ぎ木テープ 塩化ビニール, 幅2cm, 100m巻	100	300	30,000
34.	接ぎ臘 150g入り	10	800	8,000
35.	移植ごて ステンレス製	10	400	4,000
36.	砥石 荒砥, 中砥, 仕上げ砥(大)	3	10,000	30,000
37.	ナタ 刃渡30cm	3	5,000	15,000
38.	草刈鎌	20	2,500	50,000
39.	鎌用砥石 荒砥, 中砥	各5	240	2,400
40.	採果鋏	10	1,200	12,000
41.	寒冷紗 黒色, 1.8m×100m, №600	10	25,000	250,000
42.	ポリ袋 厚さ0.03mm, 各種サイズ 大(400×600), 中(200×350), 小(100×140)各100枚入り, 各10袋	1式		40,000

項	品名および仕様	数量	単価	金額
43.	発電機 100V/110V, 1.5KVA ガソリンエンジン, スペアパーツ本体価格10% (別添16参照) (モデル:デンヨーGR5S)	1	円	530,000 円
44.	発電機 100V/110V, 7.5KVA, ディーゼルエンジン スペアパーツ本体価格10% (モデル:デンヨーDBF7.5Y)	1		700,000
45.	電気恒温ふ卵器 室温60℃まで 内寸120×100×60cm(いすゞFR-16BS)	1		600,000
46.	ジュースー 日立VA-2100G	3	13,000	39,000
47.	オートクレーブ トミー精工SD-30N	1		450,000
48.	上皿秤 ① 秤量10kg, 感量5g(モデル:木屋1041G) 2台 ② 秤量1kg, 感量0.5g(モデル:木屋1041D) 2台 木屋1041-G, D	1式		184,000
49.	自動上皿天秤 2kg №1042-A, 2台, 10kg №1042-D, 2台	1式		20,000
50.	台秤 50kg №1043-B, 1台, 100kg №1043-C, 1台 木屋	1式		69,000
51.	顕微鏡及び撮影装置 照明装置付(100V), 3眼 対物レンズ:×4-×100, 5個 接眼レンズ(HEPB1WF10X)1対, 標準付属品及び収納箱付 写真用接眼レンズ(FK3.3X)1コ カバガラス, スライドガラス各300枚 (モデル:オリンパスBHB-413SP/PM- 10-M/EMM-7)	1式		530,000
52.	キャリパー(輪尺)	1式		45,000

項	品名および仕様	数量	単価	金額
	ステンレス, 20cm, 15cm 各3 八島農機		円	円
53.	糖度計 アタゴ HSR-50	2	25,000	50,000
54.	遠心分離機 3本柱, 110V, 3000 rpm (国産遠心器 H-100F)	1		400,000
55.	標準比重計 30cm, 19本組 (木屋)	1		50,000
56.	ガラス器具 ビーカー(200, 500ml), シャーレ(外径150 mm×36mm), 三角フラスコ(2ℓ, 0.5ℓ), デシケ ータ(上口, 中板18cm), メスピペット(1cc), メスシリンダー(500ml) 計8種, 各1打 (竹田理化)	1式		35,000
57.	濾紙 定性用No.2, 9cm 計500枚 (竹田理化)	1式		10,000
58.	工具 トネ印サービスキットC-1	1式		80,000
59.	灌水装置 接続布ホース 50φ×6m 2本 TS-30Nスプリンクラー 20コ 立上り管支柱 0.75 inch×1.5m, 20組 立上り用アルミパイプ 50φ×4m, 20本 中間用 " " 40本 " " 50φ×3.5m 4本 メクラ 50φ 4コ 曲管 50φ×90° 4コ 丁字管 50φ×50φ 2コ 回転式アングルバルブ 50φ×90° 10コ バルブ用ソケット 50φ, 10コ (エイワスプリンクラー)	1式		1,000,000
60.	謄写輪転機 手動, 印刷面積 246×350 % インキ2打, 原紙500枚 (モデル:ライオンSH-500)	1台		180,000

項	品名および仕様	数量	単価	金額
	61. 農 薬		円	円
	ジネブ水和剤 20 kg			20,000
	マンネブ水和剤 15 ㍊			28,000
	ストレプトマイシン水和剤 5 ㍊			15,000
	ベノミル水和剤 6 ㍊			16,000
	銅 剤 20 ㍊			38,000
	銅水和剤 20 ㍊			42,000
	ダイホルタン水和剤 20 ㍊			58,000
	ニコチン水和剤 10 ㍊			52,000
	ジメトエート5%粒剤 24 kg			34,000
	MEP 40%乳剤 20 ㍊			40,000
	ゲルセン乳剤 10 ㍊			20,000
	イソキサチオン水和剤 20 kg			32,000
	カルタップ水和剤 10 ㍊			22,000
	CPCBS 水和剤 30 ㍊			42,000
	NAC 50% 水和剤 20 ㍊			30,000
	アセフエート粒剤 24 ㍊			34,000
	(除草剤)			
	DCMU 水和剤 6 kg			21,000
	プロマシル水和剤 6 ㍊			32,000
	パラコート乳剤 10 ㍊			40,000
	D CPA. NAC 50 ㍊			50,000
	デゾレート粒剤 S 50 kg			35,000
	(農薬工業会)			
C	ウジュンパンダン用 車輛用タイヤ	1式		824,000
	(1) トヨタハイエース RH30RB-JRG 1台分 4本			
	(2) トヨタランドクルーザー FJ55RV-KC 4台分 16本			
	(3) トヨタランドクルーザー FJ40RV-UC 2台分 8本			
	(4) マイクロバス, イスズ BLD-24(ダンロップ) 2台分 8本			
	(5) ピックアップトラック, イスズ H-KB20BD			

項	品名および仕様	数量	単価	金額
	(ダンロップ)1台分 4本		円	円
			Total :	53,400,000

昭和55年度

項	品名および仕様	数量	単価	金額
A	ENREKANG用		円	円
	1. 照度計(ポケット照度計) ANA-500 (東京光電)	5	18,700	93,500
	2. 高度計 2000-11 (トーメン) 0~5000m	5	38,300	191,500
	3. 測高計 (ブルーメライズ) 樹高測定用 誤差±1%	5	76,000	380,000
	4. トランシット (東京光学) AG-20P, 収納箱, 三脚付	2	306,000	612,000
	5. 自動レベル (東京光学) AT-M3, 収納箱, 三脚付	2	143,000	286,000
	6. 平板測量器 (玉屋) 大測板(50×60cm), 三脚付 平板移動器, アリダードセット	2	22,500	45,000
	7. キルビメーター (玉屋)	5	3,500	17,500
	8. 箱尺 5m //	8	8,000	64,000
	9. メートル縄 100m //	3	6,000	18,000
	10. フース型最高最低温度計(大田計器) №61(無検)	5	32,000	160,000
	11. 水銀柱気圧計 (大田計器) フォレタン型 管径10mm (無検)	2	157,000	314,000
	12. 直示天秤 (長計量器) CT3-200D	1		502,000
	13. 上皿手動天秤 (木屋製作所) 1040-D	1		41,000
	14. 上皿直示天秤 (長計量器) PT3-5000D	1		558,000
	15. 米麦粉砕機 (木屋製作所) 特D型	1		186,000

項	品名および仕様	数量	単価	金額
	16. デジタル温度計 (木屋製作所) HLB-50	1	円	円 96,000
	17. 簡易水質検査用パックセット 9種, 全セット	3	34,500	103,000
	18. 航空写真実体鏡 (東京光学) TOPCON 3形	2	145,000	290,000
	19. 航空写真デンプリット (玉屋) 傾斜度, 面積	3	1,500	4,500
	20. 土壌酸度測定器 (竹村電機) DM-5	1		7,000
	21. 植物養分検定器 (木屋製作所) № 382	1		25,000
	22. 河川水質チェッカー (東亜電波) WQC-1A	1		109,000
	23. 教育用 16% フィルム "日本の稲作" 45分	1		170,000
	24. タイプライター (オリベッティ) MS-98-18 I テープ1打付	3	183,000	549,000
	25. 書類戸棚 (ライオン) 635・630 (176×176×40cm)	5	78,000	390,000
	26. 謄写輪転機 (ライオン) SH-500 (手動式), インク12本, 原紙タイプ用200枚, ボールペン用100 枚付	1		178,000
	27. 計算機 (サンヨー) CX-0105A, 単三乾電池25ヶ付	2	6,500	13,000
	28. ファイリングキャビネット (ライオン) B4-4 (140×45.5×62cm)	5	40,600	203,000
	29. 黒板 (ライオン) SR-01 (180×90cm)	2	56,000	112,000
	30. ポケットショッカー (富士平工業) FN96・97 ホルダー付	3	10,000	30,000
B	JENEPONTO用			
	1. 人力用小型選果機 (白柳選果機) 手廻し式, 階級(大きさ)選別用	2	131,000	262,000

項	品名および仕様	数量	単価	金額
2.	人力用選別台 (白柳選果機) 品質選別用	2	円 25,000	円 50,000
3.	簡易網室 (シマノ工業) (H)190×(D)180×(W)180cm ビニールパイプサラシ網, 屋根付	4	99,000	396,000
4.	昆虫飼育箱 (鳥津理化) W型 22-254	5	8,200	41,000
5.	昆虫飼育ビン // 5ヶ組 22-255	5	12,200	61,000
6.	解剖器 // 教師用 15点 22-002	2	8,000	16,000
7.	双眼実体顕微鏡 // VGU-S型 114-790	1		96,000
8.	微生物実験用培養セット // ED-20型 145-260	1		97,000
9.	簡易ミクロトーム // 22-214	1		21,000
10.	ニワトコ芯(ピス) // 10本束 22-217	10	1,000	10,000
11.	純水製造装置 // E-3 電気蒸留式 111-080	1		126,000
12.	顕微鏡 // SK-1 114-270	2	47,000	94,000
13.	顕微鏡修理用工具セット // 157-110	1		36,000
14.	土壌植物栄養診断器 (木屋製作所) 柳田式 No.387	2	74,000	148,000
15.	果汁酸度計 // FS-2形 No.153 (同上用備品)	1		149,000
	(1) ビーカー 50			
	(2) 定注ポンプ 5			
	(3) 苛性ソーダ 500cc 2			
	(4) フェノールフタレイン 25cc 4			
16.	殺菌濾過浄水器 (田辺商工) EP-10型 河川水用	1		220,000

項	品名および仕様	数量	単価	金額
	活性炭, EPフロック, 濾過マット付		円	円
17.	数取器 4桁	10	1,050	10,500
18.	タイプライター (オリベッティ) MS-98-18 I テープ1打付	3	183,000	549,000
19.	計算機 (サンヨー) CX-0105 A, 単三乾電池 25ヶ付	2	6,500	13,000
20.	書類戸棚 (ライオン) 635・630 (176×176×40cm)	5	78,000	390,000
21.	ファイリングキャビネット (ライオン) B4-4 (140×45.5×62cm)	5	40,600	203,000
22.	謄写輪転機 (ライオン) SH-500 (手動式), インク12本, 原紙タイプ用200枚, ボールペン用100枚付	1		178,000
23.	黒板 (ライオン) SR-01 (180×90cm)	2	56,000	112,000
			Total :	9,027,000

昭和56年度

項	品名および仕様	数量	単価	金額
J	JENEPONTO向		円	円
1.	自記雨量計 1430-C (木屋製作所) コード50m付, 用紙, インクペン1年分付	1式		128,000
2.	自記温度湿度計 1401-A (木屋製作所) 用紙, インクペン1年分付	1式		76,000
3.	土壌水分計 (J-3型) ♪ 346-B	1台		77,000
4.	土壌湿度測定器 (DM-6型) ♪ 362-D	1台		3,000
5.	土壌酸度測定器 (DM-5型) ♪ 362-B	1台		7,900
6.	ブッシュカッター用替刃 (機アキ) ロビンNB03型丸刃 (NB13-847A)	4枚	1,000	4,000

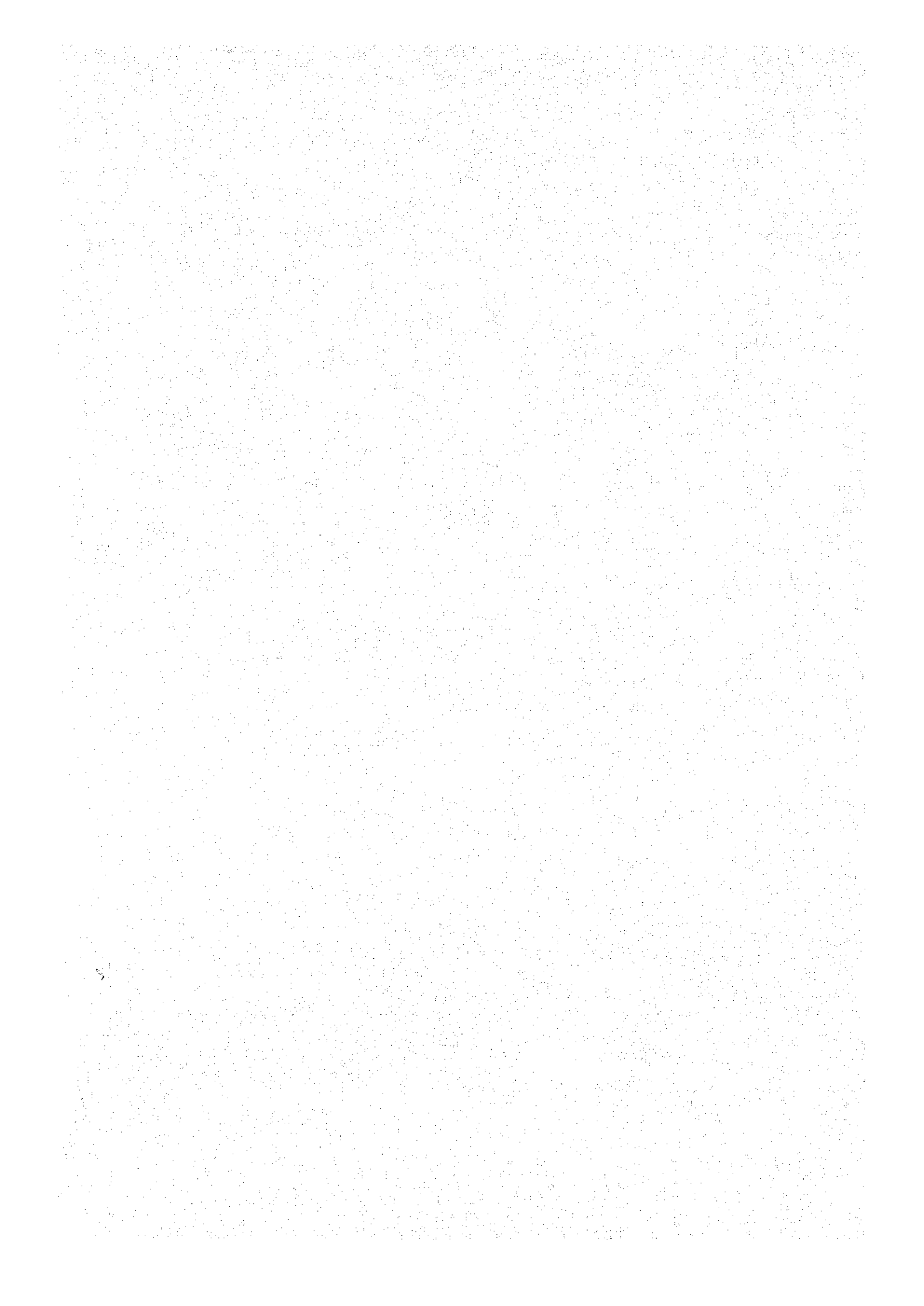
項	品名および仕様	数量	単価	金額
	ENREKANG向		円	円
E	1. 自記水位計 1470 (木屋製作所) 用紙, インクペン1年分付	1式		66,000
	2. 牛人口授精器(A-1型) ♪ 830	1台		124,000
	3. 土色判定皿 ♪ 磁製, 白色のみ 10区切	1ヶ		1,000
	4. 標準土色帖 309-B ♪	1ヶ		13,500
	5. 土壌硬度計 351 ♪	1ヶ		55,000
	6. 手持数取器 1260 ♪	3ヶ	1,400	4,200
	7. クリノメーター 1515-C ♪	1ヶ		6,000
	8. テンションメーター(寺田式) ♪ 345(S-1)	3ヶ	13,500	40,500
	♪(S-2)	3ヶ	16,900	50,700
	9. ミクロトーム MM-25(島津理化器械) ミノット式	1台		185,000
	10. Bインドール酢酸カリウム(木屋製作所) 化学用5g	1ヶ		8,600
	11. ジフィーポット ♪ φ10cm 林業用	5000ヶ	24	120,000
	12. ブッシュカッター (株アキ) ロビンNB03型 ともえ刃(8枚刃) 6枚付 目とぎヤスリ 6本付	1式		71,000
	13. フィルム(16mm) 「牛の栄養と消化」 (農文協)	1巻		60,000
	「草とともに生きる」 ♪	1ヶ		100,000
	「森林は生きている」の第一部 (東映)	1ヶ		142,500
	「森のおりたち」			
	14. スライド 「畜産シリーズ」I~Ⅷ (農文協)	1式		40,000
	「農業機械シリーズ」I~V ♪	1ヶ		40,000
	UJUNG PANDANG			
U	1. レターファイル(40枚入) (徳河文具) B4判, S型 黄色	2箱	6,100	12,200

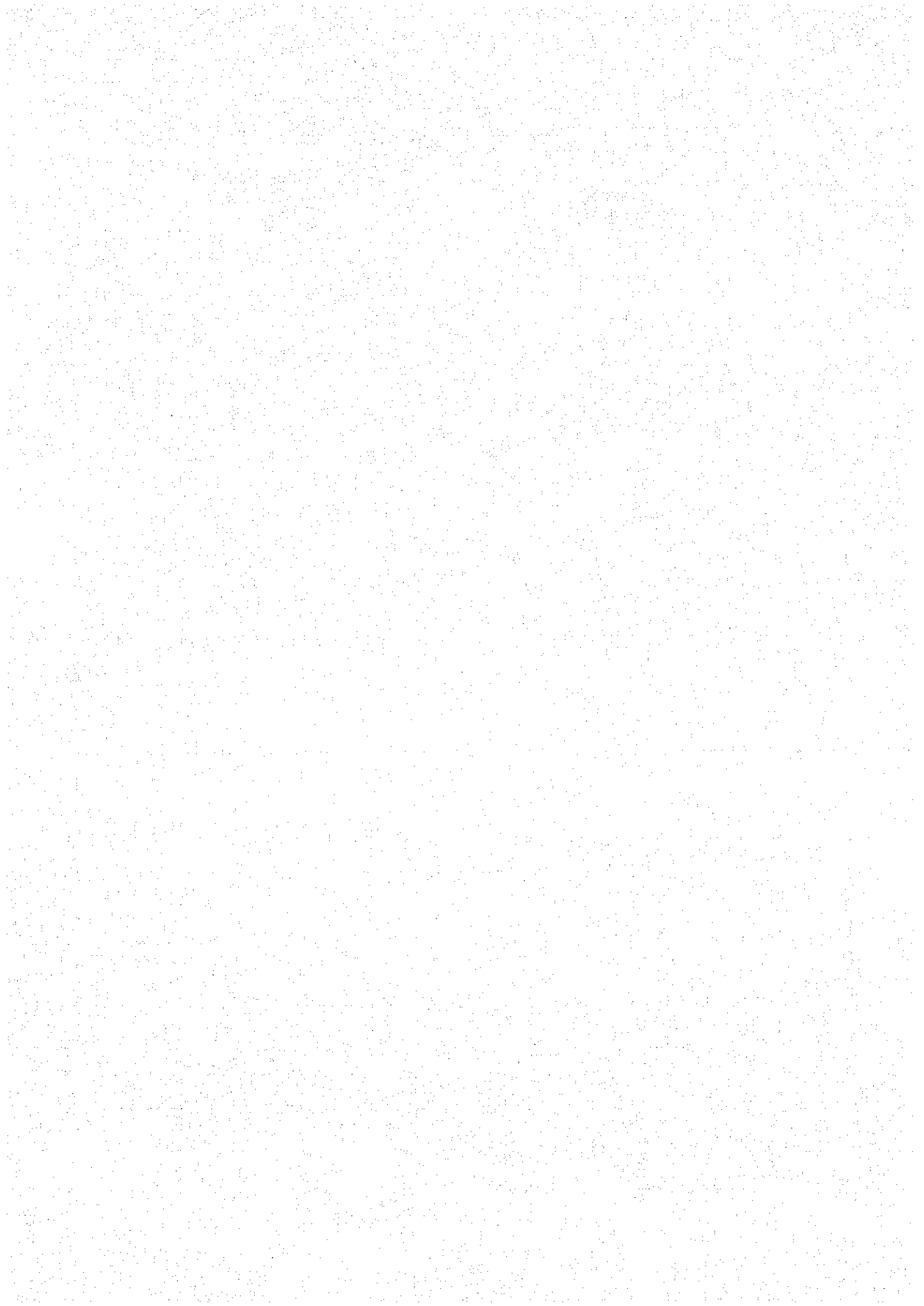
項	品名および仕様	数量	単価	金額
			円	円
2.	ステーブラー (徳河文具)			
	N03-U 同針1台に付5箱	6台	3,400	20,400
	N-10 同針1台に付15箱	2々	900	1,800
3.	パンチ 〃	10々	820	8,200
	No.11			
4.	ドリルパンチ 〃	4々	5,700	22,800
	30-414			
5.	クリップ 〃			
	No.200 (10ヶ入)	10箱	560	5,600
	No.155 (〃)	10々	280	2,800
	No.111 (〃)	10々	240	2,400
6.	裁断器 〃	4台	8,800	35,200
	No.210			
7.	謄写輪転機 〃	2式	300,000	600,000
	SH-500 (手動式)			
	インク4打, 原紙タイプ用1000枚,			
	原紙ボールペン用500枚付			
8.	計算器 (徳河文具)	3台	11,300	33,900
	カシオ fx-110			
			Total :	2,170,000

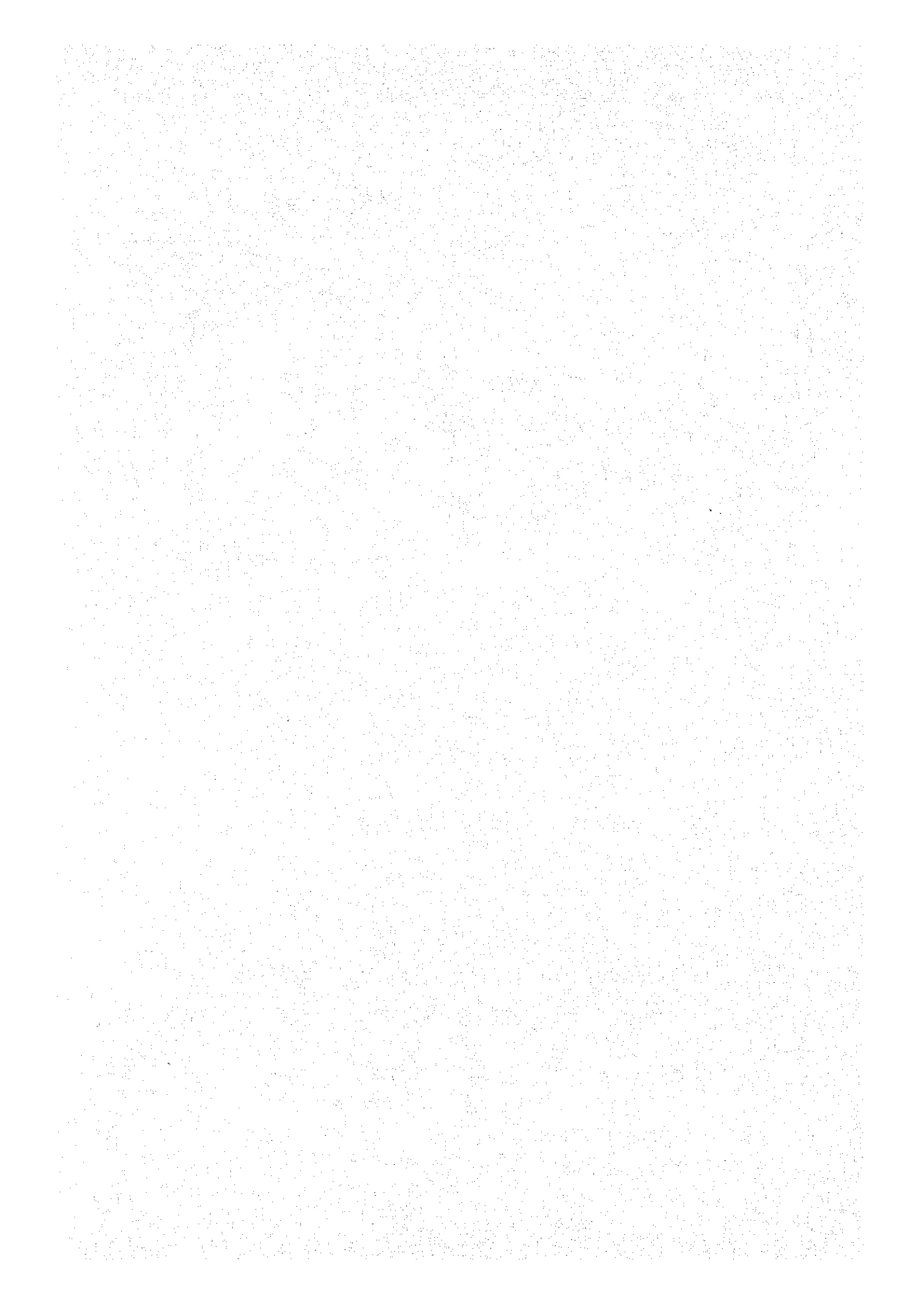
現地調達機材

		数量	単価 (千ルピー)	金額 (千ルピー)
昭和54年度	石油冷蔵庫	2	525	1,050
55年度	ステーションワゴン	2	5,813	11,626
	ミニバス	1	4,900	4,900
	タンクローリー	1	7,125	7,125
56年度	コピー機(ジャカルタ用)	1	1,733	1,733

26,534







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