

| | |
|---------|---|
| Sumut: | Podosolik (48%), Latosol (14%) |
| Sulsel: | Alluvial (28%), Latosol (22%), Podosolik(17%), Mediteran (15%) |
| NTB: | Regosol (48%), Alluvial (22%), Mediteran (13%), Grumosol (11%) |

According to the inventory survey, soils at most irrigation areas are suitable or very suitable for paddy and secondary crops cultivation. Water quality at the almost all areas is good for irrigation. Most irrigation areas are plain (less than 5 % gradient) or have mild slope (5 - 10 % gradient) (refer to Fig. V-5). In conclusion, it is seemed that soils and other physical conditions at the areas are not serious constraints for the agricultural development.

2.3 Soil in Representative Schemes

The soils have widely different features by province, and also by schemes. For the representative schemes, soil profile survey and laboratory analyses were carried out by the local consultants under supervision of the Team member during Phase II Field Survey. The test pits for soil profile survey and soil sampling are dug at 1 or 2 typical site(s) in each scheme depend on gross area and topographic condition. The soil samples were collected as top soil of 0 - 15 cm for all sites and sub soil of 15 - 45 cm for some sites. The location of soil pits and soil sample numbering are shown in Table V-4. Soil morphology of profiles is described in a series Table V-5 by soil test pit. The results of soil analyses in laboratory are summarized in Table V-6 on soil texture, pH, EC and organic matter, Table V-7 on exchangeable cation, cation exchange capacity (CEC) and available phosphate, and Table V-8 on soluble cation and anion.

To evaluate soil fertility, the criteria are prepared by Research Institute of Soil and Agro-climate, as shown in Table V-9. The evaluation of soil chemical characteristics of the representative schemes is shown in Table V-10.

3. LAND USE

3.1 Provincial Overview of Land Use

General land use is as shown in Fig. V-6, V-7 and V-8 by province. Feature of land use in wet land (wet paddy field) and dry land (used land except wet paddy field) is described below, based on statistical data in 1989. Total area of wet land and dry land and share of them in whole provincial area are as follows.

| | Wet Land | Dry Land | Total Area |
|---------|-----------------|-------------------|------------------------|
| Sumut: | 5,418 (7.6%) | 35,701 (49.8%) | 71,680 km ² |
| Sulsel: | 5,893 (9.4%) | 26,849 (43.0%) | 62,482 km ² |
| NTB: | 1,972 (9.8%) | 7,150 (35.5%) | 20,153 km ² |

First, wet land, which has 8 to 10 % share in each province, is divided by condition of irrigation and planting times of paddy per annum. Table V-11 and Fig. V-9 show this classification by Kabupaten and province, and following facts.

The ratio of irrigated paddy field in total wet paddy field is 77 % in West Nusa Tenggara province, while about 50 % in other 2 provinces.

As for technical level of irrigation, North Sumatra province has higher ratio of non technical level irrigated paddy field in total wet paddy field than other 2 provinces.

As for planting times of paddy per annum, the ratio of wet paddy field planted twice or more times is about 40 to 45 % in total wet paddy field in all 3 provinces. However, concerning additionally technical level of irrigation, there are differences in planting times of paddy by province. In West Nusa Tenggara province planting times are generally limited to be only once in non irrigated paddy field. On the other hand, in North Sumatra province double cropping of paddy is possible in more than 20 % of rainfed paddy field without irrigation.

The above features of land use in wet paddy field come mainly from amount and pattern of rainfall. North Sumatra province has a large amount of annual rainfall and some rainfall even in the dry season, and South Sulawesi province also has the long rainy season.

On the contrary, West Nusa Tenggara has a relatively small amount of annual rainfall and the long dry season. Therefore, great efforts toward irrigation development have been made in West Nusa Tenggara compared with other 2 provinces.

Here, 'non technical irrigation' means 'village irrigation' in this project. The ratio of this in total wet paddy field is about 20 % in West Nusa Tenggara to 30 % in North Sumatra. In the non technical irrigation paddy field, paddy is planted twice or more times a year in less than 40 % in West Nusa Tenggara, 50 to 60 % in the other provinces. Generally, the higher technical level on irrigation is, the higher a ratio of multi cropping of paddy is.

Next, land use of dry land is described below (refer to Table V-12 and Fig. V-10). The area categorized as garden / dry field is mostly used for food crops production, and ratio of it in total dry land is 14 % in North Sumatra and 22 % in other 2 provinces. From the view point of agricultural land, share of estate land represents feature of land use in dry land. The ratio of estate land in total dry land is 36 % in North Sumatra, 13 % in South Sulawesi, and only 3 % in West Nusa Tenggara. In North Sumatra province, there are many large scale estate farms even in plain, and great efforts toward estate crop production have been made historically. In South Sulawesi province, land use for land utilization for estate is pushed on with in the central area with relative high elevation. On the contrary, in West Nusa Tenggara estate land is very limited due to climatic condition and so on.

3.2 Land Use in the Project

Present and future land use areas on each scheme area are studied in a part of the inventory survey. At the same time, present and future planted area of crops on the wetland and dryland are surveyed. The results of land use survey are shown in Table V-13. In the land development schemes the irrigated paddy field expands widely. And in the village irrigation schemes some portion of rainfed paddy field, dryland, plantation is transformed into irrigated paddy field (refer to Table V-13).

3.3 Land Use in Representative Schemes

Land use maps on all representative schemes were prepared by the local consultants under supervision of the Team member during Phase II Field Survey. The mapping areas for present land use were

decided to include gross scheme area and surrounding area for future extension planning. Future land use is planned on the basis of present land use, water availability, irrigation facilities arrangement and so on. As a result, future extension area of irrigated paddy field is added on the present land use map as bold line. A series of the complete land use map is attached in Drawings of Volume III. The area distributions of present and future land use by scheme are as shown in Table V-14 and illustrated in Fig.V-11.

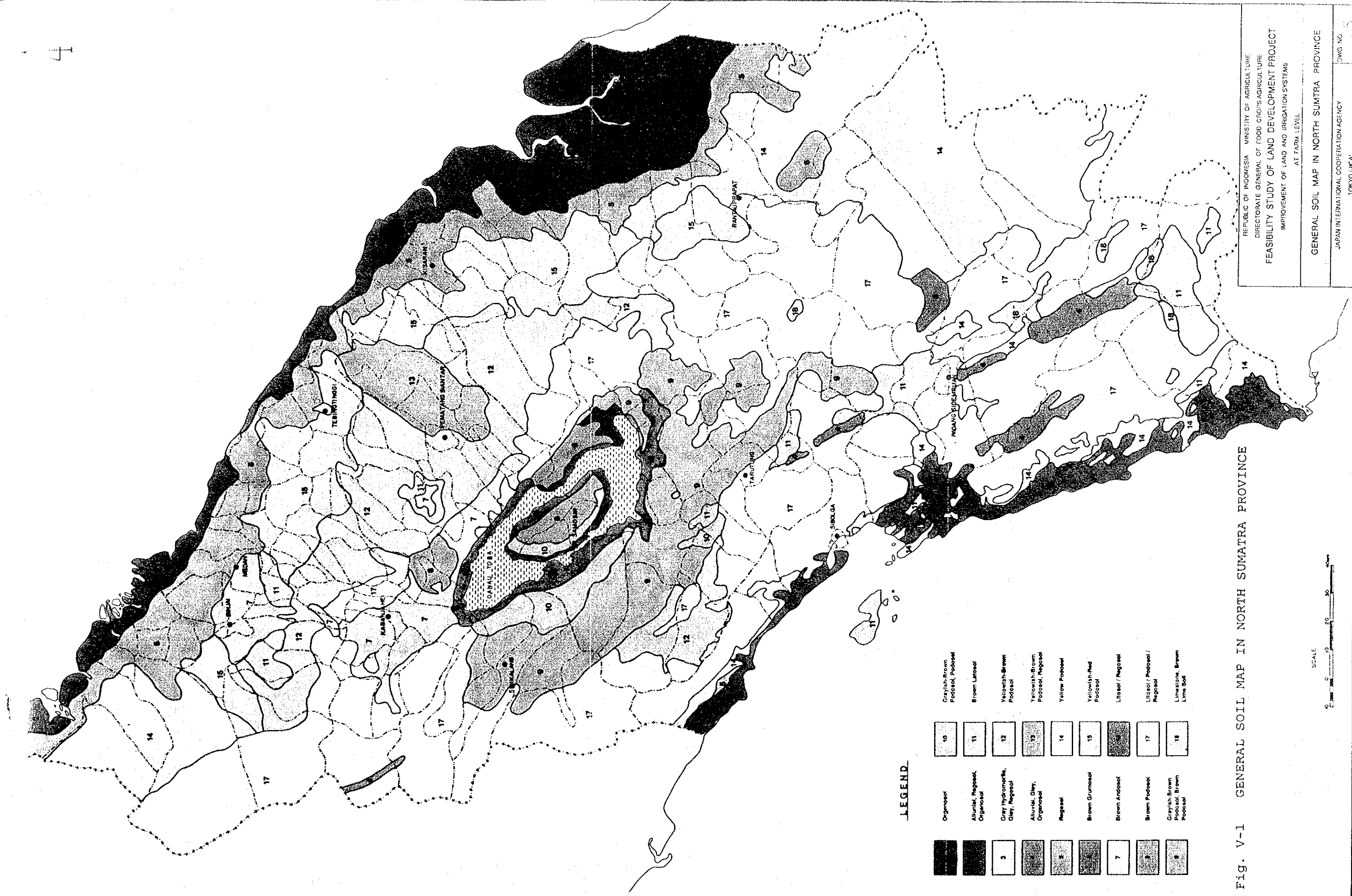


Fig. V-1 GENERAL SOIL MAP IN NORTH SUMATRA PROVINCE

LEGEND

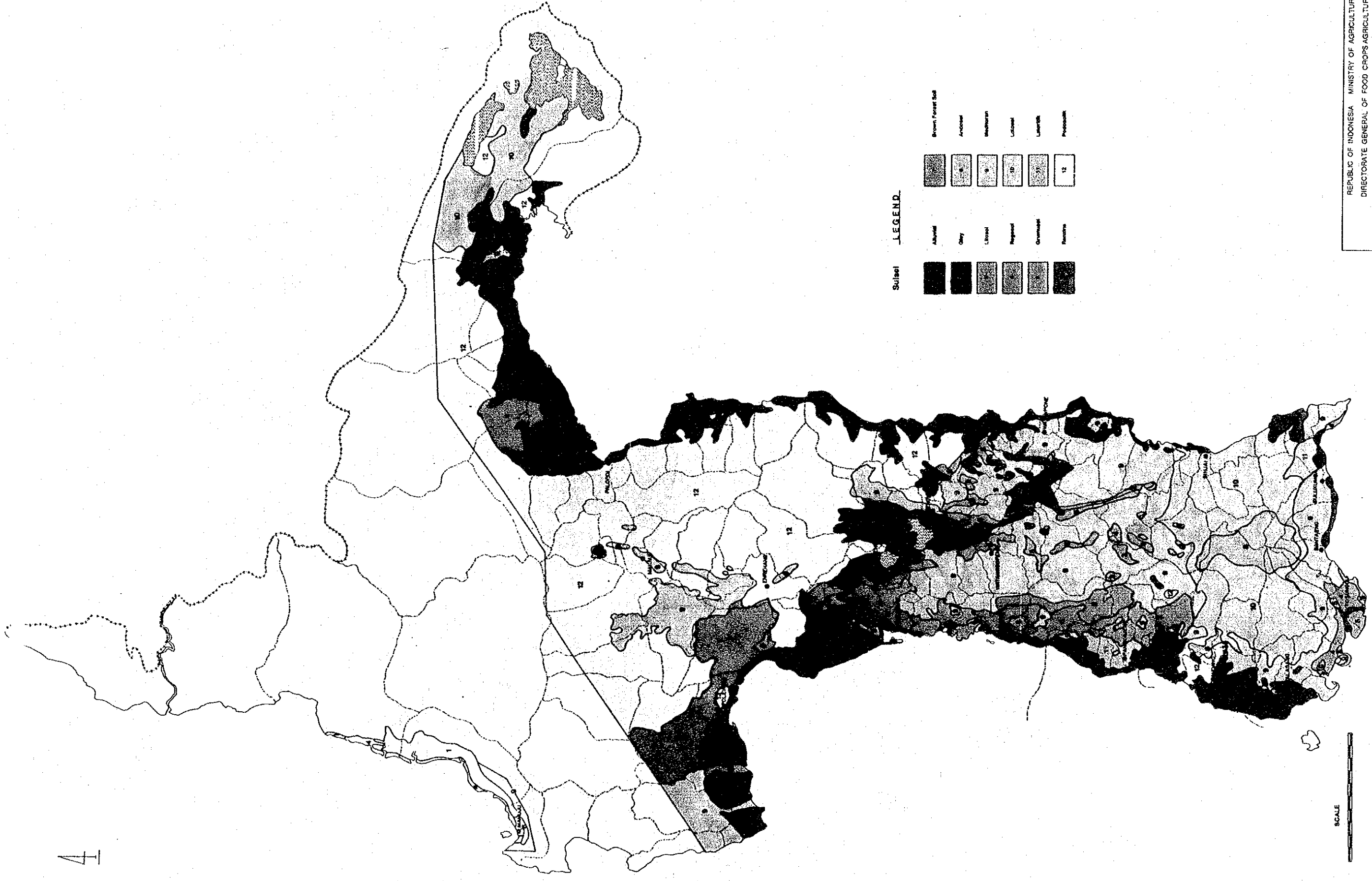
| | | |
|----|--------------------------------------|----------------------------------|
| 10 | Organosol | Grayish-Brown Podosol, Podosol |
| 11 | Aluvisol, Regosol, Organosol | Brown Latosol |
| 12 | Gray Hydromorfs, Clay, Regosol | Yellowish-Brown Podosol |
| 13 | Aluvisol, Clay, Organosol | Yellowish-Brown Podosol, Regosol |
| 14 | Regosol | Yellow Podosol |
| 15 | Brown Grumusol | Yellowish-Red Podosol |
| 16 | Brown Andosol | Litosol / Regosol |
| 17 | Brown Podosol | Litosol / Podosol / Regosol |
| 18 | Grayish-Brown Podosol, Brown Podosol | Limestone, Brown Lime Soil |

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 DIRECTORATE GENERAL OF FOOD CROPS/AGRICULTURE
 FEASIBILITY STUDY OF LAND DEVELOPMENT PROJECT
 IMPROVEMENT OF LAND AND IRRIGATION SYSTEMS
 AT FARM LEVEL

GENERAL SOIL MAP IN NORTH SUMATRA PROVINCE

JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO (JICA)

DWG NO. 5



LEGEND.

| | | | |
|--|-----------|--|-------------------|
| | Aluvial | | Brown Forest Soil |
| | Clay | | Andisol |
| | Litohal | | Mediteran |
| | Regosol | | Litosol |
| | Crustosol | | Lumosol |
| | Parosol | | Podosol |

SCALE

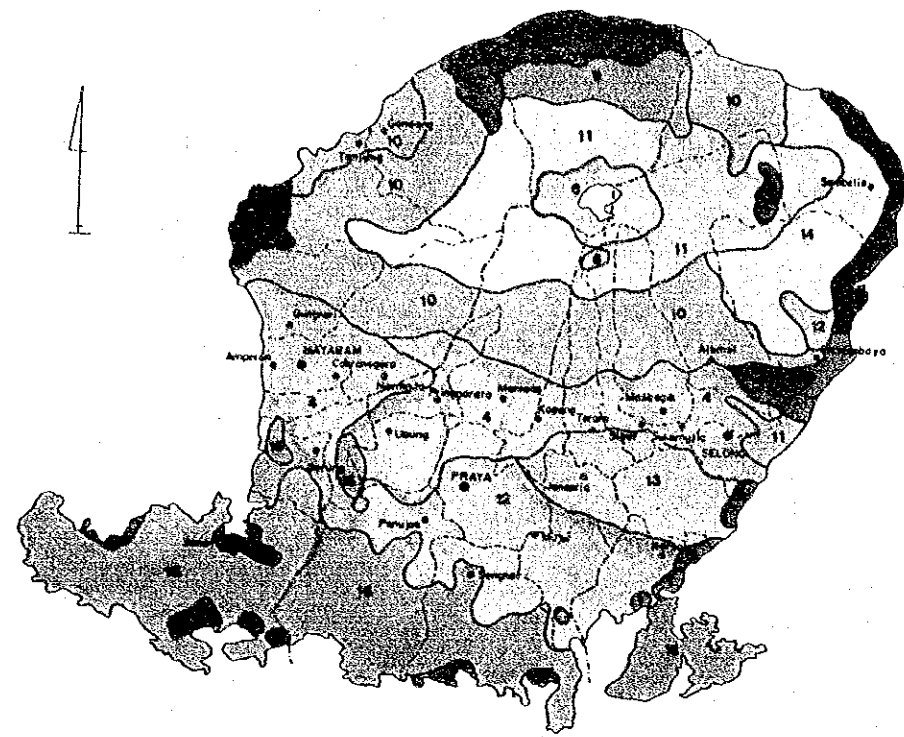
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 AT FARM LEVEL

GENERAL SOIL MAP IN SOUTH SULAWESI PROVINCE

JAPAN INTERNATIONAL COOPERATION AGENCY
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DWG. NO. 6

Fig. V-2 GENERAL SOIL MAP IN SOUTH SULAWESI PROVINCE



LEGEND

| | | | |
|----|-------------------------------------|----|--|
| 1 | Gray Alluvial | 13 | Dark Gray Grumusol, Reddish-Brown Mediteran, Litosol |
| 2 | Brown Alluvial | 14 | Brown Mediteran |
| 3 | Hydromorphic Alluvial | 15 | Brown Mediteran, Gray Grumusol, Brown Regosol, Litosol |
| 4 | Gray Regosol | 16 | Brown Regosol, Litosol |
| 5 | Gray Regosol, Hydromorphic Alluvial | 17 | Litosol, Brown Mediteran |
| 6 | Gray Regosol, Litosol | 18 | Litosol, Reddish-Brown Mediteran, Brown Mediteran |
| 7 | Grayish Regosol, Litosol | 19 | Rendzina, Litosol |
| 8 | Grayish-Brown Regosol | 20 | Brown Mediteran |
| 9 | Yellowish-Brown Regosol | 21 | Reddish-Brown Mediteran |
| 10 | Brown Regosol | 22 | Brown Mediteran, Reddish-Brown Mediteran |
| 11 | Brown Forest Soil | 23 | Brown Mediteran, Litosol |
| 12 | Gray Grumusol | 24 | Brown Litosol, Reddish-Brown Litosol |

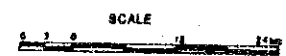


Fig. V-3 GENERAL SOIL MAP IN WEST NUSA TENGGARA PROVINCE

| | |
|--|------------|
| REPUBLIC OF INDONESIA MINISTRY OF AGRICULTURE DIRECTORATE GENERAL OF FOOD CROPS AGRICULTURE FEASIBILITY STUDY OF LAND DEVELOPMENT PROJECT IMPROVEMENT OF LAND AND IRRIGATION SYSTEMS AT FARM LEVEL | |
| GENERAL SOIL MAP IN WEST NUSA TENGGARA PROVINCE | |
| JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO (JICA) | DWG. NO. 7 |

Table V-1 INDONESIAN SOIL CLASSIFICATION SYSTEM CORRELATED WITH FAO/UNESCO AND USDA SYSTEM

| Dual/Soeptraotardjo (1957, 1961) | Modification (1978, 1981) | FAO/UNESCO (1974) | USDA Soil Taxonomy (1975) |
|-------------------------------------|--|---|--|
| Organosol | Organosol | Histosol | Histosol |
| Litosol | Litosol Ranker | Litosol Ranker | Litosol Litic sub group |
| Alluvial | Aluvial Kambisol | Fluvisol Cambisol | Entisol Inceptisol |
| Regosol | Regosol Kambisol | Regosol Cambisol | Entisol Inceptisol |
| Renzina | Renzina | Renzina | Rendoll |
| Grumusol | Grumusol | Vertisol | Vertisol |
| Andosol | Andosol | Andosol | Inceptisol |
| Podsolik coklat | Andosol | Andosol | Inceptisol |
| Podsolik coklat kekelabuan | Podosolik | Acrisol | Ultisol |
| Brown forest soil | Kambisol | Cambisol | Inceptisol |
| Latosol | Kambisol Latosol Brunizem Nitosol | Cambisol Cambisol Cambisol Nitosol Phaeozem | Inceptisol Inceptisol Inceptisol Ultisol Alfisol Mollisol Oxisol |
| | Oksisol | Ferralsol | Oxisol |
| | Kambisol molik/brunizem | Greyzem/Chernozem/Kastanozem | Mollisol |
| Podsolik merah kuning | Podsolik | Acrisol | Ultisol |
| Mediteran merah kuning | Mediteran Mediteran molik | Luvisol Phaeozem | Alfisol Mollisol |
| Podosol | Podsol | Podsol | Spodosol |
| Podsol air tanah | Podsol humik | Humic podosol | Spodosol |
| Laterit air tanah | Oksisol gleiik/plintik | Plinthic ferralsol | Aquox |
| Glei humus | Gleisol humik | Gleysol | Aquept |
| Glei humus rendah | Gleisol | Gleysol | Aquept |
| Hidormorf kelabu | Podsolik gleiik | Gleyic acrisol | Aquult |
| Alluvial hidoromorf | Gleisol hidrik | Fluvisol | Hydraquent |
| Planosol | Planosol | Planosol | Aqualf |

Source : Indonesian Soil Units and Subunits for Survey and Mapping of Transmigration Area
Soil Research Center

Table V-2 SOIL DISTRIBUTION

(1/2)

| Kind of Soil | Kabupaten | | | | | | | | | | | | | | | | | | North Sumatra Province | |
|---|-----------|---------|--------------|---------|--------------|---------|---------|------------|-----------|-----------------|----------------|---------|-------------|-----------------|---------------|---------------|---------------|-----------|------------------------|--|
| | Aeknab | Dairi | Deli Serdang | Karo | Labuhan Batu | Langkat | Nias | Simalungun | Selatan | Tapanuli Tengah | Tapanuli Utara | Bintuni | Kodya Medan | Kodya P.Siantar | Kodya Sibolga | Kodya T.Balai | Kodya T.Tingg | Total | Ratio % | |
| 1 Organosol | 25,214 | 0 | 0 | 0 | 297,522 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 322,736 | 4.50% | |
| 2 Ahuvial, Regosol & Organosol | 75,890 | 0 | 0 | 0 | 41,718 | 72,704 | 0 | 90,624 | 144,144 | 44,032 | 0 | 9,200 | 0 | 0 | 0 | 3,150 | 0 | 481,462 | 6.72% | |
| 3 Hidromorfik Keliabu, Glei Humus & Regosol | 77,672 | 0 | 95,569 | 0 | 124,077 | 77,457 | 0 | 24,376 | 15,386 | 38,656 | 360,148 | 0 | 9,910 | 0 | 0 | 2,600 | 1,200 | 827,051 | 11.54% | |
| 4 Ahuvial, Glei Humus & Organosol | 0 | 512 | 0 | 9,472 | 0 | 0 | 0 | 60,160 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70,144 | 0.98% | |
| 5 Regosol | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,304 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,304 | 0.03% | |
| 6 Grumosol Coklat | 0 | 0 | 44,488 | 0 | 16,966 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61,454 | 0.86% | |
| 7 Andosol Coklat | 0 | 0 | 35,774 | 71,936 | 0 | 0 | 76,544 | 0 | 0 | 308,458 | 9,010 | 7,400 | 0 | 0 | 0 | 0 | 0 | 509,122 | 7.10% | |
| 8 Podosolik Coklat | 0 | 0 | 0 | 0 | 0 | 0 | 40,704 | 0 | 0 | 102,144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 142,848 | 1.99% | |
| 9 Podosolik Coklat Keliabu & Podosolik Coklat | 0 | 91,136 | 0 | 0 | 0 | 0 | 0 | 45,056 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 136,192 | 1.90% | |
| 10 Podosolik Coklat Keliabu, Podosol & Tanah Diatomia | 0 | 23,552 | 10,624 | 0 | 0 | 50,671 | 0 | 24,832 | 0 | 11,008 | 78,836 | 0 | 0 | 0 | 0 | 0 | 0 | 199,528 | 2.78% | |
| 11 Latosol Coklat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 173,568 | 0 | 52,992 | 0 | 0 | 0 | 0 | 0 | 0 | 226,560 | 3.16% | |
| 12 Podosolik Coklat Kekuningan | 113,189 | 0 | 0 | 0 | 42,489 | 0 | 101,440 | 0 | 899 | 66,048 | 0 | 5,448 | 0 | 0 | 0 | 0 | 0 | 329,513 | 4.60% | |
| 13 Podosolik Coklat Kekuningan & Regosol | 0 | 0 | 0 | 0 | 0 | 0 | 111,680 | 0 | 0 | 0 | 0 | 1,600 | 0 | 0 | 0 | 0 | 0 | 113,280 | 1.58% | |
| 14 Podosolik Kuning | 0 | 0 | 0 | 0 | 319,035 | 251,134 | 0 | 0 | 579,840 | 21,760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,171,769 | 16.35% | |
| 15 Podosolik Merah Kekuningan | 113,154 | 0 | 143,448 | 0 | 69,255 | 68,740 | 100,990 | 57,344 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,900 | 554,831 | 7.74% | |
| 16 Litosol & Regosol | 0 | 3,072 | 2,173 | 5,888 | 0 | 0 | 0 | 0 | 0 | 47,872 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 59,005 | 0.82% | |
| 17 Litosol, Podosolik & Regosol | 56,990 | 196,338 | 107,718 | 125,429 | 95,463 | 94,120 | 0 | 925,016 | 0 | 0 | 0 | 0 | 0 | 0 | 528 | 0 | 0 | 1,601,601 | 22.34% | |
| 18 Batu Kapur & Tanah Kapur Coklat | 0 | 0 | 0 | 0 | 0 | 0 | 358,144 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 529 | 0 | 0 | 358,673 | 5.00% | |
| TOTAL | 462,109 | 314,610 | 439,794 | 212,725 | 922,318 | 626,329 | 531,838 | 436,920 | 1,889,650 | 218,771 | 1,060,530 | 9,010 | 26,510 | 7,048 | 1,057 | 5,750 | 3,100 | 7,168,068 | 100.00% | |

(2/2)

| Kind of Soil | (Unit: ha) | | | | | | | | | | NIB Province | |
|---|----------------|----------------|----------------|----------------|----------------|----------------|------------------|----------------|--|--|--------------|---------|
| | Kabupaten | | | | | | Bima | | | | Total | Ratio % |
| | Lombok Barat | Lombok Tengah | Lombok Timur | Sumbawa | Dompu | Bima | | | | | | |
| 1 Aluvial Kelabu | 0 | 0 | 4,978 | 7,888 | 4,944 | 716 | 18,526 | 0.94% | | | | |
| 2 Aluvial Coklat | 3,934 | 933 | 4,520 | 49,925 | 20,721 | 33,621 | 113,654 | 5.74% | | | | |
| 3 Aluvial Hidromorf | 0 | 0 | 1,075 | 0 | 0 | 0 | 1,075 | 0.05% | | | | |
| 4 Regosol Kelabu | 26,248 | 1,191 | 0 | 0 | 0 | 0 | 27,439 | 1.39% | | | | |
| 5 Regosol Kelabu | 2,793 | 16,172 | 16,723 | 0 | 0 | 0 | 35,688 | 1.80% | | | | |
| 6 Regosol Kelabu & Aluvial Hidromorf | 179 | 0 | 1,719 | 0 | 0 | 0 | 1,898 | 0.10% | | | | |
| 7 Kompleks Regosol Kelabu & Litosol | 4,392 | 278 | 3,751 | 0 | 33,059 | 65,962 | 107,442 | 5.43% | | | | |
| 8 Kompleks Regosol Kelabu & Litosol | 3,500 | 0 | 0 | 0 | 26,657 | 9,585 | 39,742 | 2.01% | | | | |
| 9 Regosol Coklat Kelabu | 21,357 | 0 | 0 | 0 | 0 | 0 | 21,357 | 1.08% | | | | |
| 10 Regosol Coklat Kekuningan | 9,517 | 979 | 666 | 0 | 0 | 0 | 11,162 | 0.56% | | | | |
| 11 Regosol Coklat | 5,037 | 0 | 2,719 | 0 | 585 | 7,493 | 15,834 | 0.80% | | | | |
| 12 Regosol Coklat | 33,213 | 8,384 | 27,152 | 0 | 0 | 0 | 68,749 | 3.47% | | | | |
| 13 Brown Forest Soil | 17,835 | 8,783 | 29,062 | 0 | 0 | 0 | 55,680 | 2.81% | | | | |
| 14 Grumosol Kelabu | 450 | 34,494 | 9,302 | 26,457 | 5,668 | 0 | 76,371 | 3.86% | | | | |
| 15 Kompleks Grumosol Kelabu Tug. Mediteran Coklat Kemerahan & Litosol | 0 | 8,269 | 15,175 | 0 | 0 | 0 | 23,444 | 1.18% | | | | |
| 16 Mediteran Coklat | 0 | 0 | 30,689 | 0 | 0 | 0 | 30,689 | 1.55% | | | | |
| 17 Kompleks Mediteran Coklat, Grumosol Kelabu, Regosol Coklat & Litosol | 44,395 | 41,357 | 11,069 | 70,272 | 4,836 | 7,987 | 179,916 | 9.09% | | | | |
| 18 Komoleks Regosol Coklat & Latosol | 0 | 0 | 0 | 3,393 | 14,104 | 20,138 | 37,635 | 1.90% | | | | |
| 19 Kompleks Litosol & Mediteran Coklat | 0 | 0 | 0 | 23,288 | 0 | 8,447 | 31,735 | 1.60% | | | | |
| 20 Kompleks Litosol, Mediteran Coklat Kemerahan & Mediteran Coklat | 0 | 0 | 0 | 496,706 | 68,495 | 155,248 | 720,449 | 36.40% | | | | |
| 21 Kompleks Renzina & Litosol | 0 | 0 | 0 | 15,405 | 0 | 0 | 15,405 | 0.78% | | | | |
| 22 Mediteran Coklat | 0 | 0 | 0 | 22,387 | 3,209 | 0 | 25,596 | 1.29% | | | | |
| 23 Mediteran Coklat Kemerahan | 0 | 0 | 0 | 10,585 | 0 | 0 | 10,585 | 0.53% | | | | |
| 24 Kompleks Mediteran Coklat & Mediteran Coklat Kemerahan | 0 | 0 | 0 | 41,829 | 0 | 6,619 | 48,448 | 2.45% | | | | |
| 25 Kompleks Mediteran Coklat & Litosol | 0 | 0 | 0 | 46,451 | 50,182 | 120,333 | 216,966 | 10.96% | | | | |
| 26 Asosiasi Latosol Coklat & Latosol Coklat Kemerahan | 0 | 0 | 0 | 32,604 | 0 | 11,211 | 43,815 | 2.21% | | | | |
| TOTAL | 172,850 | 120,840 | 158,600 | 847,190 | 232,460 | 447,360 | 1,979,300 | 100.00% | | | | |

Table V-3 SUMMARY OF INVENTORY SURVEY, SOILS AND OTHER PHYSICAL CONDITIONS

| | North Sumatra | | | | South Sulawesi | | | | West Nusa Tenggara | | | |
|-----------------------|---------------|------|-----|------|----------------|------|-----|------|--------------------|------|-----|------|
| | VI | | LD | | VI | | LD | | VI | | LD | |
| | nos | % | nos | % | nos | % | nos | % | nos | % | nos | % |
| Name of Soils | | | | | | | | | | | | |
| a Alluvial | 20 | 8% | 3 | 9% | 95 | 28% | 3 | 30% | 30 | 23% | 3 | 15% |
| b Regosol | 22 | 9% | 1 | 3% | 6 | 2% | 0 | 0% | 65 | 50% | 8 | 40% |
| c Grumosol | 4 | 2% | 1 | 3% | 29 | 8% | 1 | 10% | 10 | 8% | 7 | 35% |
| d Renzina | 0 | 0% | 0 | 0% | 2 | 1% | 0 | 0% | 0 | 0% | 0 | 0% |
| e Andosol | 18 | 7% | 1 | 3% | 22 | 6% | 0 | 0% | 0 | 0% | 0 | 0% |
| f Latosol | 36 | 15% | 3 | 9% | 76 | 22% | 1 | 10% | 0 | 0% | 1 | 5% |
| g Organosol | 11 | 4% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| h Lithosol | 14 | 6% | 8 | 25% | 1 | 0% | 0 | 0% | 7 | 5% | 0 | 0% |
| i Mediteran | 0 | 0% | 0 | 0% | 50 | 15% | 4 | 40% | 18 | 14% | 1 | 5% |
| j Podsolik | 118 | 48% | 15 | 47% | 60 | 18% | 1 | 10% | 0 | 0% | 0 | 0% |
| k Laterik | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 1% | 0 | 0% |
| l Grey Humic | 2 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Soil Suitability | | | | | | | | | | | | |
| for Paddy | | | | | | | | | | | | |
| a Very Suitable | 24 | 10% | 7 | 22% | 55 | 16% | 4 | 44% | 5 | 4% | 0 | 0% |
| b Suitable | 214 | 87% | 25 | 78% | 281 | 83% | 5 | 56% | 124 | 95% | 20 | 100% |
| c Not Suitable | 8 | 3% | 0 | 0% | 3 | 1% | 0 | 0% | 1 | 1% | 0 | 0% |
| Soil Suitability | | | | | | | | | | | | |
| for Palawija | | | | | | | | | | | | |
| a Very Suitable | 10 | 4% | 4 | 13% | 38 | 16% | 3 | 38% | 5 | 4% | 1 | 5% |
| b Suitable | 227 | 94% | 27 | 84% | 201 | 82% | 4 | 50% | 123 | 95% | 19 | 95% |
| c Not Suitable | 5 | 2% | 1 | 3% | 5 | 2% | 1 | 13% | 1 | 1% | 0 | 0% |
| Water Quality | | | | | | | | | | | | |
| for Paddy | | | | | | | | | | | | |
| a Good | 242 | 100% | 32 | 100% | 339 | 99% | 10 | 100% | 128 | 100% | 20 | 100% |
| b Not Good | 1 | 0% | 0 | 0% | 5 | 1% | 0 | 0% | 0 | 0% | 0 | 0% |
| Water Quality | | | | | | | | | | | | |
| for Palawija | | | | | | | | | | | | |
| a Good | 219 | 100% | 32 | 100% | 226 | 100% | 9 | 100% | 125 | 100% | 20 | 100% |
| b Not Good | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Topographic Condition | | | | | | | | | | | | |
| (Slope) | | | | | | | | | | | | |
| < 5 % | 121 | 49% | 15 | 47% | 131 | 38% | 5 | 50% | 83 | 63% | 16 | 80% |
| 5 % - 10 % | 110 | 45% | 15 | 47% | 129 | 37% | 5 | 50% | 42 | 32% | 3 | 15% |
| 10 % - 15 % | 14 | 6% | 2 | 6% | 50 | 14% | 0 | 0% | 3 | 2% | 1 | 5% |
| 15 % < | 2 | 1% | 0 | 0% | 39 | 11% | 0 | 0% | 3 | 2% | 0 | 0% |

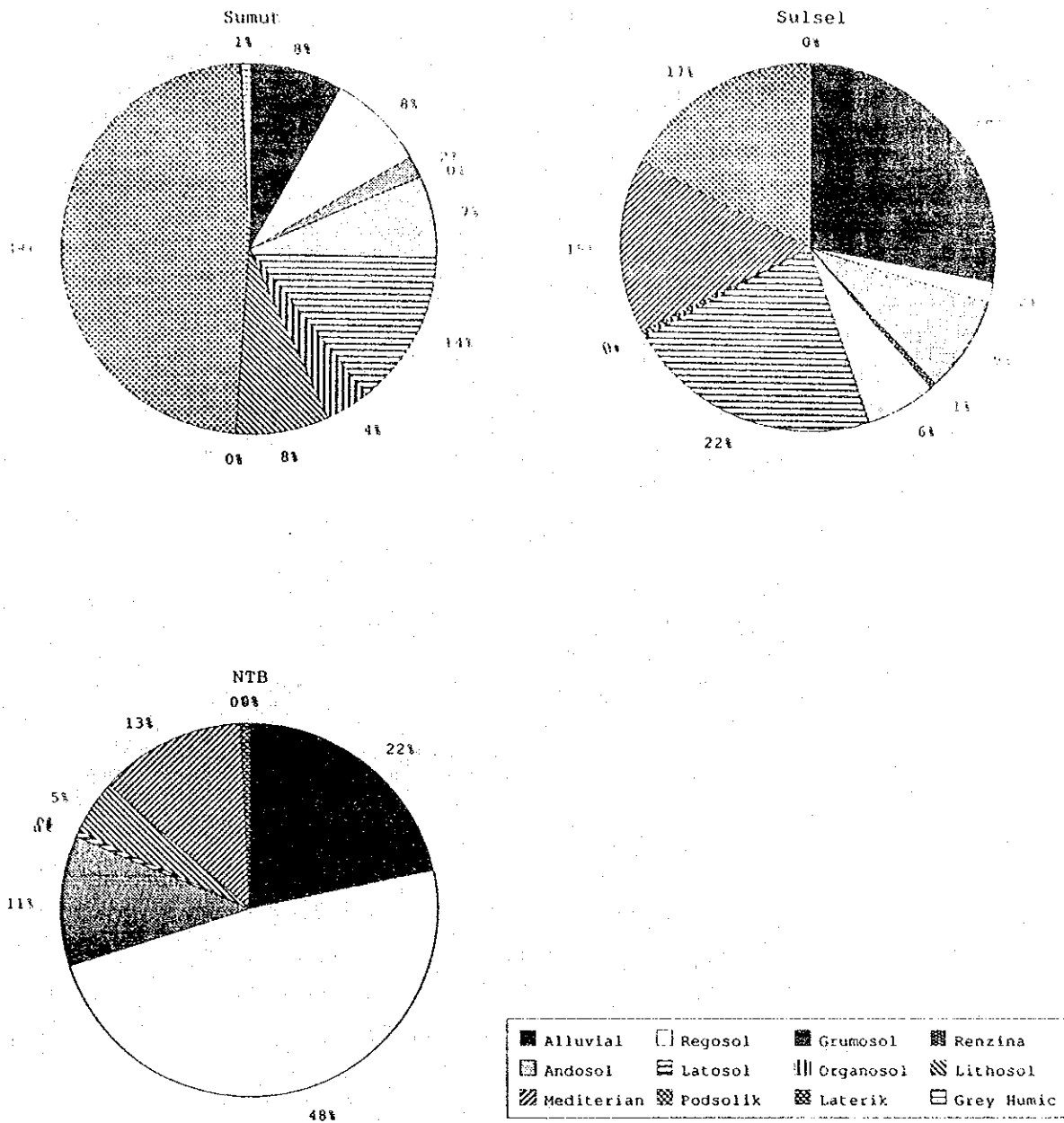


Fig. V-4 SUMMARY OF INVENTORY SURVEY, SOIL NAME

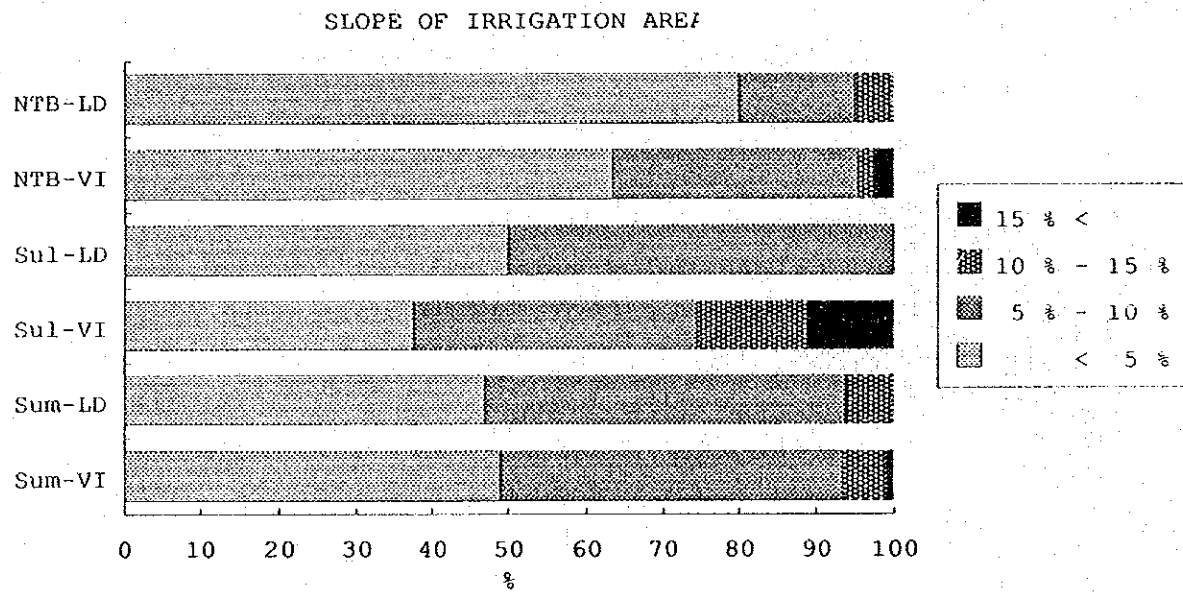


Fig. V-5 SUMMARY OF INVENTORY SURVEY, SLOPE ON THE PROJECT AREA

Table V-4 LOCATION OF SOIL SAMPLING PITS

North Sumatra

| Scheme Code | Name of Scheme | Sample No. | Desa | Kecamatan | Kabupaten | Depth |
|-------------|-----------------------|------------|----------------|----------------------|------------------|----------|
| LD60011 | Sumbari | SUM1/I | Sumbari | Silima Pungga Pungga | Dairi | 0-15 cm |
| | | SUM1/II | | | | 15-45 cm |
| | | SUM2/I | | | | 0-15 cm |
| | | SUM2/II | | | | 15-45 cm |
| LD60038 | Rauning (B) | SUM3/I | Sitire | Batang Angkola | Tapanuli Selatan | 0-15 cm |
| | | SUM3/II | | | | 15-45 cm |
| | | SUM4/I | | | | 0-15 cm |
| | | SUM4/II | | | | 15-45 cm |
| VI50025 | Sumbul Berampu | SUM5/I | Sumbul Berampu | Silima Pungga Pungga | Dairi | 0-15 cm |
| | | SUM5/II | | | | 15-45 cm |
| VI50057 | Sidomukti | SUM6/I | Berulap | Selesai | Langkat | 0-15 cm |
| VI50091 | Aek Palia | SUM7/I | Gunung Melayu | Kualuh Hulu | Labuhan Batu | 0-15 cm |
| VI50129 | Pangabatan (B) | SUM8/I | Pelita | Sorkam | Tapanuli Tengah | 0-15 cm |
| | | SUM8/II | | | | 15-45 cm |
| VI50141 | Aek Siparbue | SUM9/I | Unte Mungkur | Muara | Tapanuli Utara | 0-15 cm |
| | | SUM9/II | | | | 15-45 cm |
| VI50218 | Kutarnale | SUM10/I | Buluh Naman | Munte | Tanah Karo | 0-15 cm |
| VI50240 | Asahan VIII Pengajian | SUM11/I | Tinggi Raja | Buntu Pane | Asahan | 0-15 cm |
| | | SUM11/II | | | | 15-45 cm |
| VI50256 | Aek Sihim | SUM12/I | Gapuk Julu | Batang Toru | Tapanuli Selatan | 0-15 cm |

South Sulawesi

| Scheme Code | Name of Scheme | Sample No. | Desa | Kecamatan | Kabupaten | Depth |
|-------------|------------------|------------|---------------|---------------|-------------|----------|
| VI10055 | Pajjenge | SUL1/I | Toempo | Barri | Barri | 0-15 cm |
| VI10099 | Kadieng | SUL2/I | Tambangan | Kajang | Bulukumba | 0-15 cm |
| VI10115 | Kaindi | SUL3/I | Mampu | Anggereja | Enrekang | 0-15 cm |
| VI10140 | Lembang Bata | SUL4/I | Malino | Tinggimoncong | Gowa | 0-15 cm |
| | | SUL4/II | | | | 15-45 cm |
| VI10168 | Panrita | SUL5/I | Palantikang | Bangkala | Jeneponto | 0-15 cm |
| | | SUL5/II | | | | 15-45 cm |
| | | SUL6/I | | | | 0-15 cm |
| VI10182 | Mario I-II-III | SUL7/I | Cempaniga | Camba | Maros | 0-15 cm |
| | | SUL7/II | | | | 15-45 cm |
| | | SUL8/I | | | | 0-15 cm |
| | | SUL8/II | | | | 15-45 cm |
| VI10201 | Pakelli II | SUL9/I | Kassi Buleng | Sinjai Barat | Sinjai | 0-15 cm |
| | | SUL10/I | | | | 0-15 cm |
| | | SUL10/II | | | | 15-45 cm |
| VI10227 | Limpua / Padaelo | SUL11/I | Lampulung | Pammana | Wajo | 0-15 cm |
| | | SUL11/II | | | | 15-45 cm |
| VI10287 | Malimbu | SUL12/I | Malimbu | Sabbang | Luwu | 0-15 cm |
| VI10332 | Salu Akung | SUL13/I | Pangli Palawa | Sesean | Tana Toraja | 0-15 cm |
| VI10354 | Mariri | SUL14/I | Tadisi | Sumarorong | Polmas | 0-15 cm |
| LD20003 | Kalu | SUL15/I | Lilirawang | Lappariaja | Bone | 0-15 cm |
| | | SUL15/II | | | | 15-45 cm |
| | | SUL16/I | | | | 0-15 cm |
| | | SUL16/II | | | | 15-45 cm |

West Nusa Tenggara

| Scheme Code | Name of Scheme | Sample No. | Desa | Kecamatan | Kabupaten | Depth |
|-------------|----------------------|------------|---------------|-------------|---------------|----------|
| VI34004 | Lokok Tripas | NTB1/I | Bayan | Bayan | Lombok Barat | 0-15 cm |
| VI37003 | Montong Sapah / Puri | NTB2/I | Montong Sapah | Praya Barat | Lombok Tengah | 0-15 cm |
| | | NTB3/I | | | | 0-15 cm |
| VI35045 | Kelokos Udang | NTB4/I | Pringgajurang | Terara | Lombok Timur | 0-15 cm |
| VI35035 | Lengkok Dudu | NTB5/I | Tanjung | Selong | Lombok Timur | 0-15 cm |
| | | NTB5/II | | | | 15-45 cm |
| | | NTB6/I | | | | 0-15 cm |
| | | NTB6/II | | | | 15-45 cm |
| LD45010 | Danan Jengkang | NTB7/I | Kerongkong | Sukamulya | Lombok Timur | 0-15 cm |
| | | NTB7/II | | | | 15-45 cm |
| | | NTB8/I | | | | 0-15 cm |
| | | NTB8/II | | | | 15-45 cm |
| VI33050 | Uma Lebang | NTB9/I | Plampang | Plampang | Sumbawa | 0-15 cm |
| | | NTB10/I | | | | 0-15 cm |
| VI32013 | Mada Manini | NTB11/I | Adu | Huu | Dompu | 0-15 cm |
| VI36016 | Raba Sangga | NTB12/I | Kendo | Rasanae | Bima | 0-15 cm |

Table V-5 SOIL MORPHOLOGY OF REPRESENTATIVE SCHEMES

(1/19)

Morphology-Sumut 1

| SUM1 | | Sumbari | |
|------------------|------------------|------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Gradual | Gradual | |
| Soil Color (wet) | 10YR 3/2 | 10YR 4/6 | |
| Texture | Sandy clay loam | Clay loam | |
| Structure | Glanular | Glanular | |
| Consistency | Friable | Friable | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | - | |
| Roots | A little | - | |
| <hr/> | | | |
| SUM2 | | Sumbari | |
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Palawija | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/3 | 10YR 4/4 | |
| Texture | Silty clay loam | Silty clay loam | |
| Structure | Granular | Granular | |
| Consistency | Friable | Friable | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | - | |
| Roots | A little | - | |

| SUM3 | | Rauning (B) | |
|------------------|------------------|--------------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/3 | 10YR 5/2 | |
| Texture | Silty clay loam | Clay loam | |
| Structure | Granular | Granular | |
| Consistency | Firm | Very firm | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | A little | |
| Pan | - | - | |
| Organic Matter | More | A little | |
| Roots | More | A little | |

| SUM4 | | Rauning (B) | |
|------------------|-------------------|--------------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Mixed grade | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/4 | 10YR 4/2 | |
| Texture | Silty clay loam | Silt loam | |
| Structure | Subangular blocky | Subangular blocky | |
| Consistency | Very plastic | Slightly plastic | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | - | - | |
| Roots | Sufficient | - | |

Morphology-Sumut 3

| SUM5 | | Sumbul Berampu | |
|------------------|-------------------|-------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Sloding | | |
| Slope | 0 - 3 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/1 | 10YR 5/3 | |
| Texture | Silty loam | Silty loam | |
| Structure | Subangular blocky | Subangular blocky | |
| Consistency | Friable | Friable | |
| Plasticity | Very plastic | Very plastic | |
| Concretion | - | - | |
| Pan | - | 45 Fragipan | |
| Organic Matter | A little | - | |
| Roots | A little | - | |

| SUM6 | | Sidomukti | |
|------------------|-----------------|--------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Abrupt | Abrupt | |
| Soil Color (wet) | 10YR 3/2 | 10YR 5/3 | |
| Texture | Silty clay loam | Silty loam | |
| Structure | Granular | Granular | |
| Consistency | Friable | Friable | |
| Plasticity | Very plastic | Very plastic | |
| Concretion | - | A little | |
| Pan | - | - | |
| Organic Matter | A little | A little | |
| Roots | A little | - | |

| SUM7 | | Aek Palia | |
|------------------|-------------|------------------|--------------|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Grass land | | |
| Exposition | | | |
| Note | | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Diffuse | Diffuse |
| Soil Color (wet) | | 10YR 4/3 | 10YR 5/6 |
| Texture | | Silty loam | Clay loam |
| Structure | | Granular | Granular |
| Consistency | | Firm | Friable |
| Plasticity | | Very plastic | Very plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | - |
| Roots | | A little | A little |

| SUM8 | | Pangambatan (B) | |
|------------------|-------------|------------------------|------------------|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Gradual | Gradual |
| Soil Color (wet) | | 10YR 4/4 | 10YR 5/1 |
| Texture | | Silty clay loam | Silty clay loam |
| Structure | | Granular | Granular |
| Consistency | | Friable | Friable |
| Plasticity | | Slightly plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | - |
| Roots | | More | A little |

Morphology-Sumut 5

| SUM9 | | Aek Siparbue | |
|------------------|------------------|--------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 4/1 | 10YR 4/1 | |
| Texture | Silty loam | Sandy loam | |
| Structure | Platy | Platy | |
| Consistency | Firm | Friable | |
| Plasticity | Slightly plastic | Non plastic | |
| Concretion | - | A little | |
| Pan | - | - | |
| Organic Matter | A little | A little | |
| Roots | A little | A little | |

| SUM10 | | Kutamale | |
|------------------|------------------|------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Abrupt | Abrupt | |
| Soil Color (wet) | 10YR 3/2 | 10YR 4/6 | |
| Texture | Silty clay loam | Clay loam | |
| Structure | Crumb | Crumb | |
| Consistency | Very friable | Friable | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | - | |
| Roots | A little | - | |

| SUM11 | | Asahan VIII Pengajian | |
|------------------|----------------|-----------------------|------------------|
| Item | Description | | |
| Physiology | Alluvial plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Palawija | | |
| Exposition | | | |
| Note | | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Abrupt | Abrupt |
| Soil Color (wet) | | 10YR 5/1 | 10YR 6/1 |
| Texture | | Silty loam | Sandy loam |
| Structure | | Prismatic | Prismatic |
| Consistency | | Friable | Loose |
| Plasticity | | Slightly plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | - |
| Roots | | A little | - |

| SUM12 | | Aek Sihim | |
|------------------|-----------------|------------------|------------------|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Diffuse | Diffuse |
| Soil Color (wet) | | 10YR 3/4 | 10YR 3/1 |
| Texture | | Silty clay loam | Silty clay loam |
| Structure | | Granular | Granular |
| Consistency | | Friable | Friable |
| Plasticity | | Slightly plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | A little |
| Roots | | More | A little |

| SUL1 | | Kalu | |
|------------------|-----------------|------------------|-------------------|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Diffuse | Diffuse |
| Soil Color (wet) | | 10YR 4/6 | 10YR 4/6 |
| Texture | | Clay | Clay |
| Structure | | Massive | Subangular blocky |
| Consistency | | Sticky | Sticky |
| Plasticity | | Slightly plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | A little |
| Roots | | Medium | A little |

| SUL2 | | Kalu | |
|------------------|--------------------------|-------------------|-------------------|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Palawija | | |
| Exposition | | | |
| Note | Ploughing and fertilizer | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Diffuse | Diffuse |
| Soil Color (wet) | | 10YR 5/4 | 10YR 4.5/6 |
| Texture | | Clay | Clay |
| Structure | | Subangular blocky | Subangular blocky |
| Consistency | | Sticky | Sticky |
| Plasticity | | Slightly plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | - |
| Organic Matter | | A little | A little |
| Roots | | Medium | A little |

| SUL3 | | Pajjenge | |
|------------------|--------------------------|------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Ploughing and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | - | | |
| Soil Color (wet) | 10YR 3/3 | | |
| Texture | Clay loam | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | Slightly plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | A little | | |
| Roots | Medium | | |

| SUL4 | | Kadieng | |
|------------------|-------------------------|------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy filed | | |
| Exposition | | | |
| Note | Ploghing and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | - | | |
| Soil Color (wet) | 7.5YR 4/6 | | |
| Texture | Clay loam | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | MNon plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | A little | | |
| Roots | A little | | |

| SUL5 | | Kaindi | |
|------------------|-----------------------|---------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Hilly | | |
| Slope | 15 - 30 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | - | | |
| Soil Color (wet) | 10 YR 5/3 | | |
| Texture | Silty loam | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | Non plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | More | | |
| Roots | More | | |

| SUL6 | | Lembang Bata | |
|------------------|-----------------------|---------------------|--|
| Item | Description | | |
| Physiology | Forder mountain | | |
| Relief | Hilly | | |
| Slope | 15 - 30 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/3 | 10YR 4/4 | |
| Texture | Loam | Loam | |
| Structure | Massive | Subangular blocky | |
| Consistency | Slightly sticky | Slightly sticky | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | Medium | |
| Pan | - | - | |
| Organic Matter | Medium | A little | |
| Roots | Medium | A little | |

| SUL7 | | Panrita | |
|------------------|-----------------------|-------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/1 | 10YR 3/1 | |
| Texture | Clay | Clay | |
| Structure | Subangular blocky | Subangular blocky | |
| Consistency | Sticky | Sticky | |
| Plasticity | Slightly plastic | Very plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | A little | |
| Roots | A little | A little | |

| SUL8 | | Panrita | |
|------------------|-----------------------------|----------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Uncultivated | | |
| Exposition | | | |
| Note | 13 - 45 cm is rock material | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Abrupt | | |
| Soil Color (wet) | 10YR 3/3 | | |
| Texture | Clay loam | | |
| Structure | Subangular blocky | | |
| Consistency | Firm | | |
| Plasticity | Plastic | | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | | |
| Roots | A little | | |

Morphology-Sulsel 5

| SUL9 | | Mario I-II-III | |
|------------------|--------------------------|-----------------------|-------------------|
| Item | Description | | |
| Physiology | Volcanic fan | | |
| Relief | Sloping | | |
| Slope | 3 - 5 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Ploughing and fertilizer | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Clear | Clear |
| Soil Color (wet) | | 7.5YR 6/4 | 7.5YR 4/6 |
| Texture | | Clay | Silty clay |
| Structure | | Massive | Subangular blocky |
| Consistency | | Slightly sticky | Slightly sticky |
| Plasticity | | Non plastic | Slightly plastic |
| Concretion | | - | - |
| Pan | | - | 20 cm fragipan |
| Organic Matter | | A little | A little |
| Roots | | A little | - |

| SUL10 | | Mario I-II-III | |
|------------------|--------------------------|-----------------------|-------------------|
| Item | Description | | |
| Physiology | Volcanic fan | | |
| Relief | Sloping | | |
| Slope | 3 - 5 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Ploughing and fertilizer | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | | Clear | Clear |
| Soil Color (wet) | | 7.5YR 6/4 | 7.5YR 4/6 |
| Texture | | Clay | Silty clay |
| Structure | | Massive | Subangular blocky |
| Consistency | | Slightly sticky | Slightly sticky |
| Plasticity | | Non plastic | Slightly plastic |
| Concretion | | - | A little |
| Pan | | - | 20 cm fragipan |
| Organic Matter | | Medium | A little |
| Roots | | A little | - |

| SUL11 | | Pakelli II | |
|------------------|-----------------------|-------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Hilly | | |
| Slope | 15 - 30 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Plough and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | - | | |
| Soil Color (wet) | 10YR 4/2 | | |
| Texture | Clay loam | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | Slightly plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | More | | |
| Roots | More | | |

| SUL12 | | Pakelli II | |
|------------------|-----------------------|-------------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Hilly | | |
| Slope | 15 - 30 % | | |
| Land Use | Palawija | | |
| Exposition | | | |
| Note | Plough and fertilizer | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Clear | Clear | |
| Soil Color (wet) | 10YR 3/3 | 10YR 4/4 | |
| Texture | Silty loam | Sandy clay loam | |
| Structure | Subangular blocky | Subangular blocky | |
| Consistency | Very friable | Friable | |
| Plasticity | Non plastic | Slightly plastic | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | More | Medium | |
| Roots | Medium | Medium | |

Morphology-Sulsel 7

| SUL13 | | Limpua / Padaelo | |
|------------------|-------------------|-------------------|--|
| Item | Description | | |
| Physiology | Plain | | |
| Relief | Level | | |
| Slope | 0 - 3 % | | |
| Land Use | Uncultivated | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | Diffuse | Diffuse | |
| Soil Color (wet) | 10YR 3/1 | 10YR 3/1 | |
| Texture | Clay | Clay | |
| Structure | Subangular blocky | Subangular blocky | |
| Consistency | Very firm | Very firm | |
| Plasticity | Slightly plastic | Slightly plastic | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | Medium | A little | |
| Roots | Medium | A little | |

| SUL14 | | Malimbu | |
|------------------|-----------------|------------|--|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating | | |
| Slope | 3 - 8 % | | |
| Land Use | Uncultivated | | |
| Exposition | | | |
| Note | | | |
| Depth | 0 - 15 cm | 15 - 45 cm | |
| Layer Boundary | - | - | |
| Soil Color (wet) | 10YR 6/2 | | |
| Texture | Sandy loam | | |
| Structure | Granular | | |
| Consistency | Very friable | | |
| Plasticity | Non plastic | | |
| Concretion | - | - | |
| Pan | - | - | |
| Organic Matter | A little | | |
| Roots | Medium | | |

| SUL15 | | Salu Akung | |
|------------------|--------------------|-------------------|------------|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Undulating - hilly | | |
| Slope | 3 - 30 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | - | | |
| Soil Color (wet) | 10YR 4/2 | | |
| Texture | Clay | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | Slightly plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | More | | |
| Roots | More | | |

| SUL16 | | Mariri | |
|------------------|--------------------------|---------------|------------|
| Item | Description | | |
| Physiology | Folded mountain | | |
| Relief | Rolling | | |
| Slope | 8 - 15 % | | |
| Land Use | Paddy field | | |
| Exposition | | | |
| Note | Ploughing and fertilizer | | |
| | Depth | 0 - 15 cm | 15 - 45 cm |
| Layer Boundary | - | | |
| Soil Color (wet) | 10YR 3/3 | | |
| Texture | Silty loam | | |
| Structure | Massive | | |
| Consistency | Slightly sticky | | |
| Plasticity | Non plastic | | |
| Concretion | - | | |
| Pan | - | | |
| Organic Matter | More | | |
| Roots | More | | |

Morphology-NTB 1

NTB1,2 Danar Jengkang

| Item | Description |
|----------------------------------|--|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Regosol Gleik |
| FAO-Unesco 1985 | Eutric Regosols |
| USDA 1990 | Aquic Ustipsamments |
| Slope | 1 percent |
| Land Form | Elevated alluvial plain |
| Parent Material | Pumice |
| Drainage | Excessive |
| Land Use | Upland (Sugarcane, Maize, Groundnut and Cassava) |
| Location | North from canal-A |

| Horizon | Depth | Description |
|---------|-------------|---|
| Ap | 0 - 15 cm | Black (10YR 2/1); Gravelly silty loam; Slightly sticky; Plastic; Neutral |
| C1 | 15 - 35 cm | Very dark grayish brown (10YR 3/2); Gravelly sandy loam; Slightly sticky; Non plastic; Neutral |
| C2 | 35 - 60 cm | Very dark grayish brown (10YR 3/2); Gravelly sandy loam; Non sticky; Non plastic; Neutral |
| C3 | 60 - 120 cm | Very dark grayish brown to dark grayish brown (10YR 3.4/2); Gravelly sandy loam; Non sticky; Non plastic; Neutral |

NTB3 Mada Manini

| Item | Description |
|----------------------------------|------------------------------|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Gleisol Vertik |
| FAO-Unesco 1985 | Eutric Gleysols |
| USDA 1990 | Vertic Trophaquepts |
| Slope | 2 percent |
| Land Form | Wide valley bottom |
| Parent Material | Alluvio-Colluvium clay |
| Drainage | Poorly |
| Land Use | Wet paddy field |
| Location | 25 m north from asphalt road |

| Horizon | Depth | Description |
|---------|------------|--|
| Ap | 0 - 20 cm | Dark grayish gray (5GY 4/1); Clay; Very sticky; Plastic; Alkaline |
| Bg1 | 20 - 35 cm | Dark gray (5Y 4/1); Clay; Very sticky; Plastic; Neutral |
| Bg2 | 35 - 80 cm | Very dark grayish brown (2.5Y 3/2); Clay; Sticky; Plastic; Neutral |

Morphology-NTB 2

NTB4,5 Uma Lebang

| Item | Description |
|----------------------------------|----------------------------------|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Grumusol Pelik |
| FAO-Unesco 1985 | Eutric Vertisols |
| USDA 1990 | Pallusterts |
| Slope | 1 percent |
| Land Form | Flat colluvial and alluvial fans |
| Parent Material | Calluvium clay |
| Drainage | Somewhat poorly |
| Land Use | Upland / Rainfed paddy |
| Location | 50 m west from asphalted road |

| Horizon | Depth | Description |
|---------|--------------|--|
| Ap | 0 - 15 cm | Very dark gray (10YR 3/1); Clay; Very sticky; Plastic; Neutral |
| Bw1 | 15 - 40 cm | Very dark gray to very dark grayish brown (10YR 3/1.2); Clay; Very sticky; Plastic; Neutral |
| Bw2 | 40 - 110 cm | Very dark gray to very dark grayish brown (10YR 3/1.2); Clay; Very sticky; Plastic; Alkaline |
| Bw3 | 110 - 120 cm | Very dark grayish brown to very dark gray (10YR 3/2.1); Clay; Very sticky; Plastic; Neutral |

NTB6 Lokok Tripas

| Item | Description |
|----------------------------------|---|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Mediterranean Gleiik |
| FAO-Unesco 1985 | Gleyic Luvisols |
| USDA 1990 | Aquic Haplustalfs |
| Slope | 21 percent |
| Land Form | Upper Slope of elongated ridges |
| Parent Material | Breccias |
| Drainage | Moderately well |
| Land Use | Wet paddy field, village irrigation |
| Location | 100 m northwestern from Lokok Tripas Village Profil |

| Horizon | Depth | Description |
|---------|-------------|---|
| Ap | 0 - 15 cm | Very dark brown (10YR 3/2); Silty clay loam; Sticky; Slightly plastic; Very slightly acid |
| Bt1 | 15 - 40 cm | Dark reddish brown (5YR 3/4); Clay; Sticky; Slightly plastic; Very slightly acid |
| Bt2 | 45 - 85 cm | Dark reddish brown to reddish brown (5YR 3.4/4); Clay; Sticky; Slightly plastic; Neutral |
| Bt3 | 85 - 120 cm | Reddish brown (5YR 4/4); Clay; Sticky; Slightly plastic; Very slightly acid |

Morphology-NTB 3

| NTB7 | | Lengkok Dudu |
|-------------------|-------------------------------------|---|
| Item | Description | |
| Soil Mapping Unit | None | |
| Classification | | |
| P3MT 1983 | Regosol Kuarsik | |
| FAO-Unesco 1985 | Eutric Regosols | |
| USDA 1990 | Aquic Ustipsaments | |
| Slope | 1 percent | |
| Land Form | Flat sandy deposits | |
| Parent Material | Alluvium sand and pumice | |
| Drainage | Moderately well | |
| Land Use | Wet paddy field, village irrigation | |
| Location | 100 m northwest from beach | |
| Horizon | Depth | Description |
| Ap | 0 - 20 cm | Very dark brown (10YR 2/2); Sandy loam; Slightly sticky; Non plastic; Alkaline |
| C1 | 20 - 60 cm | Very dark grayish brown (10YR 3/2); Sandy loam; Slightly sticky; Non plastic; Alkaline |
| C2 | 60 - 120 cm | Very dark grayish brown to dark brown (10YR 3/2.3); Sandy loam; Slightly sticky; Non plastic; Neutral |

| NTB8 | | Lengkok Dudu |
|-------------------|-------------------------------------|---|
| Item | Description | |
| Soil Mapping Unit | None | |
| Classification | | |
| P3MT 1983 | Arenosol Gleik | |
| FAO-Unesco 1985 | Haplic Arenosols | |
| USDA 1990 | Ustarents | |
| Slope | 1 percent | |
| Land Form | Elevated alluvial plain | |
| Parent Material | Pumice | |
| Drainage | Moderately well | |
| Land Use | Wet paddy field, village irrigation | |
| Location | South from secondary canal | |
| Horizon | Depth | Description |
| Ap | 0 - 20 cm | Very dark brown (10YR 2/2); Silty loam; Slightly sticky; Slightly plastic; Neutral |
| C1 | 20 - 45 cm | Very dark brown to very dark grayish brown (10YR 2.3/2); Loam; Slightly sticky; Slightly plastic; Neutral |
| C2 | 45 - 80 cm | Very dark grayish brown (10YR 3/2); Loam; Slightly sticky; Slightly plastic; Neutral |
| C3 | 80 - 120 cm | Very dark grayish brown (10YR 3/2); Loam; Slightly sticky; Slightly plastic; Neutral |

Morphology-NTB 4

NTB9 Kelokos Udang

| Item | Description |
|----------------------------------|-------------------------------------|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Mediteran Gleik |
| FAO-Unesco 1985 | Gleyic Luvisols |
| USDA 1990 | Aquic Haplustalfs |
| Slope | 3 percent |
| Land Form | Upper slope of nose |
| Parent Material | Breccias |
| Drainage | Moderately well |
| Land Use | Wet paddy field, village irrigation |
| Location | East part of Kedondong village |

| Horizon | Depth | Description |
|---------|-------------|---|
| Ap1 | 0 - 20 cm | Very dark gray (10YR 3/1); Clay; Sticky; Slightly plastic; Neutral |
| Bt1 | 20 - 30 cm | Dark brown (7.5YR 3/2); Gravelly clay; Many medium fine and coarse gravell; Sticky; Slightly plastic; Neutral |
| Bt2 | 30 - 70 cm | Dark brown (7.5YR 3/2); Clay; Very sticky; Plastic; Neutral |
| Bt3 | 70 - 120 cm | Brown (7.5YR 4/4); Clay; Very sticky; Plastic; Neutral |

NTB10 Raba Sangga

| Item | Description |
|----------------------------------|--|
| Soil Mapping Unit Classification | None |
| P3MT 1983 | Grumsol pelik |
| FAO-Unesco 1985 | Eutric Vertisols |
| USDA 1990 | Pellusterts |
| Slope | 1 percent |
| Land Form | Wide valley bottom |
| Parent Material | Alluvio-Colluvium clay |
| Drainage | Poorly |
| Land Use | Wet paddy field, village irrigation |
| Location | 50 m west from Gubug pertemuan's or 500 m northwest from balaidesa |

| Horizon | Depth | Description |
|---------|--------------|--|
| Apg | 0 - 20 cm | Dark grayish gray (5GY 4/1); Clay; Very sticky; Plastic; Alkaline |
| Bwg1 | 20 - 45 cm | Dark gray (5Y 4/1); Clay; Very sticky; Plastic; Neutral |
| Bw2 | 45 - 110 cm | Very dark grayish brown (2.5Y 3/2); Clay; Sticky; Plastic; Neutral |
| Bw3 | 110 - 120 cm | Very dark grayish brown to dark grayish brown (2.5Y 3.4/2); Clay; Sticky; Plastic; Neutral |

Morphology-NTB 5

NTB11,12 Montong Sapah / Puri

| Item | Description |
|-------------------|-------------------------------------|
| Soil Mapping Unit | None |
| Classification | |
| P3MT 1983 | Mediteran Gleik |
| FAO-Unesco 1985 | Gleyic Luvisols |
| USDA 1990 | Aquic Haplustalfs |
| Slope | 10 percent |
| Land Form | Middle slope of allongated ridges |
| Parent Material | Breccias |
| Drainage | Somewhat poorly |
| Land Use | Wet paddy field, village irrigation |
| Location | 300 m north from SD Kelanjur II |

| Horizon | Depth | Description |
|---------|-------------|---|
| Ap1 | 0 - 20 cm | Dark grayish brown (2.5Y 4/2); Clay; Sticky; Slightly plastic; Neutral |
| Bt1 | 20 - 45 cm | Olive brown (2.5Y 4/4); Clay; Sticky; Slightly plastic; Neutral |
| Bt2 | 45 - 90 cm | Grayish brown (2.5YR 4.5/2); Clay; Sticky; Slightly plastic; Neutral |
| Bt3 | 90 - 120 cm | Very dark grayish brown (10YR 3/2); Clay; Sticky; Slightly plastic; Neutral |

Table V-6 SOIL TEXTURE, PH, EC, AND ORGANIC MATTER

North Sumatra

| Sample No. | Sand % | Silt % | Clay % | pH(H ₂ O) | pH(KCl) | EC uS/cm | Org-C % | Org-N % | C/N | Org-Matter % |
|------------|--------|--------|--------|----------------------|---------|----------|---------|---------|------|--------------|
| SU1/I | 32.5 | 31.9 | 35.6 | 6.21 | 4.89 | 30.0 | 1.15 | 0.16 | 7.2 | 2.91 |
| SU1/II | 36.4 | 17.6 | 46.0 | 5.50 | 4.47 | 15.3 | 0.53 | 0.10 | 5.3 | 1.02 |
| SU2/I | 32.7 | 30.2 | 37.1 | 6.12 | 4.82 | 43.0 | 1.75 | 0.15 | 11.7 | 3.37 |
| SU2/II | 32.4 | 20.8 | 46.8 | 5.89 | 4.50 | 18.9 | 0.46 | 0.09 | 5.1 | 0.89 |
| SU3/I | 24.1 | 8.8 | 67.1 | 5.79 | 4.31 | 41.7 | 1.51 | 0.20 | 7.6 | 2.91 |
| SU3/II | 16.2 | 18.2 | 65.6 | 5.61 | 4.03 | 34.9 | 1.75 | 0.13 | 13.5 | 3.37 |
| SU4/I | 21.8 | 29.0 | 49.2 | 5.99 | 4.50 | 39.7 | 1.36 | 0.13 | 10.5 | 2.62 |
| SU4/II | 19.3 | 37.1 | 43.6 | 6.52 | 4.90 | 38.0 | 0.68 | 0.09 | 7.6 | 1.31 |
| SU5/I | 35.3 | 36.7 | 28.0 | 6.35 | 4.91 | 72.6 | 3.17 | 0.19 | 16.7 | 6.10 |
| SU5/II | 54.0 | 17.3 | 28.7 | 6.00 | 4.72 | 35.2 | 2.23 | 0.18 | 12.4 | 4.29 |
| SU6/I | 34.2 | 35.6 | 30.2 | 5.83 | 4.44 | 44.8 | 1.51 | 0.09 | 16.8 | 2.91 |
| SU7/I | 53.4 | 19.3 | 27.3 | 5.54 | 4.23 | 24.0 | 0.53 | 0.09 | 5.9 | 1.02 |
| SU8/I | 22.0 | 41.2 | 36.8 | 5.41 | 4.20 | 31.5 | 1.91 | 0.21 | 9.1 | 3.67 |
| SU8/II | 24.1 | 36.2 | 39.7 | 5.89 | 4.89 | 33.1 | 1.05 | 0.15 | 7.0 | 2.02 |
| SU9/I | 32.3 | 27.5 | 40.2 | 5.66 | 4.49 | 98.4 | 2.31 | 0.18 | 12.8 | 4.44 |
| SU9/II | 50.4 | 20.5 | 29.1 | 6.75 | 5.10 | 50.0 | 0.24 | 0.05 | 4.8 | 0.46 |
| SU10/I | 31.8 | 28.1 | 40.1 | 5.83 | 4.40 | 40.3 | 2.40 | 0.18 | 13.3 | 4.62 |
| SU11/I | 52.2 | 21.6 | 26.2 | 5.79 | 4.31 | 21.2 | 0.68 | 0.09 | 7.6 | 1.31 |
| SU11/II | 26.6 | 21.0 | 52.4 | 6.10 | 4.43 | 15.6 | 0.38 | 0.04 | 9.5 | 0.73 |
| SU12/I | 34.1 | 26.4 | 39.5 | 5.36 | 4.26 | 27.4 | 2.57 | 0.12 | 21.4 | 4.94 |

South Sulawesi

| Sample No. | Sand % | Silt % | Clay % | pH(H ₂ O) | pH(KCl) | EC uS/cm | Org-C % | Org-N % | C/N | Org-Matter % |
|------------|--------|--------|--------|----------------------|---------|----------|---------|---------|------|--------------|
| SS1/I | 20.0 | 28.1 | 51.9 | 5.58 | 4.29 | 121.0 | 1.83 | 0.10 | 18.3 | 1.83 |
| SS2/I | 38.2 | 30.8 | 31.0 | 5.99 | 4.57 | 90.0 | 1.43 | 0.14 | 10.2 | 1.43 |
| SS3/I | 16.8 | 35.4 | 47.8 | 7.64 | 7.18 | 369.0 | 2.91 | 0.15 | 19.4 | 2.91 |
| SS4/I | 41.5 | 36.6 | 21.9 | 6.24 | 4.89 | 203.0 | 2.57 | 0.20 | 12.8 | 2.57 |
| SS4/II | 42.6 | 30.8 | 26.6 | 6.73 | 5.15 | 105.0 | 1.59 | 0.06 | 26.5 | 1.59 |
| SS5/I | 19.4 | 20.6 | 60.0 | 7.03 | 5.47 | 120.0 | 0.75 | 0.06 | 12.5 | 0.75 |
| SS5/II | 23.7 | 20.6 | 55.7 | 7.00 | 5.51 | 138.0 | 1.20 | 0.09 | 13.3 | 1.20 |
| SS6/I | 19.6 | 20.0 | 60.4 | 7.05 | 6.47 | 128.0 | 0.75 | 0.16 | 4.7 | 0.75 |
| SS7/I | 10.8 | 38.4 | 50.8 | 6.33 | 4.89 | 98.1 | 1.38 | 0.25 | 5.5 | 1.38 |
| SS7/II | 14.2 | 36.4 | 49.4 | 6.41 | 5.35 | 67.4 | 0.80 | 0.18 | 4.4 | 0.80 |
| SS8/I | 9.6 | 39.4 | 51.0 | 6.13 | 4.79 | 97.1 | 1.28 | 0.15 | 8.5 | 1.28 |
| SS8/II | 12.2 | 40.4 | 47.4 | 6.61 | 5.15 | 57.3 | 0.75 | 0.08 | 9.4 | 0.75 |
| SS9/I | 31.1 | 37.3 | 31.6 | 5.95 | 4.68 | 41.1 | 4.85 | 0.36 | 13.5 | 4.85 |
| SS10/I | 25.2 | 34.4 | 40.4 | 5.23 | 4.40 | 52.6 | 4.27 | 0.26 | 16.4 | 4.27 |
| SS10/II | 33.8 | 24.4 | 41.8 | 5.11 | 4.44 | 52.8 | 1.91 | 0.23 | 8.3 | 1.91 |
| SS11/I | 13.1 | 24.0 | 62.9 | 5.92 | 4.83 | 244.0 | 2.07 | 0.09 | 23.0 | 2.07 |
| SS11/II | 6.0 | 32.6 | 61.4 | 6.28 | 5.22 | 553.0 | 1.51 | 0.12 | 12.6 | 1.51 |
| SS12/I | 56.3 | 29.4 | 14.3 | 5.80 | 4.47 | 58.7 | 1.43 | 0.13 | 11.0 | 1.43 |
| SS13/I | 16.1 | 22.2 | 61.7 | 5.67 | 5.96 | 147.0 | 4.56 | 0.35 | 13.0 | 4.56 |
| SS14/I | 26.7 | 51.9 | 21.4 | 5.72 | 4.44 | 36.0 | 4.08 | 0.21 | 19.4 | 4.08 |
| SS15/I | 17.4 | 21.6 | 61.0 | 6.76 | 5.59 | 77.2 | 1.43 | 0.12 | 11.9 | 1.43 |
| SS15/II | 11.2 | 31.4 | 57.4 | 6.35 | 5.12 | 211.0 | 1.03 | 0.09 | 11.4 | 1.03 |
| SS16/I | 22.0 | 23.2 | 54.8 | 6.90 | 5.98 | 120.0 | 1.12 | 0.11 | 10.2 | 1.12 |
| SS16/II | 33.9 | 20.4 | 45.7 | 6.79 | 5.52 | 60.6 | 0.75 | 0.10 | 7.5 | 0.75 |

West Nusa Tenggara

| Sample No. | Sand % | Silt % | Clay % | pH(H ₂ O) | pH(KCl) | EC uS/cm | Org-C % | Org-N % | C/N | Org-Matter % |
|------------|--------|--------|--------|----------------------|---------|----------|---------|---------|------|--------------|
| NT1/I | 13.0 | 53.7 | 33.4 | 6.67 | 5.47 | 260.0 | 2.20 | 0.15 | 14.7 | 3.79 |
| NT2/I | 16.6 | 34.2 | 49.2 | 7.83 | 6.37 | 170.0 | 2.07 | 0.14 | 14.8 | 3.56 |
| NT3/I | 13.4 | 30.9 | 55.8 | 7.05 | 5.70 | 175.0 | 1.62 | 0.12 | 13.5 | 2.79 |
| NT4/I | 25.3 | 28.6 | 46.0 | 6.37 | 4.72 | 150.0 | 2.12 | 0.13 | 16.3 | 3.66 |
| NT5/I | 66.1 | 24.7 | 9.2 | 7.57 | 6.62 | 305.0 | 1.94 | 0.13 | 14.9 | 3.35 |
| NT5/II | 67.4 | 25.5 | 7.1 | 8.13 | 7.20 | 505.0 | 1.56 | 0.12 | 13.0 | 2.69 |
| NT6/I | 26.6 | 57.9 | 15.5 | 8.08 | 7.48 | 408.0 | 1.85 | 0.14 | 13.2 | 3.19 |
| NT6/II | 45.5 | 44.2 | 10.2 | 8.12 | 7.60 | 435.0 | 1.19 | 0.09 | 13.2 | 2.05 |
| NT7/I | 42.2 | 51.4 | 6.4 | 7.71 | 6.68 | 85.0 | 1.81 | 0.14 | 12.9 | 3.12 |
| NT7/II | 71.5 | 24.5 | 4.0 | 7.67 | 6.40 | 42.0 | 1.63 | 0.13 | 12.5 | 2.81 |
| NT8/I | 56.5 | 36.3 | 7.2 | 7.56 | 6.52 | 275.0 | 2.01 | 0.15 | 13.4 | 3.47 |
| NT8/II | 75.4 | 21.4 | 3.3 | 7.38 | 6.46 | 85.0 | 1.74 | 0.14 | 12.4 | 3.00 |
| NT9/I | 15.9 | 21.4 | 62.7 | 8.15 | 7.11 | 155.0 | 2.15 | 0.16 | 13.4 | 3.71 |
| NT10/I | 29.6 | 14.5 | 55.9 | 8.34 | 7.12 | 175.0 | 1.98 | 0.16 | 12.4 | 3.41 |
| NT11/I | 29.7 | 20.2 | 50.1 | 7.96 | 6.49 | 90.0 | 2.54 | 0.16 | 15.9 | 4.37 |
| NT12/I | 37.0 | 20.1 | 42.9 | 8.92 | 7.09 | 142.0 | 2.79 | 0.17 | 16.4 | 4.81 |

Table V-7 EXCHANGEABLE CATION, CEC AND AVAILABLE PHOSPHATE

North Sumatra

| Sample No. | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | Exch-Al me/100g | Exch-NH4 me/100g | Total Base me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
|------------|-----------------|--------------------|--------------------|--------------------|--------------------|---------------------|-----------------------|----------------|---------------|------------------|
| SU1/I | 0.24 | 0.61 | 2.48 | 0.55 | 0.22 | 0.17 | 3.88 | 13.45 | 28.8 | 10.89 |
| SU1/II | 0.11 | 0.71 | 2.60 | 0.59 | 0.43 | 0.85 | 4.01 | 10.83 | 37.0 | 2.48 |
| SU2/I | 0.27 | 0.68 | 3.87 | 0.68 | 0.02 | 0.12 | 5.50 | 12.05 | 45.6 | 4.99 |
| SU2/II | 0.23 | 0.67 | 2.78 | 0.62 | 0.11 | 0.08 | 4.30 | 11.88 | 36.2 | 2.09 |
| SU3/I | 0.15 | 0.85 | 6.80 | 1.66 | 0.43 | 0.08 | 9.46 | 20.79 | 45.5 | 11.57 |
| SU3/II | 0.09 | 0.96 | 6.33 | 1.69 | 0.97 | 0.12 | 9.07 | 23.06 | 39.3 | 13.60 |
| SU4/I | 0.18 | 0.66 | 7.57 | 1.68 | 0.11 | 0.05 | 10.09 | 23.23 | 43.4 | 8.89 |
| SU4/II | 0.10 | 0.85 | 7.89 | 1.74 | tr | 0.08 | 10.58 | 23.93 | 44.2 | 5.64 |
| SU5/I | 1.19 | 0.68 | 3.79 | 0.69 | tr | 0.17 | 6.35 | 16.07 | 39.5 | 71.05 |
| SU5/II | 0.66 | 0.90 | 3.36 | 0.42 | tr | 0.11 | 5.34 | 15.72 | 34.0 | 12.25 |
| SU6/I | 0.20 | 0.82 | 5.40 | 1.14 | 0.32 | 0.16 | 7.56 | 16.07 | 47.0 | 22.09 |
| SU7/I | 0.11 | 0.71 | 2.17 | 0.52 | 0.97 | 0.08 | 3.51 | 9.08 | 38.7 | 52.79 |
| SU8/I | 0.15 | 0.65 | 3.49 | 1.26 | 1.95 | 0.14 | 5.55 | 15.55 | 35.7 | 4.37 |
| SU8/II | 0.10 | 0.71 | 3.37 | 1.62 | 0.38 | 0.13 | 5.80 | 18.69 | 31.0 | 1.86 |
| SU9/I | 0.19 | 0.76 | 9.49 | 1.69 | 1.62 | 0.08 | 12.13 | 17.64 | 68.8 | 6.29 |
| SU9/II | 0.31 | 0.68 | 8.25 | 1.77 | 0.05 | 0.09 | 11.01 | 21.13 | 52.1 | 4.99 |
| SU10/I | 0.76 | 0.95 | 4.42 | 1.26 | 0.54 | 0.11 | 7.39 | 19.91 | 37.1 | 118.57 |
| SU11/I | 0.16 | 0.63 | 1.63 | 0.54 | 0.59 | 0.11 | 2.96 | 8.56 | 34.6 | 8.89 |
| SU11/II | 0.46 | 0.85 | 2.38 | 0.92 | 0.38 | 0.09 | 4.61 | 15.89 | 29.0 | 3.74 |
| SU12/I | 0.14 | 0.76 | 3.35 | 0.94 | 1.08 | 0.11 | 5.19 | 18.17 | 28.6 | 4.99 |

South Sulawesi

| Sample No. | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | Exch-Al me/100g | Exch-NH4 me/100g | Total Base me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
|------------|-----------------|--------------------|--------------------|--------------------|--------------------|---------------------|-----------------------|----------------|---------------|------------------|
| SS1/I | 0.32 | 0.73 | 9.39 | 1.65 | 0.31 | 0.57 | 12.09 | 23.58 | 51.3 | 3.72 |
| SS2/I | 0.27 | 0.81 | 6.37 | 1.42 | 0.05 | 0.19 | 8.87 | 19.04 | 46.6 | 8.89 |
| SS3/I | 0.26 | 0.69 | 18.81 | 0.94 | tr | 0.16 | 20.70 | 27.42 | 75.5 | 6.10 |
| SS4/I | 0.74 | 0.68 | 10.59 | 1.84 | 0.02 | 0.42 | 13.85 | 32.84 | 42.2 | 91.22 |
| SS4/II | 0.67 | 0.69 | 10.27 | 1.83 | 0.02 | 0.28 | 13.46 | 25.85 | 52.1 | 98.21 |
| SS5/I | 0.22 | 0.70 | 17.45 | 1.61 | tr | 0.07 | 19.98 | 67.77 | 29.5 | 8.99 |
| SS5/II | 0.31 | 0.78 | 15.76 | 2.14 | tr | 0.07 | 18.99 | 56.42 | 33.7 | 6.72 |
| SS6/I | 0.22 | 0.76 | 17.40 | 1.60 | tr | 0.17 | 19.98 | 60.78 | 32.9 | 8.90 |
| SS7/I | 0.86 | 0.70 | 10.42 | 1.22 | tr | 0.42 | 13.20 | 36.50 | 36.2 | 15.66 |
| SS7/II | 0.68 | 0.62 | 12.67 | 1.80 | tr | 0.08 | 15.77 | 26.80 | 58.8 | 11.50 |
| SS8/I | 0.66 | 0.76 | 10.12 | 1.82 | tr | 0.22 | 13.36 | 34.58 | 38.6 | 15.24 |
| SS8/II | 0.62 | 0.65 | 12.57 | 1.87 | tr | 0.09 | 15.71 | 28.30 | 55.5 | 10.59 |
| SS9/I | 0.24 | 1.08 | 3.85 | 1.11 | 0.38 | 0.26 | 6.28 | 20.36 | 30.8 | 26.58 |
| SS10/I | 0.36 | 0.63 | 1.17 | 0.34 | 1.73 | 0.20 | 2.50 | 15.55 | 16.1 | 31.24 |
| SS10/II | 0.22 | 0.64 | 1.40 | 0.37 | 1.41 | 0.29 | 2.63 | 15.37 | 17.1 | 17.79 |
| SS11/I | 0.63 | 1.16 | 16.70 | 1.96 | tr | 0.08 | 20.45 | 41.57 | 49.2 | 56.63 |
| SS11/II | 0.70 | 1.82 | 17.78 | 1.98 | tr | 0.13 | 22.28 | 55.89 | 39.9 | 130.42 |
| SS12/I | 0.07 | 0.16 | 3.66 | 0.89 | 0.7 | 0.15 | 4.78 | 10.83 | 44.1 | 54.68 |
| SS13/I | 0.34 | 0.17 | 16.39 | 1.37 | tr | 0.36 | 18.27 | 35.28 | 51.8 | 9.57 |
| SS14/I | 0.19 | 0.15 | 3.20 | 1.06 | 1.51 | 0.26 | 4.60 | 17.64 | 26.1 | 39.42 |
| SS15/I | 0.47 | 5.15 | 16.11 | 1.76 | tr | 0.09 | 23.49 | 40.17 | 58.5 | 8.37 |
| SS15/II | 0.28 | 0.23 | 16.51 | 1.76 | tr | 0.22 | 18.78 | 36.33 | 51.7 | 8.99 |
| SS16/I | 0.26 | 0.14 | 15.11 | 1.72 | tr | 0.09 | 17.23 | 34.93 | 49.3 | 8.99 |
| SS16/II | 0.26 | 0.19 | 13.89 | 1.72 | tr | 0.12 | 16.06 | 29.52 | 54.4 | 6.10 |

West Nusa Tenggara

| Sample No. | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | Exch-Al me/100g | Exch-NH4 me/100g | Total Base me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
|------------|-----------------|--------------------|--------------------|--------------------|--------------------|---------------------|-----------------------|----------------|---------------|------------------|
| NT1/I | 1.62 | 0.49 | 12.25 | 5.70 | tr | 0.10 | 20.06 | 23.85 | 84.1 | 0.50 |
| NT2/I | 1.28 | 0.93 | 13.25 | 5.53 | tr | 0.13 | 20.99 | 25.38 | 82.7 | 6.60 |
| NT3/I | 0.77 | 0.23 | 6.60 | 2.40 | tr | 0.11 | 10.00 | 12.69 | 78.8 | 2.90 |
| NT4/I | 1.11 | 0.51 | 10.25 | 4.83 | tr | 0.13 | 16.70 | 26.46 | 63.1 | tr |
| NT5/I | 1.07 | 0.75 | 13.50 | 4.75 | tr | 0.16 | 20.07 | 20.77 | 96.6 | 5.70 |
| NT5/II | 0.85 | 1.30 | 9.75 | 3.62 | tr | 0.18 | 15.52 | 16.54 | 93.8 | 3.20 |
| NT6/I | 0.85 | 1.22 | 13.75 | 4.66 | tr | 0.15 | 20.48 | 17.85 | 114.7 | 5.60 |
| NT6/II | 0.77 | 1.42 | 10.25 | 3.79 | tr | 0.13 | 16.23 | 12.62 | 128.6 | 2.40 |
| NT7/I | 0.85 | 0.38 | 6.10 | 1.97 | tr | 0.14 | 9.30 | 10.77 | 86.4 | 6.10 |
| NT7/II | 0.68 | 0.32 | 4.65 | 1.19 | tr | 0.09 | 6.84 | 6.92 | 98.8 | 3.00 |
| NT8/I | 0.73 | 1.48 | 10.00 | 2.92 | tr | 0.17 | 15.13 | 15.00 | 100.9 | 8.40 |
| NT8/II | 0.56 | 0.51 | 7.50 | 1.97 | tr | 0.12 | 10.54 | 11.92 | 88.4 | 6.00 |
| NT9/I | 2.14 | 0.80 | 55.75 | 12.47 | tr | 0.20 | 71.16 | 70.00 | 101.7 | tr |
| NT10/I | 2.74 | 1.88 | 44.75 | 12.82 | tr | 0.18 | 62.19 | 56.15 | 110.8 | 4.20 |
| NT11/I | 1.45 | 1.07 | 24.75 | 10.22 | tr | 0.16 | 37.49 | 46.02 | 81.5 | 3.20 |
| NT12/I | 0.77 | 1.16 | 28.75 | 10.56 | tr | 0.15 | 41.24 | 43.08 | 95.7 | 1.60 |

Table V-8 SOLUBLE CATION AND ANION

North Sumatra

| Sample No. | Sol-K me/100g | Sol-Na me/100g | Sol-Ca me/100g | Sol-Mg me/100g | Sol-Cl me/100g | Sol-SO ₄ me/100g | Sol-NO ₃ me/100g |
|------------|------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------|--------------------------------|
| SU1/I | 0.08 | 0.01 | 0.41 | 0.14 | 0.014 | 0.011 | 0.0037 |
| SU1/II | 0.05 | 0.05 | 0.89 | 0.14 | 0.005 | 0.499 | 0.0023 |
| SU2/I | 0.08 | 0.03 | 2.00 | 0.15 | tr | tr | 0.0104 |
| SU2/II | 0.08 | 0.08 | 1.37 | 0.15 | tr | tr | 0.0028 |
| SU3/I | 0.06 | 0.26 | 3.30 | 0.17 | 0.162 | 0.471 | 0.0046 |
| SU3/II | 0.05 | 0.44 | 3.93 | 0.18 | 0.135 | 0.224 | 0.0053 |
| SU4/I | 0.07 | 0.13 | 4.23 | 0.18 | 0.140 | 0.080 | 0.0127 |
| SU4/II | 0.11 | 0.25 | 3.65 | 0.18 | 0.005 | 0.011 | 0.0048 |
| SU5/I | 0.11 | 0.22 | 1.98 | 0.15 | 0.093 | tr | 0.0042 |
| SU5/II | 0.09 | 0.35 | 1.72 | 0.14 | 0.014 | tr | 0.0058 |
| SU6/I | 0.07 | 0.31 | 3.26 | 0.16 | 0.098 | 0.248 | 0.0058 |
| SU7/I | 0.06 | 0.10 | 0.86 | 0.15 | 0.009 | 0.011 | 0.0059 |
| SU8/I | 0.07 | 0.20 | 2.03 | 0.17 | 0.225 | 0.364 | 0.0045 |
| SU8/II | 0.05 | 0.24 | 1.94 | 0.18 | 0.151 | 0.068 | 0.0087 |
| SU9/I | 0.07 | 0.30 | 2.95 | 0.17 | 0.173 | 0.091 | 0.0073 |
| SU9/II | 0.09 | 0.27 | 5.78 | 0.18 | 0.019 | 0.011 | 0.0042 |
| SU10/I | 0.10 | 0.07 | 2.21 | 0.16 | 0.063 | 0.002 | 0.0117 |
| SU11/I | 0.07 | 0.13 | 0.63 | 0.15 | 0.005 | tr | 0.0070 |
| SU11/II | 0.09 | 0.32 | 1.22 | 0.16 | 0.005 | tr | 0.0030 |
| SU12/I | 0.06 | 0.25 | 1.62 | 0.16 | 0.088 | 0.045 | 0.0070 |

South Sulawesi

| Sample No. | Sol-K me/100g | Sol-Na me/100g | Sol-Ca me/100g | Sol-Mg me/100g | Sol-Cl me/100g | Sol-SO ₄ me/100g | Sol-NO ₃ me/100g |
|------------|------------------|-------------------|-------------------|-------------------|-------------------|--------------------------------|--------------------------------|
| SS1/I | 0.08 | 0.20 | 7.25 | 0.18 | 0.108 | 0.023 | 0.0071 |
| SS2/I | 0.08 | 0.14 | 4.03 | 0.17 | 0.063 | 0.068 | 0.0046 |
| SS3/I | 0.07 | 0.09 | 8.00 | 0.16 | 0.048 | tr | 0.0012 |
| SS4/I | 0.10 | 0.18 | 6.50 | 0.18 | 0.093 | 0.299 | 0.0010 |
| SS4/II | 0.10 | 0.13 | 7.52 | 0.19 | 0.058 | 0.011 | 0.0015 |
| SS5/I | 0.07 | 0.15 | 11.50 | 0.34 | tr | 0.011 | 0.0013 |
| SS5/II | 0.08 | 0.12 | 12.76 | 0.37 | tr | tr | 0.0016 |
| SS6/I | 0.10 | 0.15 | 11.58 | 0.44 | tr | 0.012 | 0.0015 |
| SS7/I | 0.10 | 0.23 | 7.66 | 0.45 | 0.086 | 0.028 | 0.0240 |
| SS7/II | 0.09 | 0.18 | 7.08 | 0.36 | 0.014 | tr | 0.0260 |
| SS8/I | 0.09 | 0.13 | 7.56 | 0.15 | 0.083 | 0.023 | 0.0020 |
| SS8/II | 0.09 | 0.08 | 7.09 | 0.16 | 0.011 | tr | 0.0021 |
| SS9/I | 0.08 | 0.24 | 2.16 | 0.14 | 0.024 | 0.023 | 0.0053 |
| SS10/I | 0.08 | 0.10 | 0.08 | 0.11 | 0.028 | 0.312 | 0.0126 |
| SS10/II | 0.08 | 0.04 | 0.06 | 0.09 | 0.024 | 1.142 | 0.0050 |
| SS11/I | 0.09 | 0.40 | 5.85 | 0.18 | 0.151 | 0.846 | 0.0038 |
| SS11/II | 0.10 | 0.54 | 7.79 | 0.17 | 0.135 | 1.994 | 0.0042 |
| SS12/I | 0.04 | 0.08 | 1.31 | 0.12 | 0.038 | 0.011 | 0.0026 |
| SS13/I | 0.08 | 0.15 | 10.77 | 0.14 | 0.168 | 0.011 | 0.0065 |
| SS14/I | 0.08 | 0.14 | 0.77 | 0.13 | 0.103 | 0.034 | 0.0038 |
| SS15/I | 0.09 | 0.06 | 6.98 | 0.16 | 0.005 | tr | 0.0040 |
| SS15/II | 0.09 | 0.14 | 8.67 | 0.16 | 0.073 | 0.011 | 0.0035 |
| SS16/I | 0.08 | 0.05 | 12.40 | 0.15 | tr | tr | 0.0036 |
| SS16/II | 0.08 | 0.06 | 6.14 | 0.15 | 0.014 | tr | 0.0033 |

West Nusa Tenggara

| Sample No. | Sol-K me/100g | Sol-Na me/100g | Sol-Ca me/100g | Sol-Mg me/100g | Sol-Cl mg/l | Sol-SO ₄ mg/l | Sol-NO ₃ mg/l |
|------------|------------------|-------------------|-------------------|-------------------|----------------|-----------------------------|-----------------------------|
| NT1/I | 0.05 | 0.09 | 0.08 | 0.05 | 3.500 | 3.330 | 6.2000 |
| NT2/I | 0.05 | 0.21 | 0.08 | 0.07 | 3.500 | 3.330 | 7.4400 |
| NT3/I | 0.05 | 0.08 | 0.09 | 0.05 | 3.500 | 8.330 | 7.4400 |
| NT4/I | 0.03 | 0.07 | 0.11 | 0.06 | 3.500 | 10.000 | 6.2000 |
| NT5/I | 0.05 | 0.18 | 0.13 | 0.09 | 5.100 | 3.330 | 6.2000 |
| NT5/II | 0.05 | 0.40 | 0.13 | 0.08 | 3.500 | 8.330 | 7.4000 |
| NT6/I | 0.08 | 0.46 | 0.47 | 0.24 | 3.500 | 10.000 | 6.2000 |
| NT6/II | 0.09 | 0.65 | 0.47 | 0.31 | 3.500 | 10.000 | 6.2000 |
| NT7/I | 0.16 | 0.30 | 0.16 | 0.08 | 5.100 | 3.330 | 7.4000 |
| NT7/II | 0.06 | 0.09 | 0.08 | 0.05 | 7.100 | 3.330 | 8.0600 |
| NT8/I | 0.06 | 0.42 | 0.14 | 0.07 | 3.500 | 8.330 | 8.0600 |
| NT8/II | 0.05 | 0.16 | 0.13 | 0.06 | 3.500 | 10.000 | 7.4000 |
| NT9/I | 0.11 | 0.17 | 0.47 | 0.14 | 3.500 | 10.000 | 8.1000 |
| NT10/I | 0.13 | 0.43 | 0.34 | 0.16 | 5.100 | 8.330 | 8.1000 |
| NT11/I | 0.19 | 0.61 | 0.94 | 0.42 | 3.500 | 10.000 | 8.7000 |
| NT12/I | 0.31 | 0.70 | 0.63 | 0.37 | 5.100 | 8.330 | 6.2000 |

Table V-9 SOIL FERTILITY CRITERIA IN INDONESIA

| Item | Unit | Very Low (VL) | Low (L) | Moderate (M) | High (H) | Very High (VH) | |
|-----------------|------------|-------------------|-------------|-----------------------|----------------|----------------------------|------------------|
| Organic C | (%) | < 1.00 | 1.00 - 2.00 | 2.01 - 3.00 | 3.01 - 5.00 | > 5.00 | |
| Organic N | (%) | < 0.10 | 0.10 - 0.20 | 0.21 - 0.50 | 0.51 - 0.75 | > 0.75 | |
| C/N Ratio | | < 5 | 5 - 10 | 11 - 15 | 16 - 25 | > 25 | |
| P2O5 HCl 25% | (mg/100g) | < 10 | 10 - 20 | 21 - 40 | 41 - 60 | > 60 | |
| P2O5 Bray I | (ppm) | < 10 | 10 - 15 | 16 - 25 | 26 - 35 | > 35 | |
| P2O5 Olsen | (ppm) | < 10 | 10 - 20 | 21 - 40 | 41 - 60 | > 60 | |
| K2O HCl 25% | (mg/100g) | < 10 | 10 - 20 | 21 - 40 | 41 - 60 | > 60 | |
| CEC | (me/100g) | < 5 | 5 - 16 | 17 - 24 | 25 - 40 | > 40 | |
| Exchangeable K | (me/100g) | < 0.1 | 0.1 - 0.2 | 0.3 - 0.5 | 0.6 - 1.0 | > 1.0 | |
| Exchangeable Ca | (me/100g) | < 2 | 2 - 5 | 6 - 10 | 11 - 20 | > 20 | |
| Exchangeable Mg | (me/100g) | < 0.4 | 0.4 - 1.0 | 1.1 - 2.0 | 2.1 - 8.0 | > 8.0 | |
| Exchangeable Na | (me/100g) | < 0.1 | 0.1 - 0.3 | 0.4 - 0.7 | 0.8 - 1.0 | > 1.0 | |
| Base Saturation | (%) | < 20 | 20 - 35 | 36 - 50 | 51 - 70 | > 70 | |
| Al Saturation | (%) | < 10 | 10 - 20 | 21 - 30 | 31 - 60 | > 60 | |
| EC | (mmhos/cm) | < 1 | 1 - 2 | 2 - 3 | 3 - 4 | > 4 | |
| | | Very acid (VA) | Acid (A) | Slightly acid (SA) | Neutral (N) | Slightly alkaline (SAL) | Alkaline (AL) |
| pH (H2O) | | < 4.5 | 4.5 - 5.5 | 5.6 - 6.5 | 6.6 - 7.5 | 7.6 - 8.5 | > 8.5 |

Source : Research Institute of Soil and Agro-climate

Table V-10 SOIL FERTILITY ANALYSIS

| North Sumatra | | | | | | | | | | | | | |
|---------------|-----------------|----------------------|----------|---------|---------|------|--------------|-----------------|-----------------|-----------------|-------------|------------|---------------|
| Sample No. | Name of Scheme | pH(H ₂ O) | EC uS/cm | Org-C % | Org-N % | C/N | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
| SUM1/I | Sumbari | 6.2 SA | 30.0 | 1.15 L | 0.16 L | 7 L | 0.2 L | 0.6 M | 2 L | 0.6 L | 13 L | 29 L | 11 |
| SUM1/II | | 5.5 A | 15.3 | 0.53 VL | 0.10 L | 5 L | 0.1 L | 0.7 M | 3 L | 0.6 L | 11 L | 37 M | 2 |
| SUM2/I | | 6.1 SA | 43.0 | 1.75 L | 0.15 L | 12 M | 0.3 M | 0.7 M | 4 L | 0.7 L | 12 L | 46 M | 5 |
| SUM2/II | | 5.9 SA | 18.9 | 0.46 VL | 0.09 VL | 5 L | 0.2 L | 0.7 M | 3 L | 0.6 L | 12 L | 36 M | 2 |
| SUM3/I | Raaming (B) | 5.8 SA | 41.7 | 1.51 L | 0.20 L | 8 L | 0.2 L | 0.9 H | 7 M | 1.7 M | 21 M | 46 M | 12 |
| SUM3/II | | 5.6 SA | 34.9 | 1.75 L | 0.13 L | 13 M | 0.1 VL | 1.0 H | 6 M | 1.7 M | 23 M | 39 M | 14 |
| SUM4/I | | 6.0 SA | 39.7 | 1.36 L | 0.18 L | 10 M | 0.2 L | 0.7 M | 8 M | 1.7 M | 23 M | 43 M | 9 |
| SUM4/II | | 6.5 SA | 38.0 | 0.68 VL | 0.09 VL | 8 L | 0.1 L | 0.9 H | 8 M | 1.7 M | 24 M | 44 M | 6 |
| SUM5/A | Sumbul Berampa | 6.4 SA | 72.6 | 3.17 H | 0.19 L | 17 M | 1.2 VH | 0.7 M | 4 L | 0.7 L | 16 L | 40 M | 71 |
| SUM5/II | | 6.0 SA | 35.2 | 2.23 M | 0.18 L | 12 M | 0.7 H | 0.9 H | 3 L | 0.4 L | 16 L | 34 L | 12 |
| SUM6/I | Sidomukti | 5.8 SA | 44.8 | 1.51 L | 0.09 VL | 17 M | 0.2 L | 0.8 H | 5 L | 1.1 M | 16 L | 47 M | 22 |
| SUM7/I | Aek Palia | 5.5 A | 24.0 | 0.53 VL | 0.09 VL | 6 L | 0.1 L | 0.7 M | 2 L | 0.5 L | 9 L | 39 M | 53 |
| SUM8/I | Pangambatan (B) | 5.4 A | 31.5 | 1.91 L | 0.21 M | 9 L | 0.2 L | 0.7 M | 3 L | 1.3 M | 16 L | 36 M | 4 |
| SUM8/II | | 5.9 SA | 33.1 | 1.05 L | 0.15 L | 7 L | 0.1 L | 0.7 M | 3 L | 1.6 M | 19 M | 31 L | 2 |
| SUM9/I | Aek Siparbae | 5.7 SA | 98.4 | 2.31 M | 0.18 L | 13 M | 0.2 L | 0.8 H | 9 M | 1.7 M | 18 M | 69 H | 6 |
| SUM9/II | | 6.8 N | 50.0 | 0.24 VL | 0.05 VL | 5 VL | 0.3 M | 0.7 M | 8 M | 1.8 M | 21 M | 52 H | 5 |
| SUM10/I | Kutamale | 5.8 SA | 40.3 | 2.40 M | 0.18 L | 13 M | 0.8 H | 1.0 H | 4 L | 1.3 M | 20 M | 37 M | 119 |
| SUM11/I | Asahan VIII | 5.8 SA | 21.2 | 0.68 VL | 0.09 VL | 8 L | 0.2 L | 0.6 M | 2 VL | 0.5 L | 9 L | 35 L | 9 |
| SUM11/II | Pengajian | 6.1 SA | 15.6 | 0.38 VL | 0.04 VL | 10 L | 0.5 M | 0.9 H | 2 L | 0.9 L | 16 L | 29 L | 4 |
| SUM12/I | Aek Sihim | 5.4 A | 27.4 | 2.57 M | 0.12 L | 21 H | 0.1 L | 0.8 H | 3 L | 0.9 L | 18 M | 29 L | 5 |

| South Sulawesi | | | | | | | | | | | | | |
|----------------|------------------|----------------------|----------|---------|---------|-------|--------------|-----------------|-----------------|-----------------|-------------|------------|---------------|
| Sample No. | Name of Scheme | pH(H ₂ O) | EC uS/cm | Org-C % | Org-N % | C/N | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
| SUL1/I | Pajjenge | 5.6 SA | 121.0 | 1.83 L | 0.10 L | 18 M | 0.3 M | 0.7 M | 9 M | 1.7 M | 24 M | 51 H | 4 |
| SUL2/I | Kaditeng | 6.0 SA | 90.0 | 1.43 L | 0.14 L | 10 L | 0.3 M | 0.8 H | 6 M | 1.4 M | 19 M | 47 M | 9 |
| SUL3/I | Kaindi | 7.6 SAL | 369.0 | 2.91 M | 0.15 L | 19 M | 0.3 M | 0.7 M | 19 H | 0.9 L | 27 H | 75 VH | 6 |
| SUL4/A | Lembang Bata | 6.2 SA | 203.0 | 2.57 M | 0.20 L | 13 M | 0.7 H | 0.7 M | 11 H | 1.8 M | 33 H | 42 M | 91 |
| SUL4/II | | 6.7 N | 105.0 | 1.59 L | 0.06 VL | 27 VH | 0.7 H | 0.7 M | 10 M | 1.8 M | 26 H | 52 H | 98 |
| SUL5/A | Panrita | 7.0 N | 120.0 | 0.75 VL | 0.06 VL | 13 M | 0.2 L | 0.7 M | 17 H | 1.6 M | 68 VH | 29 L | 9 |
| SUL5/II | | 7.0 N | 138.0 | 1.20 L | 0.09 VL | 13 M | 0.3 M | 0.8 H | 16 H | 2.1 H | 56 VH | 34 L | 7 |
| SUL6/I | | 7.1 N | 128.0 | 0.75 VL | 0.16 L | 5 VL | 0.2 L | 0.8 H | 17 H | 1.6 M | 61 VH | 33 L | 9 |
| SUL7/I | Mario I-II-III | 6.3 SA | 98.1 | 1.38 L | 0.25 M | 6 L | 0.9 H | 0.7 M | 10 M | 1.2 M | 37 H | 36 M | 16 |
| SUL7/II | | 6.4 SA | 67.4 | 0.80 VL | 0.18 L | 4 VL | 0.7 H | 0.6 M | 13 H | 1.8 M | 27 H | 59 H | 12 |
| SUL8/I | | 6.1 SA | 97.1 | 1.28 L | 0.15 L | 9 L | 0.7 H | 0.8 H | 10 M | 1.8 M | 35 H | 39 M | 15 |
| SUL8/II | | 6.6 N | 57.3 | 0.75 VL | 0.08 VL | 9 L | 0.6 H | 0.7 M | 13 H | 1.9 M | 28 H | 56 H | 11 |
| SUL9/I | Pakelli II | 6.0 SA | 41.1 | 4.85 H | 0.36 M | 13 M | 0.2 L | 1.1 VH | 4 L | 1.1 M | 20 M | 31 L | 27 |
| SUL10/I | | 5.2 A | 52.6 | 4.27 H | 0.26 M | 16 H | 0.4 M | 0.6 M | 1 VL | 0.3 VL | 16 L | 16 VL | 31 |
| SUL10/II | | 5.1 A | 52.8 | 1.91 L | 0.23 M | 8 L | 0.2 L | 0.6 M | 1 VL | 0.4 VL | 15 L | 17 VL | 18 |
| SUL11/A | Limpua / Padaclo | 5.9 SA | 244.0 | 2.07 M | 0.09 VL | 23 H | 0.6 H | 1.2 VH | 17 H | 2.0 M | 42 VH | 49 M | 57 |
| SUL11/II | | 6.3 SA | 53.0 | 1.51 L | 0.12 L | 13 M | 0.7 H | 1.8 VH | 18 H | 2.0 M | 56 VH | 40 M | 130 |
| SUL12/A | Malimbu | 5.8 SA | 58.7 | 1.43 L | 0.13 L | 11 M | 0.1 VL | 0.2 L | 4 L | 0.9 L | 11 L | 44 M | 55 |
| SUL13/A | Salu Akung | 5.7 SA | 147.0 | 4.56 H | 0.35 M | 13 M | 0.3 M | 0.2 L | 16 H | 1.4 M | 35 H | 52 H | 10 |
| SUL14/A | Marin | 5.7 SA | 36.0 | 4.08 H | 0.21 M | 19 M | 0.2 L | 0.2 L | 3 L | 1.1 M | 18 M | 26 L | 39 |
| SUL15/A | Kalu | 6.8 N | 77.2 | 1.43 L | 0.12 L | 12 M | 0.5 M | 5.2 VH | 16 H | 1.8 M | 40 H | 58 H | 8 |
| SUL15/II | | 6.4 SA | 211.0 | 1.03 L | 0.09 VL | 11 M | 0.3 M | 0.2 L | 17 H | 1.8 M | 36 H | 52 H | 9 |
| SUL16/A | | 6.9 SA | 120.0 | 1.12 L | 0.11 L | 10 L | 0.3 M | 0.1 L | 15 H | 1.7 M | 35 H | 49 M | 9 |
| SUL16/II | | 6.8 N | 60.6 | 0.75 VL | 0.10 L | 8 L | 0.3 M | 0.2 L | 14 H | 1.7 M | 30 H | 54 H | 6 |

| West Nusa Tenggara | | | | | | | | | | | | | |
|--------------------|-----------------|----------------------|----------|---------|---------|------|--------------|-----------------|-----------------|-----------------|-------------|------------|---------------|
| Sample No. | Name of Scheme | pH(H ₂ O) | EC uS/cm | Org-C % | Org-N % | C/N | Ex-K me/100g | Exch-Na me/100g | Exch-Ca me/100g | Exch-Mg me/100g | CEC me/100g | Base-Sat % | Avai-P2O5 ppm |
| NTB1/I | Lokok Tripas | 6.7 N | 260.0 | 2.20 M | 0.15 L | 15 M | 1.6 VH | 0.5 M | 12 H | 5.7 H | 24 M | 84 VH | 1 |
| NTB2/I | Montong Sapah / | 7.8 SAL | 170.0 | 2.07 M | 0.14 L | 15 M | 1.3 VH | 0.9 H | 13 H | 5.5 H | 25 H | 83 VH | 7 |
| NTB3/I | Puri | 7.1 N | 175.0 | 1.62 L | 0.12 L | 14 M | 0.8 H | 0.2 L | 7 M | 2.4 H | 13 L | 79 VH | 3 |
| NTB4/I | Kelokos Udang | 6.4 SA | 150.0 | 2.12 M | 0.13 L | 16 H | 1.1 VH | 0.5 M | 10 M | 4.8 H | 26 L | 63 VH | ur |
| NTB5/I | Lengkok Duda | 7.6 SAL | 305.0 | 1.94 L | 0.13 L | 15 M | 1.1 VH | 0.8 H | 14 H | 4.8 H | 21 M | 97 VH | 6 |
| NTB5/II | | 8.1 SAL | 505.0 | 1.56 L | 0.12 L | 13 M | 0.9 H | 1.3 VH | 10 M | 3.6 H | 17 M | 94 VH | 3 |
| NTB6/I | | 8.1 SAL | 408.0 | 1.85 L | 0.14 L | 13 M | 0.9 H | 1.2 VH | 14 H | 4.7 H | 18 M | 115 VH | 6 |
| NTB6/II | | 8.1 SAL | 435.0 | 1.19 L | 0.09 VL | 13 M | 0.8 H | 1.4 VH | 10 M | 3.8 H | 13 L | 129 VH | 2 |
| NTB7/I | Danar Jengkrang | 7.7 SAL | 85.0 | 1.81 L | 0.14 L | 13 M | 0.9 H | 0.4 M | 6 M | 2.0 M | 11 L | 86 VH | 6 |
| NTB7/II | | 7.7 SAL | 42.0 | 1.63 L | 0.13 L | 13 M | 0.7 H | 0.3 L | 5 L | 1.2 M | 7 L | 99 VH | 3 |
| NTB8/I | | 7.6 SAL | 275.0 | 2.01 M | 0.15 L | 13 M | 0.7 H | 1.5 VH | 10 M | 2.9 H | 15 L | 101 VH | 8 |
| NTB8/II | | 7.4 N | 85.0 | 1.74 L | 0.14 L | 12 M | 0.6 H | 0.5 M | 8 M | 2.0 M | 12 L | 88 VH | 6 |
| NTB9/A | Uma Lebang | 8.2 SAL | 155.0 | 2.15 M | 0.16 L | 13 M | 2.1 VH | 0.8 H | 56 VH | 12.5 VH | 70 VH | 102 VH | ur |
| NTB10/I | | 8.3 SAL | 175.0 | 1.98 L | 0.16 L | 12 M | 2.7 VH | 1.9 VH | 45 VH | 12.8 VH | 56 VH | 111 VH | 4 |
| NTB11/I | Mada Manini | 8.0 SAL | 90.0 | 2.54 M | 0.16 L | 16 H | 1.5 VH | 1.1 VH | 25 VH | 10.2 VH | 46 VH | 81 VH | 3 |
| NTB12/I | Raba Sangga | 8.9 AL | 142.0 | 2.79 M | 0.17 L | 16 H | 0.8 H | 1.2 VH | 29 VH | 10.6 VH | 43 VH | 96 VH | 2 |

Legend: VA Very acid VL Very low
A Asid L Low
SA Slightly acid M Moderate
N Neutral H High
SAL Slightly alkaline VH Very high
AL Alkaline

Note: Plain : Surface soil
Italic : Sub-surface soil

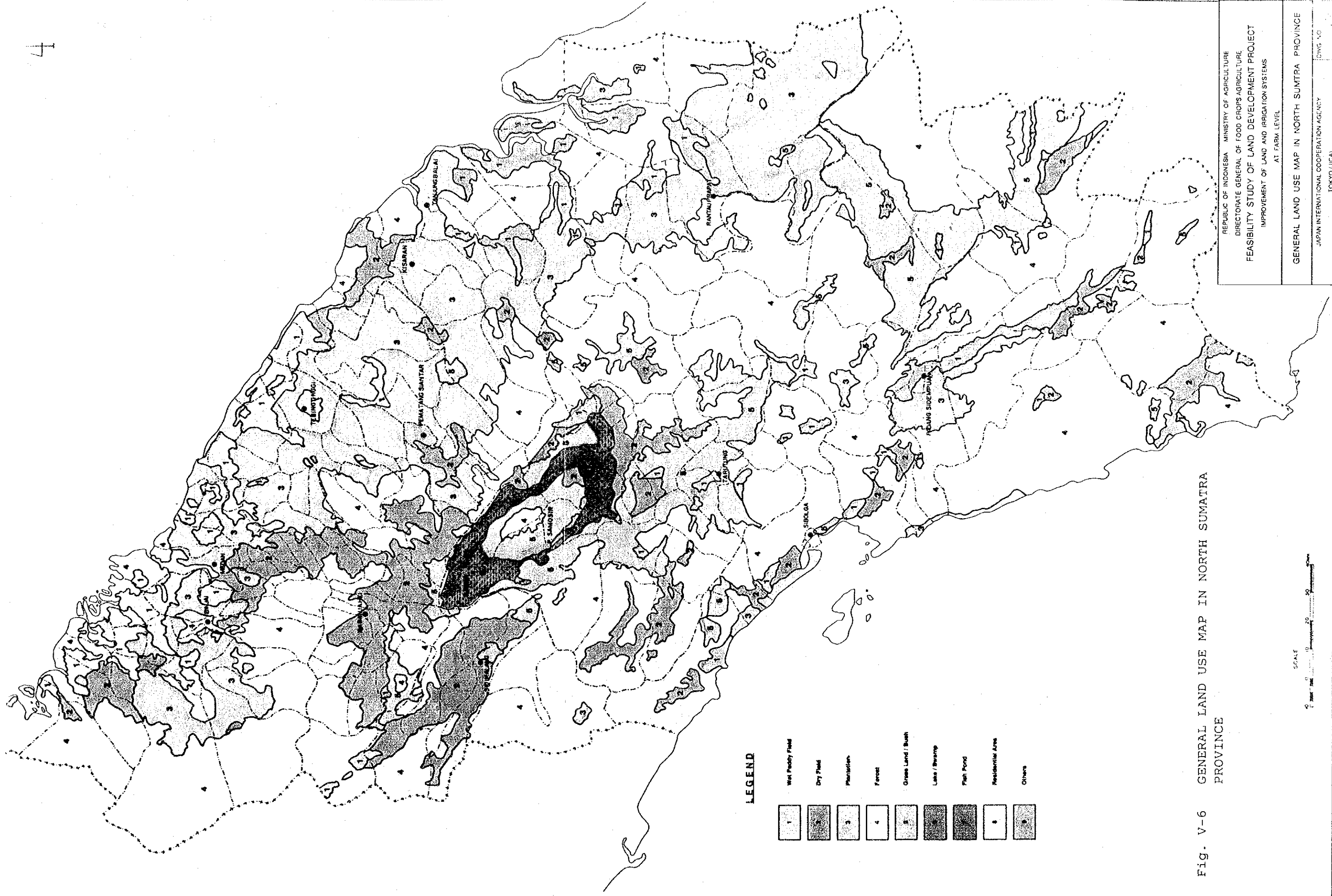


Fig. V-6 GENERAL LAND USE MAP IN NORTH SUMATRA PROVINCE

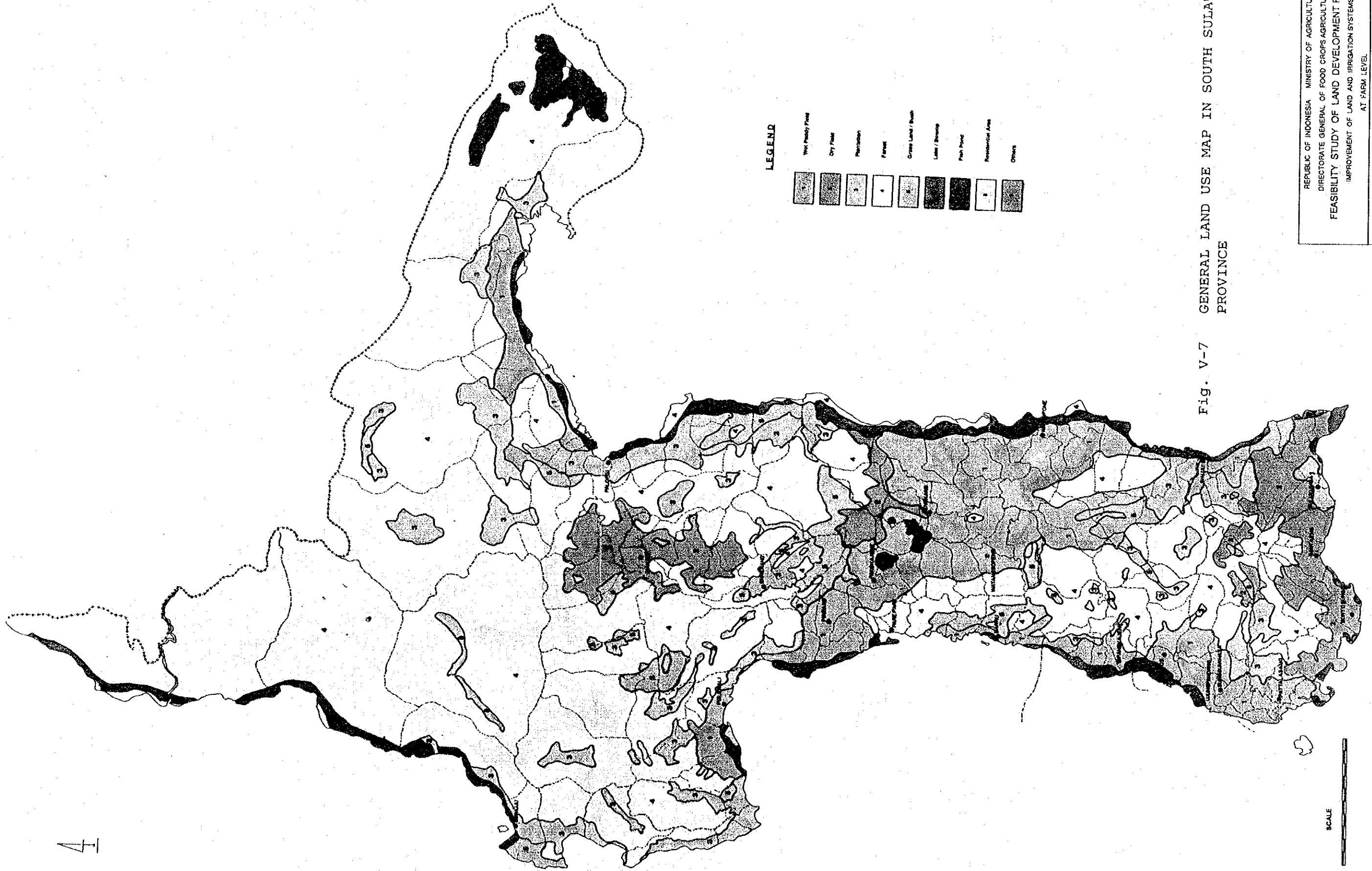
REPUBLIC OF INDONESIA MINISTRY OF AGRICULTURE
 DIRECTORATE GENERAL OF FOOD CROPS AGRICULTURE
 FEASIBILITY STUDY OF LAND DEVELOPMENT PROJECT
 IMPROVEMENT OF LAND AND IRRIGATION SYSTEMS
 AT FARM LEVEL

GENERAL LAND USE MAP IN NORTH SUMATRA PROVINCE

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
 TOKYO, JAPAN

DWG. NO.

4



LEGEND

- Wet Paddy Field
- Dry Field
- Pasture
- Forest
- Grass Land / Bush
- Lake / Swamp
- Fish Pond
- Residential Area
- Others

Fig. V-7

GENERAL LAND USE MAP IN SOUTH SULAWESI PROVINCE

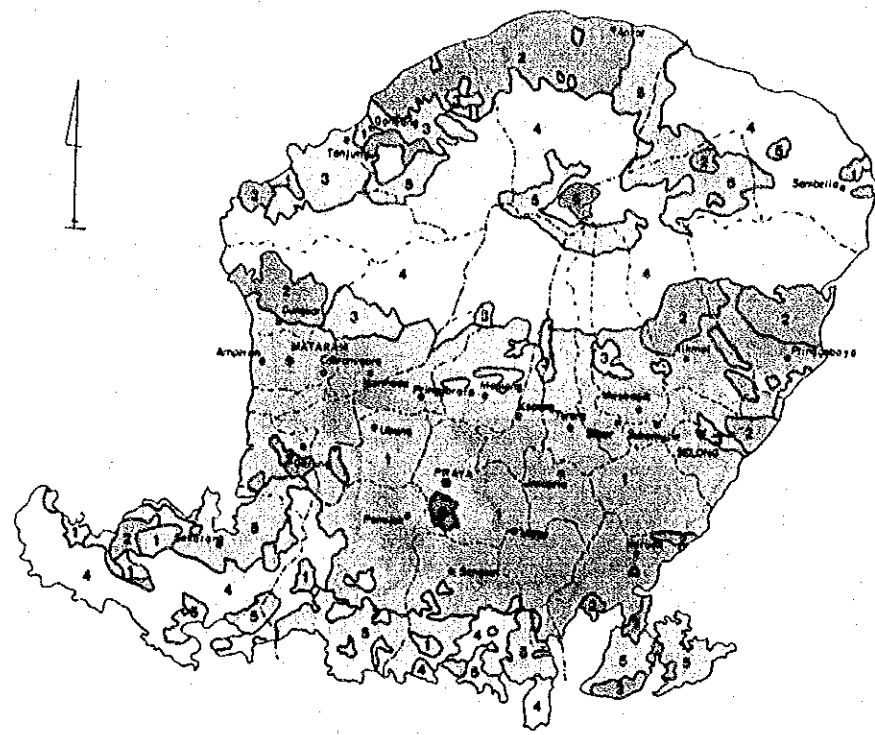
SCALE

REPUBLIC OF INDONESIA MINISTRY OF AGRICULTURE
 DIRECTORATE GENERAL OF FOOD CROPS AGRICULTURE
 FEASIBILITY STUDY OF LAND DEVELOPMENT PROJECT
 IMPROVEMENT OF LAND AND IRRIGATION SYSTEMS
 AT FARM LEVEL

GENERAL LAND USE MAP IN SOUTH SULAWESI PROVINCE

JAPAN INTERNATIONAL COOPERATION AGENCY
 TOKYO (JICA)

DWG. NO. 43



LEGEND

- 1 Wet Paddy Field
- 2 Dry Field
- 3 Pterocarp
- 4 Forest
- 5 Grass Land / Bush
- 6 Lake / Swamp
- 7 Fish Pond
- 8 Residential Area
- 9 Other

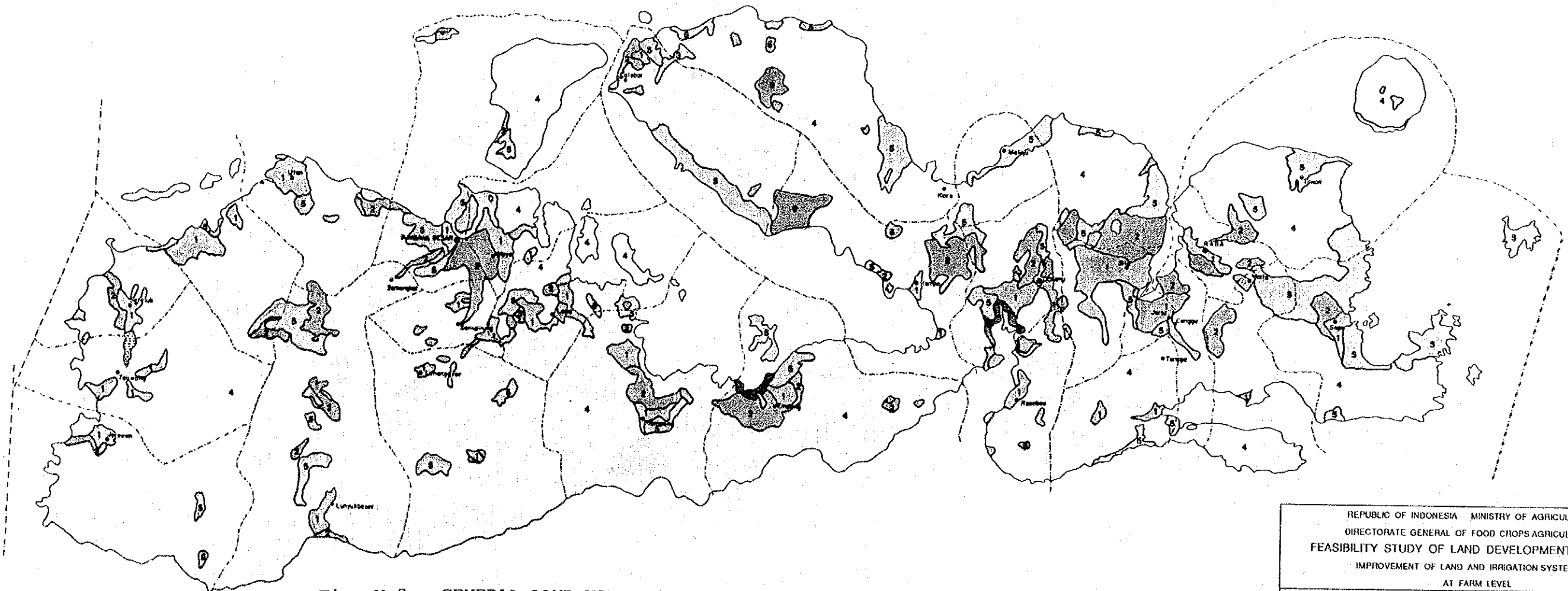


Fig. V-8 GENERAL LAND USE MAP IN WEST NUSA TENGGARA PROVINCE



| | |
|--|----------------|
| REPUBLIC OF INDONESIA MINISTRY OF AGRICULTURE DIRECTORATE GENERAL OF FOOD CROPS AGRICULTURE FEASIBILITY STUDY OF LAND DEVELOPMENT PROJECT IMPROVEMENT OF LAND AND IRRIGATION SYSTEMS AT FARM LEVEL | |
| GENERAL LAND USE MAP IN WEST NUSA TENGGARA PROVINCE | |
| JAPAN INTERNATIONAL COOPERATION AGENCY TOKYO (JICA) | DWG. NO. 44 |

Table V-11 AREA OF WET LAND BY IRRIGATION TYPE AND PADDY PLANTING TIMES (1989)

North Sumatra

| Kabupaten | Technical Irri. | | Semi Tech. Irri. | | Non Tech. Irri. | | Rainfed | | Tidal | | Others | | Total | | TOTAL |
|------------------|-----------------|--------|------------------|--------|-----------------|--------|---------|--------|-------|-------|--------|--------|---------|---------|---------|
| | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | |
| Nias | 0 | 0 | 104 | 1,165 | 575 | 2,868 | 13,962 | 3,233 | 0 | 0 | 0 | 0 | 14,641 | 7,266 | 21,907 |
| Tapanuli Selatan | 0 | 0 | 2,210 | 9,032 | 13,876 | 27,126 | 12,286 | 1,225 | 0 | 0 | 1,133 | 30 | 29,505 | 37,413 | 66,918 |
| Tapanuli Tengah | 0 | 0 | 350 | 4,029 | 1,615 | 3,361 | 1,709 | 1,541 | 0 | 0 | 2,679 | 704 | 6,353 | 9,635 | 15,988 |
| Tapanuli Utara | 0 | 0 | 2,959 | 2,406 | 35,520 | 10,262 | 4,259 | 221 | 0 | 0 | 210 | 0 | 42,948 | 12,889 | 55,837 |
| Labuhan Batu | 0 | 2,915 | 0 | 1,094 | 0 | 816 | 52,269 | 2,079 | 3,916 | 0 | 26,282 | 0 | 62,467 | 6,904 | 89,371 |
| Asahan | 0 | 200 | 1,025 | 8,065 | 371 | 5,499 | 25,924 | 4,966 | 426 | 86 | 4,648 | 26 | 32,394 | 18,842 | 51,236 |
| Simalungun | 478 | 29,042 | 578 | 7,528 | 2,525 | 9,701 | 346 | 116 | 0 | 280 | 955 | 4,207 | 47,342 | 51,549 | 100,891 |
| Dairi | 0 | 0 | 37 | 338 | 6,197 | 4,172 | 20 | 0 | 0 | 0 | 0 | 0 | 6,254 | 4,510 | 10,764 |
| Karo | 0 | 0 | 4,825 | 1,510 | 5,915 | 200 | 385 | 0 | 0 | 1,393 | 0 | 12,518 | 1,710 | 14,228 | 28,456 |
| Doli Serdang | 0 | 15,609 | 0 | 13,100 | 1,422 | 22,296 | 27,898 | 9,349 | 1,194 | 0 | 1,377 | 432 | 31,831 | 60,786 | 92,617 |
| Langkat | 0 | 2,770 | 0 | 1,593 | 988 | 2,703 | 22,555 | 17,384 | 1,509 | 1,923 | 9,598 | 0 | 34,650 | 26,373 | 61,023 |
| Sibolga | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tanjung Balai | 0 | 0 | 100 | 200 | 0 | 0 | 699 | 100 | 0 | 0 | 0 | 0 | 799 | 300 | 1,099 |
| Pematang Siantar | 0 | 210 | 0 | 143 | 0 | 587 | 0 | 19 | 0 | 0 | 0 | 22 | 0 | 972 | 972 |
| Tebing Tinggi | 0 | 93 | 0 | 360 | 0 | 0 | 873 | 0 | 0 | 0 | 50 | 0 | 923 | 453 | 1,376 |
| Madang | 0 | 0 | 0 | 80 | 65 | 205 | 1,588 | 2,039 | 150 | 0 | 106 | 0 | 1,909 | 2,324 | 4,233 |
| Binjai | 0 | 0 | 0 | 0 | 0 | 150 | 544 | 2,020 | 0 | 0 | 0 | 0 | 544 | 2,170 | 2,714 |
| Total | 478 | 50,839 | 12,188 | 50,643 | 69,069 | 89,946 | 165,257 | 44,283 | 7,195 | 2,009 | 47,756 | 2,169 | 301,943 | 239,889 | 541,832 |

South Sulawesi

| Kabupaten | Technical Irri. | | Semi Tech. Irri. | | Non Tech. Irri. | | Rainfed | | Tidal | | Others | | Total | | TOTAL |
|---------------|-----------------|---------|------------------|--------|-----------------|--------|---------|--------|-------|--------|--------|--------|---------|---------|---------|
| | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | |
| Selayar | 0 | 0 | 0 | 0 | 0 | 35 | 775 | 0 | 0 | 0 | 0 | 0 | 775 | 35 | 810 |
| Bulukumba | 0 | 0 | 0 | 3,141 | 4,052 | 12,037 | 937 | 464 | 0 | 0 | 167 | 0 | 5,156 | 15,642 | 20,798 |
| Bantaeng | 0 | 0 | 0 | 765 | 95 | 5,636 | 0 | 225 | 0 | 0 | 0 | 0 | 95 | 6,626 | 6,721 |
| Jeneponto | 3,419 | 875 | 2,595 | 543 | 2,217 | 361 | 4,479 | 0 | 0 | 0 | 5 | 0 | 12,715 | 1,779 | 14,494 |
| Takalar | 60 | 721 | 578 | 576 | 1,364 | 723 | 11,214 | 0 | 0 | 0 | 6 | 0 | 13,216 | 2,020 | 15,236 |
| Gowa | 5,764 | 4,046 | 2,861 | 710 | 5,198 | 3,526 | 6,993 | 0 | 0 | 0 | 0 | 0 | 20,816 | 8,282 | 29,098 |
| Sinjai | 0 | 0 | 71 | 1,015 | 138 | 4,001 | 5,698 | 765 | 0 | 0 | 0 | 0 | 5,907 | 5,781 | 11,688 |
| Bone | 4,565 | 4,142 | 550 | 0 | 2,579 | 1,582 | 11,167 | 788 | 0 | 0 | 0 | 0 | 18,861 | 6,512 | 25,373 |
| Maros | 1,746 | 4,245 | 310 | 0 | 1,301 | 2,382 | 8,120 | 2,334 | 0 | 0 | 0 | 0 | 11,477 | 8,961 | 20,438 |
| Rangkep | 0 | 0 | 601 | 1,327 | 617 | 908 | 7,904 | 246 | 0 | 7 | 0 | 0 | 9,129 | 2,481 | 11,610 |
| Barru | 2,983 | 6,620 | 736 | 4,002 | 13,274 | 8,069 | 39,404 | 3,520 | 690 | 0 | 0 | 0 | 57,087 | 22,211 | 79,298 |
| Suppeng | 0 | 3,300 | 0 | 2,925 | 960 | 10,825 | 4,564 | 1,025 | 0 | 0 | 0 | 0 | 5,524 | 18,075 | 23,599 |
| Wajo | 0 | 0 | 0 | 0 | 0 | 5,225 | 75,231 | 5,836 | 0 | 0 | 0 | 0 | 75,231 | 11,061 | 86,292 |
| Sidrap | 0 | 20,563 | 3,767 | 6,334 | 2,191 | 2,150 | 8,241 | 2,202 | 0 | 0 | 0 | 0 | 14,199 | 31,249 | 45,448 |
| Pinrang | 3,350 | 34,580 | 0 | 0 | 4,255 | 468 | 4,691 | 314 | 0 | 0 | 503 | 0 | 12,739 | 35,362 | 48,101 |
| Enrekang | 0 | 0 | 0 | 0 | 1,269 | 2,828 | 4,293 | 123 | 0 | 0 | 0 | 0 | 5,562 | 2,951 | 8,513 |
| Luwu | 559 | 17,476 | 2,389 | 3,743 | 12,328 | 16,202 | 11,487 | 1,592 | 300 | 10,140 | 1,274 | 37,203 | 40,287 | 77,490 | |
| Tator | 0 | 0 | 0 | 0 | 2,811 | 8,265 | 5,351 | 4,920 | 0 | 0 | 0 | 0 | 8,162 | 13,185 | 21,347 |
| Polmas | 0 | 4,634 | 502 | 1,350 | 2,991 | 4,304 | 5,391 | 4,283 | 0 | 0 | 0 | 0 | 8,884 | 14,571 | 23,455 |
| Majene | 0 | 0 | 0 | 0 | 0 | 95 | 2,773 | 39 | 0 | 0 | 0 | 0 | 2,773 | 134 | 2,907 |
| Mamuju | 0 | 0 | 0 | 0 | 560 | 2,940 | 2,543 | 2,162 | 0 | 0 | 2,611 | 184 | 5,714 | 5,286 | 11,000 |
| Ujung Pandang | 0 | 0 | 0 | 0 | 0 | 0 | 3,811 | 93 | 0 | 0 | 631 | 7 | 4,442 | 100 | 4,542 |
| Pare-Pare | 0 | 0 | 0 | 0 | 0 | 300 | 721 | 0 | 0 | 0 | 4 | 0 | 725 | 300 | 1,025 |
| Total | 22,446 | 101,202 | 14,960 | 26,431 | 58,200 | 92,862 | 225,788 | 30,931 | 990 | 0 | 14,068 | 1,465 | 336,452 | 252,891 | 589,343 |

West Nusa Tenggara

| Kabupaten | Technical Irri. | | Semi Tech. Irri. | | Non Tech. Irri. | | Rainfed | | Tidal | | Others | | Total | | TOTAL |
|---------------|-----------------|--------|------------------|--------|-----------------|--------|---------|-------|-------|-------|--------|-------|---------|--------|---------|
| | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | Once | Twice | |
| Lombok Barat | 0 | 12,290 | 3,043 | 4,648 | 288 | 949 | 3,145 | 291 | 0 | 0 | 0 | 0 | 6,476 | 18,178 | 24,654 |
| Lombok Tengah | 0 | 15,339 | 10,794 | 4,188 | 1,870 | 169 | 13,929 | 0 | 5,242 | 0 | 0 | 0 | 31,835 | 19,696 | 51,531 |
| Lombok Timur | 2,904 | 5,177 | 19,634 | 10,031 | 3,429 | 4,267 | 731 | 0 | 0 | 0 | 0 | 0 | 26,698 | 19,475 | 46,173 |
| Sumbawa | 0 | 0 | 8,531 | 3,961 | 10,319 | 1,406 | 10,964 | 0 | 0 | 0 | 0 | 0 | 29,814 | 5,367 | 35,181 |
| Dompu | 0 | 2,017 | 956 | 2,400 | 1,354 | 3,305 | 2,719 | 14 | 0 | 0 | 185 | 0 | 5,214 | 7,736 | 12,950 |
| Bima | 0 | 0 | 1,905 | 6,201 | 7,099 | 4,014 | 7,541 | 0 | 0 | 0 | 0 | 0 | 16,545 | 10,215 | 26,760 |
| Total | 2,904 | 34,823 | 44,863 | 31,429 | 24,359 | 14,110 | 39,029 | 305 | 5,242 | 0 | 185 | 0 | 116,582 | 80,667 | 197,249 |

Source: Agricultural Survey: Land Area by Utilization for Outside of Java, 1989. Biro Pusat Statistik

AREA RATIO OF WET LAND BY IRRIGATION TYPE, 1989

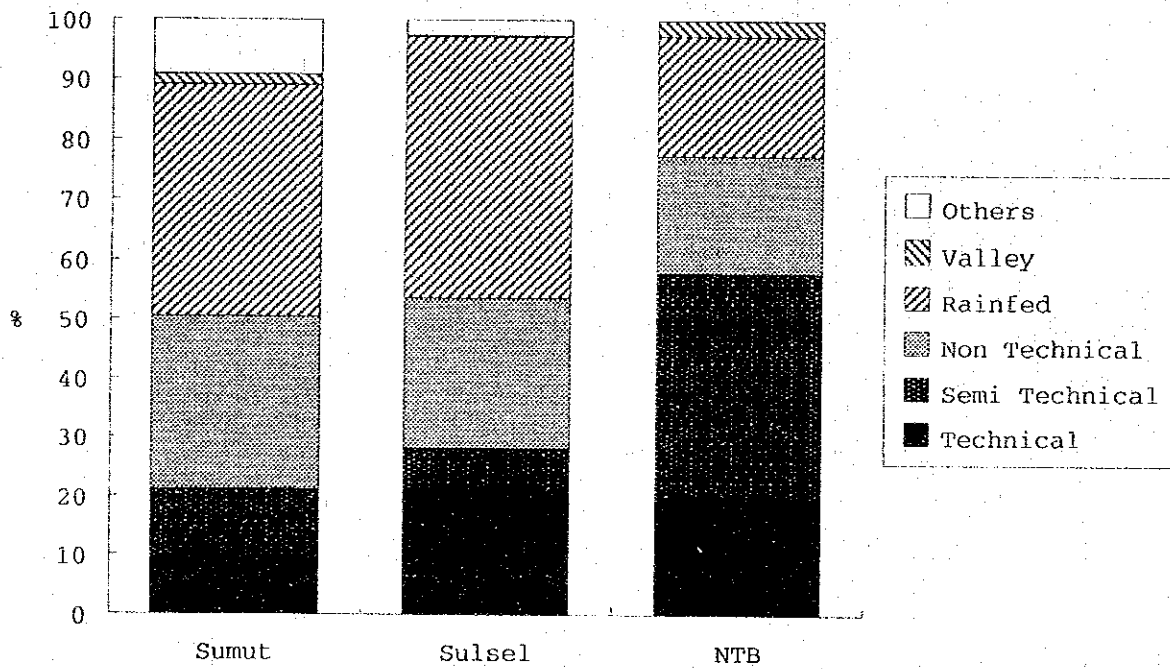


Fig. V-9 AREA RATIO OF WET LAND BY IRRIGATION TYPE, 1989

Table V-12 AREA OF DRY LAND BY UTILIZATION (1989)

North Sumatra

| Kabupaten | House Compound | Garden/Dry Field | Shifting Cultivation | Grass Land | Swamp | Dyke | Pond | Temporary Fallow Land | Private Wood Forest | Gov. & Pri. Estate Land | Total | |
|------------------|----------------|------------------|----------------------|------------|---------|-------|-------|-----------------------|---------------------|-------------------------|-----------|---------|
| Nias | 18,195 | 129,100 | 19,834 | 1,131 | 8,859 | | 0 | 42 | 3,379 | 276 | 65,146 | 245,970 |
| Tapanuli Selatan | 21,097 | 35,404 | 14,124 | 62,363 | 75,075 | | 0 | 2,081 | 202,189 | 191,522 | 125,284 | 729,139 |
| Tapanuli Tengah | 8,920 | 10,121 | 5,695 | 2,075 | 17,706 | | 70 | 131 | 13,170 | 32,073 | 34,955 | 124,916 |
| Tapanuli Utara | 41,628 | 38,726 | 25,819 | 64,057 | 7,677 | | 212 | 1,706 | 100,123 | 142,628 | 47,953 | 470,529 |
| Labuhan Batu | 29,289 | 29,136 | 17,829 | 10,135 | 31,311 | | 10 | 176 | 23,367 | 27,091 | 333,151 | 501,495 |
| Asahan | 36,710 | 48,802 | 2,848 | 0 | 23,846 | | 428 | 175 | 2,971 | 14,159 | 159,417 | 289,356 |
| Simalungun | 13,740 | 50,378 | 26,717 | 13,941 | 282 | | 52 | 380 | 20,868 | 21,197 | 143,199 | 290,754 |
| Dairi | 7,590 | 22,842 | 20,147 | 670 | 10 | | 0 | 95 | 21,975 | 31,682 | 0 | 105,011 |
| Karo | 21,478 | 17,986 | 47,322 | 12,662 | 722 | | 0 | 413 | 14,328 | 11,275 | 310 | 126,496 |
| Deli Serdang | 19,361 | 64,940 | 6,641 | 105 | 1,983 | | 979 | 655 | 575 | 19,893 | 157,429 | 272,561 |
| Langkat | 25,203 | 54,391 | 35,353 | 5,488 | 10,421 | | 3,639 | 475 | 14,846 | 35,165 | 200,015 | 384,996 |
| Sibolga | 352 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 352 |
| Tanjung Balai | 1,701 | 2,825 | 200 | 0 | 0 | | 0 | 100 | 0 | 0 | 0 | 4,826 |
| Pematang Siantar | 2,372 | 0 | 969 | 0 | 7 | | 0 | 67 | 44 | 0 | 1,630 | 5,089 |
| Tebing Tinggi | 1,599 | 114 | 210 | 0 | 90 | | 0 | 58 | 111 | 0 | 0 | 2,182 |
| Medan | 9,467 | 846 | 1,109 | 26 | 3 | | 418 | 5 | 5 | 0 | 122 | 12,001 |
| Binjai | 2,360 | 1,684 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 349 | 4,395 |
| Total | 261,062 | 507,303 | 224,817 | 172,653 | 177,992 | 5,808 | 6,561 | 417,951 | 526,961 | 1,268,960 | 3,570,068 | |

South Sulawesi

| Kabupaten | House Compound | Garden/Dry Field | Shifting Cultivation | Grass Land | Swamp | Dyke | Pond | Temporary Fallow Land | Private Wood Forest | Gov. & Pri. Estate Land | Total | |
|---------------|----------------|------------------|----------------------|------------|--------|--------|--------|-----------------------|---------------------|-------------------------|-----------|---------|
| Selayar | 495 | 16,975 | 12,423 | 18,263 | 0 | | 163 | 0 | 7,516 | 0 | 18,177 | 74,012 |
| Bulukumba | 5,103 | 30,804 | 1,977 | 34 | 0 | | 3,686 | 138 | 967 | 1,426 | 33,135 | 77,270 |
| Bantaeng | 1,016 | 20,017 | 0 | 350 | 0 | | 128 | 16 | 2,166 | 6,865 | 1,136 | 31,694 |
| Jeneponto | 783 | 23,705 | 399 | 0 | 0 | | 2,041 | 0 | 27 | 428 | 566 | 27,949 |
| Takalar | 5,041 | 9,010 | 161 | 437 | 0 | | 2,210 | 751 | 969 | 1,879 | 768 | 21,226 |
| Gowa | 22,250 | 33,087 | 7,421 | 1,375 | 129 | | 0 | 79 | 416 | 19,770 | 3,671 | 88,198 |
| Sinjai | 2,827 | 16,657 | 3,277 | 1,055 | 0 | | 549 | 24 | 20 | 1,746 | 19,007 | 45,162 |
| Bone | 9,690 | 14,810 | 4,270 | 5,562 | 632 | | 265 | 6,583 | 1,883 | 17,240 | 3,550 | 64,485 |
| Maros | 11,612 | 9,058 | 1,812 | 2,108 | 531 | | 7,610 | 51 | 4,854 | 7,504 | 17,606 | 62,746 |
| Rangkep | 2,231 | 4,539 | 3,307 | 4,763 | 0 | | 620 | 0 | 695 | 25,786 | 1,434 | 43,375 |
| Barru | 17,809 | 91,177 | 0 | 3,370 | 665 | | 7,178 | 79 | 8,005 | 25,026 | 43,052 | 196,361 |
| Soppeng | 2,409 | 25,403 | 0 | 4,251 | 3,000 | | 0 | 26 | 739 | 16,696 | 6,652 | 59,176 |
| Wajo | 5,648 | 36,096 | 4,710 | 25,905 | 8,227 | | 13,219 | 1,020 | 5,509 | 6,358 | 21,522 | 128,214 |
| Sidrap | 5,348 | 18,190 | 3,106 | 50,455 | 564 | | 0 | 6 | 207 | 15,519 | 9,124 | 102,519 |
| Pinrang | 11,167 | 29,847 | 8,602 | 13,280 | 1,357 | | 10,727 | 154 | 184 | 10,857 | 5,067 | 91,242 |
| Enrekang | 1,989 | 20,941 | 8,196 | 38,033 | 0 | | 0 | 81 | 1,215 | 30,168 | 1,502 | 102,125 |
| Luwu | 40,884 | 46,946 | 13,326 | 37,141 | 15,643 | | 14,205 | 1,130 | 90,260 | 131,246 | 66,790 | 457,571 |
| Tator | 6,466 | 4,869 | 0 | 16,992 | 0 | | 0 | 3 | 63,176 | 58,525 | 14,037 | 164,068 |
| Polmas | 4,313 | 63,579 | 88,695 | 35,778 | 3,587 | | 4,581 | 149 | 70,757 | 86,752 | 53,251 | 411,442 |
| Majene | 3,277 | 62,460 | 20,500 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 86,237 |
| Mamuju | 804 | 12,902 | 8,663 | 53,943 | 1,905 | | 11,580 | 0 | 43,970 | 165,793 | 36,172 | 335,732 |
| Ujung Pandang | 4,554 | 2,578 | 0 | 0 | 415 | | 0 | 960 | 926 | 72 | 0 | 9,505 |
| Pare-Pare | 392 | 1,898 | 306 | 1,350 | 0 | | 24 | 1 | 0 | 625 | 0 | 4,596 |
| Total | 166,108 | 595,548 | 191,151 | 314,445 | 36,655 | 78,786 | 11,251 | 304,461 | 636,281 | 356,219 | 2,684,905 | |

West Nusa Tenggara

| Kabupaten | House Compound | Garden/Dry Field | Shifting Cultivation | Grass Land | Swamp | Dyke | Pond | Temporary Fallow Land | Private Wood Forest | Gov. & Pri. Estate Land | Total | |
|---------------|----------------|------------------|----------------------|------------|-------|-------|-------|-----------------------|---------------------|-------------------------|---------|---------|
| Lombok Barat | 6,218 | 43,346 | 23,063 | 465 | 1 | | 279 | 87 | 45 | 7,767 | 9,357 | 90,628 |
| Lombok Tengah | 5,480 | 19,617 | 0 | 915 | 0 | | 154 | 11 | 7,478 | 40 | 23 | 33,718 |
| Lombok Timur | 5,872 | 23,253 | 4,384 | 123 | 0 | | 820 | 98 | 0 | 10,317 | 1,026 | 45,893 |
| Sumbawa | 2,073 | 34,359 | 8,093 | 8,862 | 903 | | 1,290 | 18 | 7,318 | 144,477 | 7,747 | 215,140 |
| Dompu | 2,047 | 12,698 | 1,070 | 71,009 | 50 | | 937 | 200 | 8,830 | 25,979 | 1,019 | 123,839 |
| Bima | 3,196 | 27,233 | 4,612 | 17,487 | 9 | | 1,693 | 208 | 20,206 | 129,907 | 1,255 | 205,806 |
| Total | 24,886 | 160,506 | 41,222 | 98,861 | 963 | 5,173 | 622 | 43,877 | 318,487 | 20,427 | 715,024 | |

Source: Agricultural Survey: Land Area by Utilization for Outside of Java, 1989. Biro Pusat Statistik

AREA RATIO OF DRY LAND BY UTILIZATION, 1989

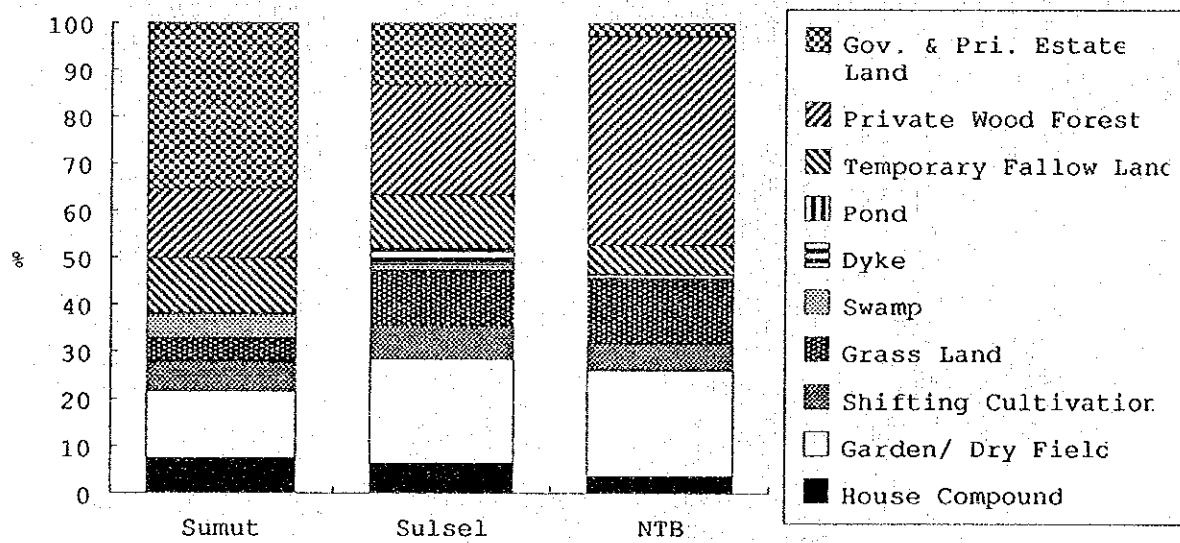


Fig. V-10 AREA RATIO OF DRY LAND BY UTILIZATION, 1989

Table V-13 SUMMARY OF INVENTORY SURVEY, AVERAGE AREA BY LAND USE

| | North Sumatra | | | | South Sulawesi | | | | West Nusa Tenggara | | | |
|-------------------------|---------------|-----|------------|-----|----------------|-----|------------|-----|--------------------|-----|------------|-----|
| | VI (ha) | (%) | LD (ha) | (%) | VI (ha) | (%) | LD (ha) | (%) | VI (ha) | (%) | LD (ha) | (%) |
| Present Land Use | | | | | | | | | | | | |
| Paddy Field (Irrigated) | 74 | 46% | 110 | 45% | 77 | 24% | 168 | 30% | 70 | 17% | 297 | 28% |
| Paddy Field (Rainfed) | 34 | 21% | 23 | 10% | 77 | 24% | 127 | 23% | 43 | 10% | 145 | 14% |
| Dry Land | 21 | 13% | 22 | 9% | 69 | 21% | 81 | 15% | 98 | 24% | 356 | 33% |
| Plantation | 5 | 3% | 8 | 3% | 17 | 5% | 30 | 5% | 18 | 4% | 67 | 6% |
| Grass Land | 0 | 0% | 0 | 0% | 11 | 3% | 0 | 0% | 1 | 0% | 0 | 0% |
| Fallow | 3 | 2% | 10 | 4% | 10 | 3% | 4 | 1% | 3 | 1% | 17 | 2% |
| Forest | 3 | 2% | 10 | 4% | 55 | 17% | 1 | 0% | 162 | 39% | 177 | 17% |
| Bush | 9 | 6% | 47 | 19% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Others | 11 | 7% | 12 | 5% | 5 | 2% | 144 | 26% | 19 | 5% | 7 | 1% |
| Total | 160 | | 242 | | 322 | | 555 | | 414 | | 1066 | |
| Future Land Use | | | | | | | | | | | | |
| Paddy Field (Irrigated) | 122 | 78% | 222 | 93% | 111 | 39% | 219 | 60% | 81 | 34% | 340 | 62% |
| Paddy Field (Rainfed) | 8 | 5% | 2 | 1% | 51 | 18% | 24 | 7% | 8 | 3% | 23 | 4% |
| Dry Land | 10 | 6% | 4 | 2% | 59 | 20% | 34 | 9% | 34 | 14% | 183 | 33% |
| Plantation | 4 | 3% | 3 | 1% | 14 | 5% | 20 | 5% | 3 | 1% | 1 | 0% |
| Grass Land | 0 | 0% | 0 | 0% | 5 | 2% | 0 | 0% | 0 | 0% | 0 | 0% |
| Fallow | 1 | 1% | 0 | 0% | 3 | 1% | 0 | 0% | 3 | 1% | 0 | 0% |
| Forest | 1 | 1% | 0 | 0% | 39 | 14% | 1 | 0% | 103 | 43% | 0 | 0% |
| Bush | 2 | 1% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Others | 9 | 6% | 9 | 4% | 5 | 2% | 70 | 19% | 9 | 4% | 0 | 0% |
| Total | 157 | | 240 | | 288 | | 368 | | 241 | | 547 | |

Note: Since all figures are rounded, Total area is not always coincident.

Table V-14 PRESENT AND FUTURE LAND USE IN REPRESENTATIVE SCHEMES

| Scheme Code | Name of Scheme | | | | | | | | | | (Unit: ha) | |
|--------------------|-----------------------|---------|-----------------------|-------------------------|---------------------|---------|----------------------------|---------|--------|-----------------|---------------------|------------|
| | | | Irrigated Paddy Field | Former Irr. Paddy Field | Rainfed Paddy Field | Dryland | Plantation & Mixed Culture | Pasture | Forest | Resident & Road | River, Pond & Swamp | Gross Area |
| NORTH SUMATRA | | | | | | | | | | | | |
| LD60011 | Sumbari | Present | 34 | | 1 | 20 | 106 | | | | 2 | 163 |
| | | Future | 77 | | 0 | 10 | 74 | | | | 2 | 163 |
| LD60038 | Rauning (B) | Present | 5 | 14 | | 3 | 62 | | | 15 | | 99 |
| | | Future | 66 | 0 | | 0 | 33 | | | 0 | | 99 |
| VI50025 | Sumbul Berampu | Present | 124 | | | | 69 | | | 34 | 7 | 234 |
| | | Future | 124 | | | | 69 | | | 34 | 7 | 234 |
| VI50057 | Sidomukti | Present | 12 | | 15 | | 36 | | | | 4 | 68 |
| | | Future | 27 | | 3 | | 33 | | | | 4 | 68 |
| VI50091 | Aek Palia | Present | 34 | | | 2 | 22 | | | | 2 | 64 |
| | | Future | 38 | | | 2 | 21 | | | | 2 | 64 |
| VI50129 | Pangambatan (B) | Present | 30 | 12 | | | | | | 11 | | 56 |
| | | Future | 48 | 0 | | | | | | 8 | | 56 |
| VI50141 | Aek Siparbue | Present | 23 | | 1 | 1 | 9 | | | | 3 | 37 |
| | | Future | 26 | | 0 | 0 | 8 | | | | 3 | 37 |
| VI50218 | Kutamale | Present | 32 | | | 17 | | | | 12 | 6 | 69 |
| | | Future | 40 | | | 12 | | | | 11 | 6 | 69 |
| VI50240 | Asahan VIII Pengajian | Present | 45 | | 2 | 10 | 39 | | | | 2 | 100 |
| | | Future | 66 | | 0 | 4 | 26 | | | 2 | 2 | 100 |
| VI50256 | Aek Sihim | Present | 40 | | | | 58 | | | | 4 | 103 |
| | | Future | 48 | | | | 50 | | | | 4 | 103 |
| SOUTH SULAWESI | | | | | | | | | | | | |
| LD20003 | Kala | Present | 47 | | | 32 | 11 | | | | 10 | 101 |
| | | Future | 70 | | | 9 | 11 | | | | 10 | 101 |
| VII0055 | Pajjenge | Present | 100 | 43 | | 4 | 2 | | | 10 | 1 | 160 |
| | | Future | 143 | 0 | | 4 | 2 | | | 10 | 1 | 160 |
| VII0099 | Kadieng | Present | 171 | | | 61 | 27 | | | 2 | 7 | 270 |
| | | Future | 224 | | | 9 | 27 | | | 1 | 7 | 270 |
| VII0115 | Kaindi | Present | 67 | | | 104 | 3 | | | 16 | 5 | 195 |
| | | Future | 124 | | | 47 | 3 | | | 16 | 5 | 195 |
| VII0140 | Lembang Bata | Present | 72 | | | | | | | 101 | 2 | 175 |
| | | Future | 76 | | | | | | | 97 | 2 | 175 |
| VII0168 | Panrita | Present | 55 | | | 3 | 15 | | | 1 | 4 | 78 |
| | | Future | 65 | | | 0 | 8 | | | 1 | 4 | 78 |
| VII0182 | Mario I-II-III | Present | 50 | | | 12 | | | | 4 | 6 | 74 |
| | | Future | 57 | | | 5 | | | | 4 | 6 | 74 |
| VII0201 | Pakelli II | Present | 19 | | | 35 | 104 | | | | 10 | 168 |
| | | Future | 54 | | | 16 | 88 | | | | 10 | 168 |
| VII0227 | Limpua / Padaelo | Present | 77 | | | 20 | 19 | | | | 19 | 161 |
| | | Future | 138 | | | 0 | 0 | | | 0 | 19 | 161 |
| VII0287 | Malimbu | Present | 0 | 32 | | 2 | 1 | | | 9 | | 44 |
| | | Future | 32 | 0 | | 2 | 1 | | | 9 | | 44 |
| VII0332 | Safu Akung | Present | 26 | | | | | | | 4 | | 30 |
| | | Future | 26 | | | | | | | 4 | | 30 |
| VII0354 | Mariri | Present | 0 | 34 | | 50 | 23 | | | 15 | 29 | 151 |
| | | Future | 63 | 0 | | 21 | 23 | | | 15 | 29 | 151 |
| WEST NUSA TENGGARA | | | | | | | | | | | | |
| LD45010 | Damar Jengking | Present | 5 | | | | 218 | | | | 4 | 227 |
| | | Future | 120 | | | | 103 | | | | 4 | 227 |
| VI32013 | Mada Manini | Present | 70 | | | | | | | 13 | 14 | 98 |
| | | Future | 70 | | | | | | | 13 | 14 | 98 |
| VI33050 | Uma Lebang | Present | 68 | | | 24 | 4 | | | | | 96 |
| | | Future | 89 | | | 3 | 4 | | | | | 96 |
| VI34004 | Lokok Tripas | Present | 34 | | | 19 | | | | | 4 | 57 |
| | | Future | 34 | | | 19 | | | | | 4 | 57 |
| VI35035 | Lengkok Dudu | Present | 24 | | | | 20 | | | 1 | | 45 |
| | | Future | 26 | | | | 18 | | | 1 | | 45 |
| VI35045 | Kelokos Udang | Present | 105 | | | 12 | | | | | 11 | 128 |
| | | Future | 111 | | | 6 | | | | | 11 | 128 |
| VI36016 | Raba Sangga | Present | 111 | | | 1 | | | | 11 | 2 | 125 |
| | | Future | 111 | | | 1 | | | | 11 | 2 | 125 |
| VI37003 | Montong Sapah / Puri | Present | 13 | | 20 | 3 | | | | | 1 | 37 |
| | | Future | 33 | | 0 | 3 | | | | | 1 | 37 |

LAND USE AREA OF REPRESENTATIVE SCHEMES IN NORTH SUMATRA

(1/3)

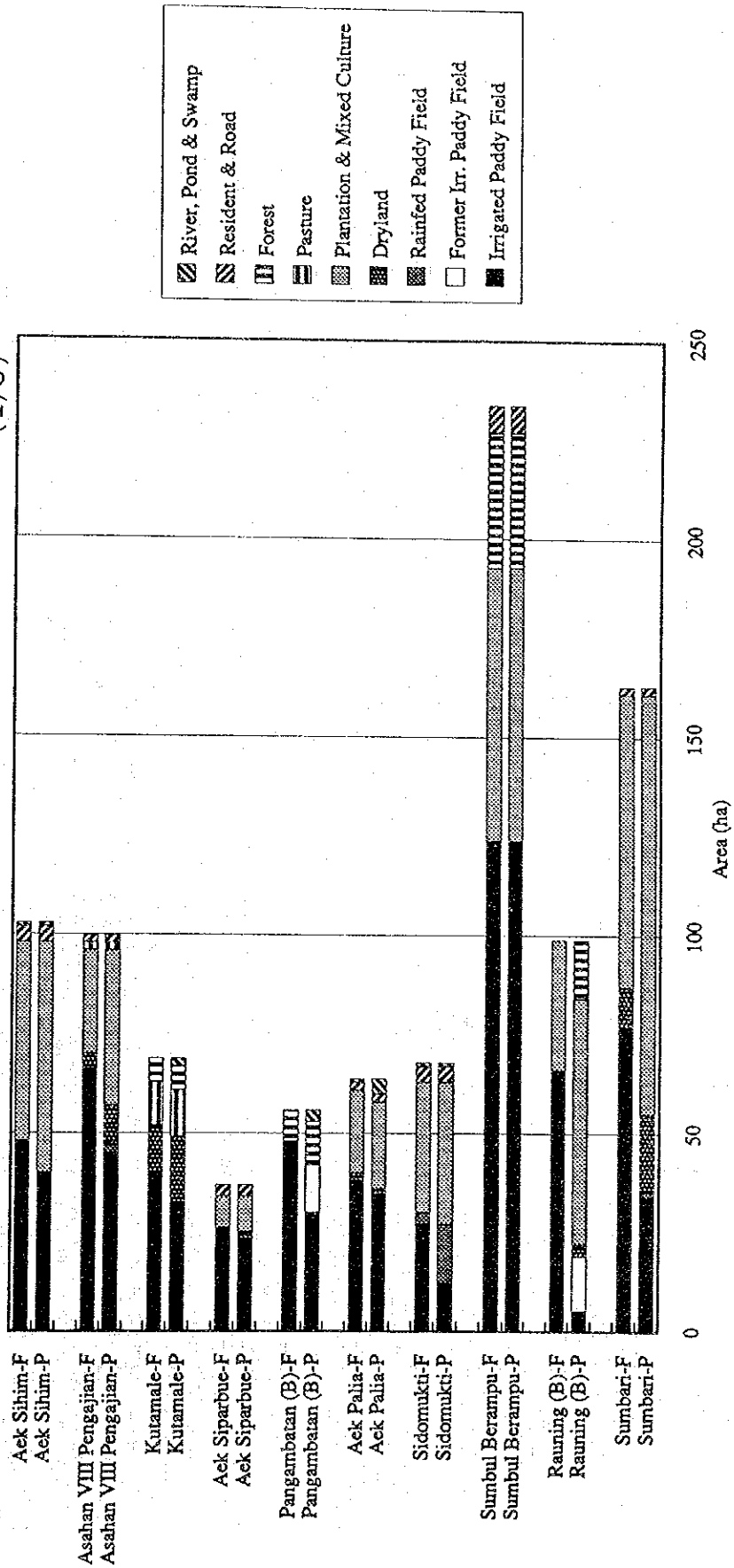
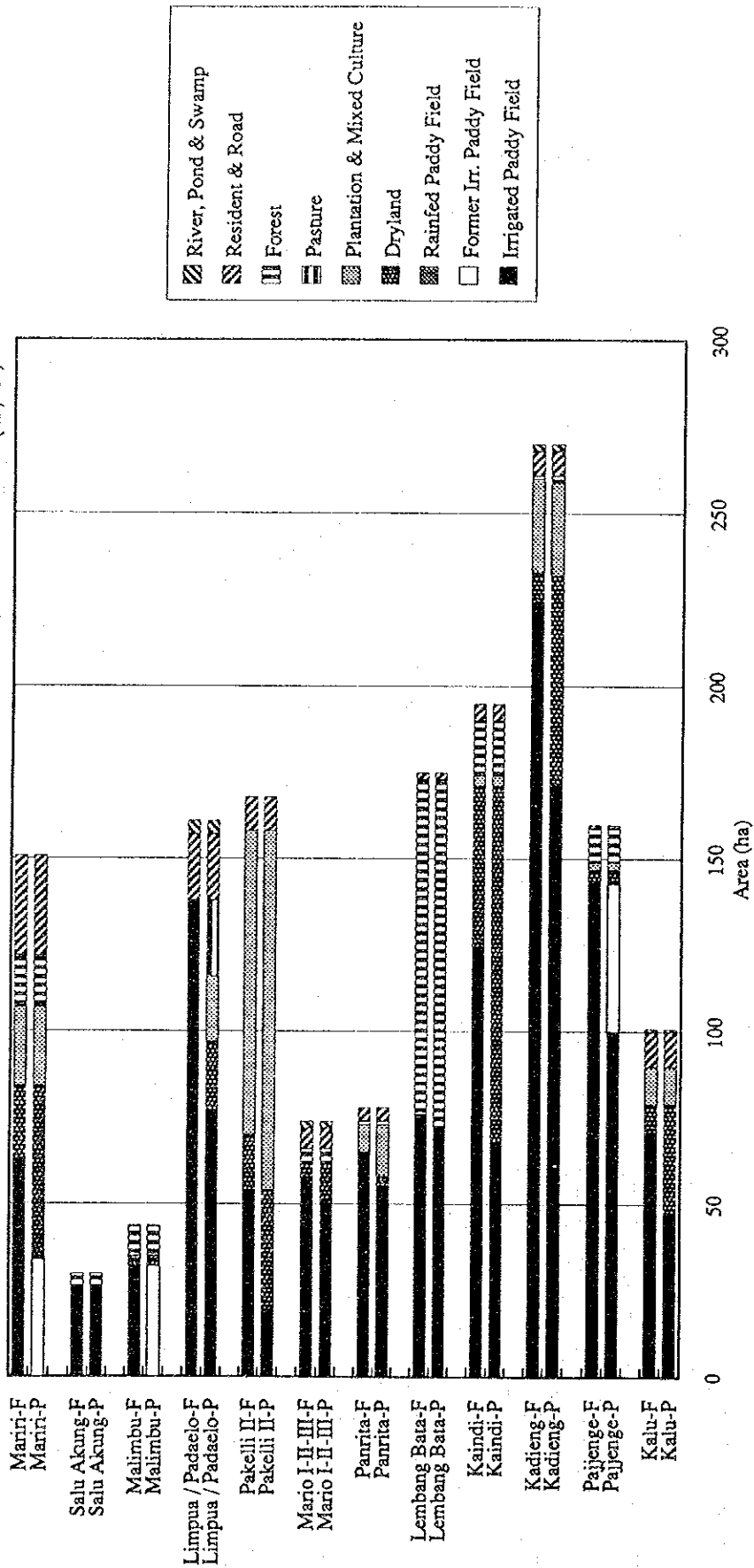


Fig. V-11 LAND USE AREA OF REPRESENTATIVE SCHEMES

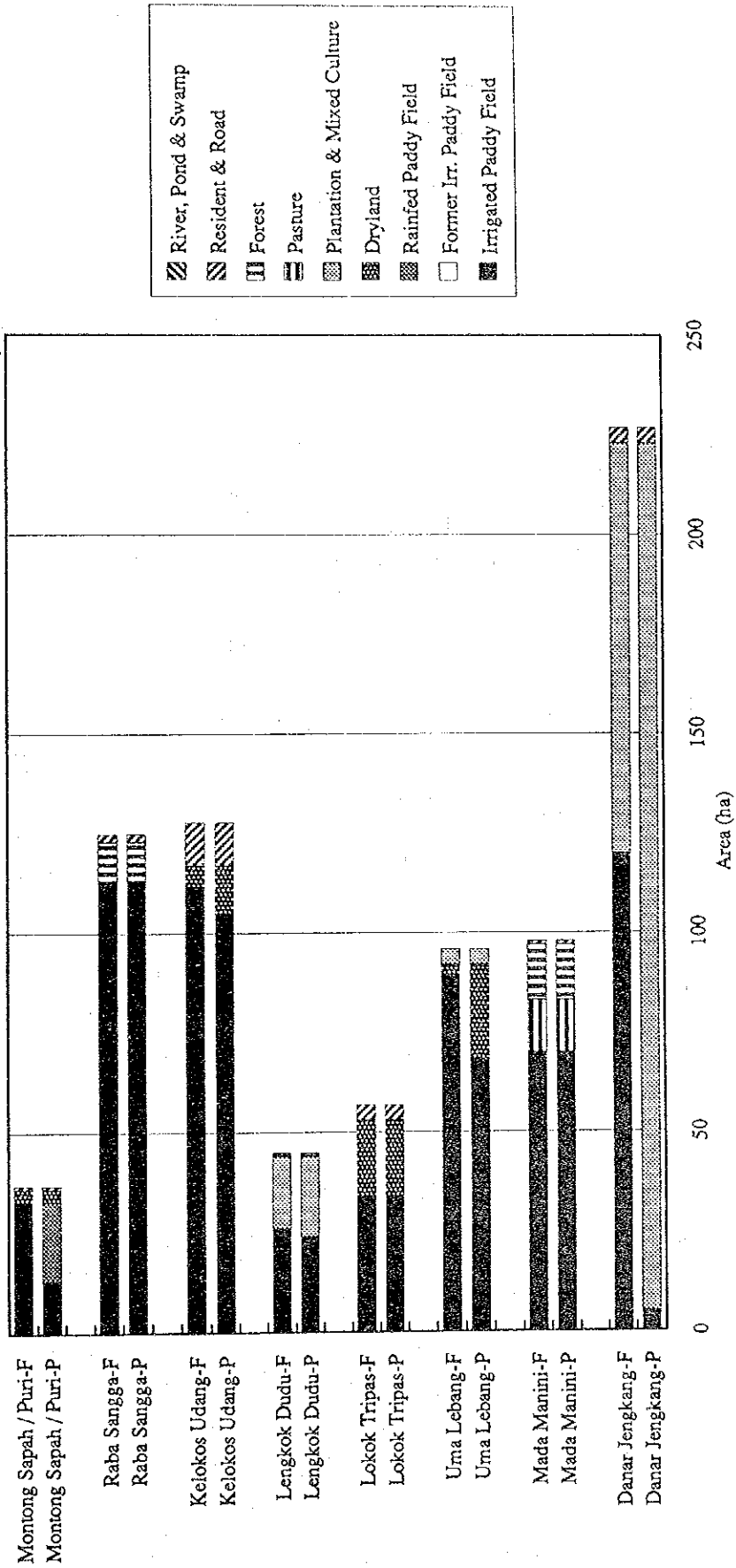
LAND USE AREA OF REPRESENTATIVE SCHEMES IN SOUTH SULAWESI

(2/3)



LAND USE AREA OF REPRESENTATIVE SCHEMES IN WEST NUSA TENGGARA

(3/3)



APPENDIX-VI

AGRICULTURE AND AGRO-ECONOMY

APPENDIX-VI AGRICULTURE AND AGRO-ECONOMY

1. GENERAL

This Appendix subjected to Agriculture and Agro-economy examines present situation of food crop production, farm economy and agricultural supporting system, in provincial level, the project schemes and the representative schemes. Furthermore, agricultural development plan within the Project is discussed.

This Project focuses on food crops sub sector, especially rice production, in a extensive agriculture sector. Therefore, discussions in this report concentrates upon the sub sector, even in the part titled as agriculture sector.

2. AGRICULTURE

2.1 Provincial Overview of Agriculture

(1) General

The objective three provinces have great activity in agriculture sector. In addition to food crops sub sector, plantation is active in North Sumatra and South Sulawesi, fishery in South Sulawesi, and animal husbandry in West Nusa Tenggara.

General condition of food crops production is summarized in Table VI-1 in terms of harvested area, yield rate and production during 1985 to 1990. Annual yield fluctuation by kind of crops is illustrated in Fig. VI-1.

(2) Rice

The three provinces are the greatest rice producers in outer Java. All of the provinces have surplus of rice regarding to supply and demand balance, although there are some rice deficient regions such as urban area. The rice production and surplus data are presented in Table VI-2. The conversion factors and ratios of non food use are based on the methods of Central Bureau of Statistics in Indonesia. And rice consumption per capita is estimated to 134 kg/year in 1989 in terms of the Fifth Five-Year Development Plan. The amounts of rice surplus in 1989 are computed as 109,000 tons in North Sumatra, 989,000 tons in South

Sulawesi and 216,000 tons in West Nusa Tenggara province.

(3) Palawija

The three provinces have different features in secondary crops production. Major crops are maize in North Sumatra and South Sulawesi province, and legume, such as soybean and green peas, in West Nusa Tenggara province. In West Nusa Tenggara, which has highest ratio of harvested area of secondary crops to that of paddy in the three provinces, secondary crops are cultivated intensively in many wet paddy fields. In addition, extensive cultivation of secondary crops, such as green peas, is also practiced at dry field with unsuitable condition especially in the Sumbawa island, eastern part of West Nusa Tenggara, so yield rate of green peas is very low. On the other hand, farmers have a traditional custom not to plant any secondary crops in wet paddy field after harvest of paddy at many regions in North Sumatra and South Sulawesi. So, a lot of wet paddy fields are fallowed after harvest of paddy even with good condition of water.

(4) Copping Pattern

Monthly distribution of planted and harvested area of food crops are illustrated in Fig. VI-2. The charts show common planting and harvesting time in the provinces.

Cropping intensity of paddy is calculated by each paddy field group as shown in Table VI-3.

(5) Variety of Paddy

Predominant varieties of paddy are different by province and season due to complicated natural characteristics, suitability and accessibility of varieties, and farmers willingness. Following Table VI-4 shows dominant five varieties and those share of total planted area through FY 1987/88 by province. In North Sumatra province local varieties and IR46 are cultivated in more than half of total paddy planted area. In South Sulawesi PB42 has top share of about one third, and IR48 and Cisadane are sequent. In West Nusa Tenggara, PB36 is predominant variety with great share of more than two third, and Cisadane has second share.

2.2 Agriculture in the Project

(1) Cropping Pattern

As for present and future cropping pattern, areas of seven typical patterns are asked in the inventory survey. The results on the item are shown in Table VI-5 and Fig. VI-3. The cropping intensity on wet paddy field can be calculated from these data. The provincial features of cropping intensity are described below.

In North Sumatra province, the cropping intensity of paddy and secondary crops is seemed to increase from 160 % to 200 % after implementation of the project. In South Sulawesi province, the cropping intensity of paddy and secondary crops is seemed not to increase very much, but the cropping intensity of paddy, except secondary crops, is to increase from 140 % to 160 %. Secondary crops will be changed into paddy there. In comparison with those 2 provinces, West Nusa Tenggara province has the feature of high cropping intensity due to lots of secondary crop cultivation in wet paddy field. The present cropping intensity of paddy and secondary crops is 250 % and will increase nearly to 300 %.

Here, the results of the survey may not represent real condition on the fields because of difficulty in the question about that. In further study, the cropping pattern on each project area should be examined thoroughly based on water availability, climate, soils, marketing and farmers' intention.

(2) Yield Rate

Present and future yield rates of paddy and each secondary crop were also surveyed as summarized in Table VI-6 and VI-7. The average and distribution of yield rates of them are graphed by province and kind of project scheme as shown in Fig. VI-4 and VI-5, respectively.

The answers on yield rate are seemed to have bias upward. For example, average yield rate of wet paddy in village irrigation schemes is higher than statistical data in 5-year average from 1985 to 1989.

| | Statistics | Present | Future |
|------------------|------------|---------|----------|
| N. Sumatra | 3.85 | 4.8 | 6.6 t/ha |
| S. Sulawesi | 4.08 | 4.5 | 6.0 t/ha |
| W. Nusa Tenggara | 4.07 | 4.5 | 4.8 t/ha |

Those statistical data cannot be simply compared with the results of the survey due to different category. But the facts, that every average yield rate exceed statistical data and the most survey areas are not developed very well, are enough for determination of upward bias. Such trend is founded in those of secondary crops.

Moreover, the answers on yield rates have relatively large standard deviation. The distribution chart, Fig. VI-5, represents scatter and peak of unit yield of crops.

2.3 Agriculture in Representative Schemes

(1) Planted Area

The planted area is defined as 90 % of the farm land such as paddy field and dryland. The reason is that the portion of wasted area accompanied with levee and terraced field is relatively large due to generally steep ground of the Project area. The present and future planted area are determined as Table VI-8, by scheme and season.

(2) Yield Rate Estimation

In estimation of paddy yield rate, the key factor determining paddy yield rate is assumed to be technical level of irrigation out of complicated factors such as stable water supply and overall improvement of farming. Paddy field area is divided into two groups, of which one is technical and semi technical irrigation area, and another is simple irrigation, rainfed, tidal and other paddy field. The ratio of the latter in total paddy field area ('non technical ratio' hereinafter) is assumed to be determining factor of paddy yield rate. Then, simple regression between non technical ratio and 5-year average yield rate of paddy are calculated by using each Kabupaten data (refer to Fig. VI-6). Since the Project area is generally located in lesser productive area, correlation in the Project area is estimated on lower limit of 90 % confidence interval which is presented as

dotted line in the figure. Since present paddy field of the Project is classified into the non technical group, present yield rate is at 100 % of the non technical ratio. The improvement level of irrigation facilities within the Project will not reach fully technical irrigation conducted by Ministry of Public Works. Therefore target yield are decided to be at 20 % of the non technical ratio. To achieve target yield of paddy will require five years.

Present paddy yield in rainfed field is determined at 75 % of irrigated paddy mentioned above. The ratio is derived from the inventory results of irrigated and rainfed paddy. A part of rainfed paddy field is to transformed to irrigated field but the rest is not directly affected by the Project. It is seemed to get indirect effect of regional progress in cropping methods, but the indirect effect is not stable and countable. Therefore, yield rate of rainfed paddy is expected to remain at a present level in future, at least.

As for yield rates of palawija crops, vegetables and other crops, present yields are estimated at 5-year average rates on statistics modified by the ratio of provincial average and adopted figure of irrigated paddy illustrated in the figure. The decreasing factors are 81 % in North Sumatra, 83 % in South Sulawesi and 94 % in West Nusa Tenggara. Future yield rates of those crops are to be present level at least, for the same reason of rainfed paddy.

The present and future yield rates of major food crops are summarized in Table VI-9.

(3) Crop Production

The amount of paddy production will be almost doubled due to expansion of irrigate field, increase of cropping intensity and increase of yield rate. On the contrary, The production of upland crops will sometimes decrease due to reduction of planted area.

The change of paddy production in the 30 schemes are presented by province in Table VI-10 and VI-11. The increment rates of paddy production are estimated to be about 120 % in North Sumatra and South Sulawesi and about 90 % in West Nusa Tenggara.

3 AGRO-ECONOMY

3.1 Provincial Overview of Agro-economy

(1) Agricultural Development Policy

Each province officially sets the growth target of each economic sector on Five-Year Development Plans. In the Fifth Five-Year Plan (Repelita V), target of annual growth rate of the whole sectors is 4.8 % to 5.4 % in the three provinces. Agriculture sector is expected to growth at the rate of 4.4 % in North Sumatra, 4.1 % in South Sulawesi and 3.7 % in West Nusa Tenggara (refer to Table VI-12). Although projected growth rates of agriculture sector are relatively low, the sector has still high weight of the provincial economy.

(2) Mass Guidance (Bimas) Program

The Indonesian Government has widely introduced some intensification programs for increasing of agricultural production. Mass Guidance (Bimas) is formulated and adopted in 1965 to guide the process of agricultural change at the farm level. The scheme was basically designed to develop conditions in which a large number of farmers are motivated and guided in the adoption of new agro-technology as the key to achieving higher productivity and financial return.

At the same time, it was recognized that learning new technologies would give rise to the need among farmers for other farm inputs such as seed, fertilizers and pesticides as well as for working capital to finance them. In addition, post-harvest and marketing skills, procedures and facilities would need to be enhanced. These requirements posed the need to ensure close integration with infrastructure improvements, such as irrigation systems and roads, in order to support rice production and improve access to markets.

Regular Intensification (Inmum) involves the dissemination of technology and other farm inputs to individual farmers without any obligation for joint effort with others. Under Special Intensification (Insus), more intensive farming is implemented by individual farmers cooperating in groups, through which farm inputs are channeled. At the highest level of Super Intensification (Supra Insus), starting from 1987, rice production is intensified through cooperation not only among farmers in one group, but also among farmers groups covering a

wider geographical area of between 5,000 and 25,000 ha.

Supra Insus combines in one coordinated approach the most advanced technological and socioeconomic dimensions of rice farming available. For Supra Insus, the recommended production technology for rice includes:

- Perfect soil treatment;
- The use of certified high-quality and high-yield seed;
- The alternation of high-yield rice varieties within a single year;
- Minimum plantings of 200,000 rice seedlings per hectare;
- The use of Integrated Pest Management (IPM);
- The balanced application of fertilizers;
- The improvement of on-farm irrigation and water management.

Supra Insus extends the practice of farmer participation, not only among farmers in one group, but also among a number of farmers groups within a single Field Extension Working Area (WKPP), covering between 600 and 1,000 ha. In addition, farmers groups in neighboring Supra Insus schemes cooperate over a wider area (Unit Supra Insus) of between 5,000 and 25,000 ha. Cooperation among farmers groups is one of the most significant advances on earlier intensification schemes.

In 1989, the wet paddy field covered by Supra Insus, Insus and Innum amount to about 2.26 million ha, 5.38 million ha and 1.82 million ha, respectively. This means about 96 % of total wet paddy field is covered by some intensification programs in Indonesia. In all of the three provinces, intensification programs are introduced in more than 96 % of wet paddy field, and Supra Insus in 26 to 29 % of wet paddy field in the same year (refer to Table VI-13 and VI-14).

(3) Agricultural Extension Service

For the farm technical support, Field Extension Centers (BPPs) have established with founding of the Agency for agricultural Education, Training and Extension, Ministry of Agriculture, since 1974. The BPP is basically expected to be one unit per kecamatan in rural area. A BPP is organized by an extension supervisor (PPM), field extension workers (PPLs), and sometimes subject-matter specialist (PPS). Total number of the extension workers in Indonesia is 33,000 as of 1990. The numbers of PPM, PPL and PPS are about 7,000, 24,000 and 2,000, respectively.

The main functions of BPP are: 1) formulation of farmers' group, 2) guidance of new cultivation method, 3) training of key farmers at a local level, 4) establishment of demonstration farm, 5) support of marketing channel of production materials, and 6) on-farm research. Main extension methods of BPPs are 1) direct guidance to farmers, 2) visit to demonstration farm, and 3) dissemination of new technologies by booklets or slides.

(4) Farmers Credit (KUT)

Since 1984, subsidized credits for food production, including rice, have been made available through the Farming Credit program (KUT). KUT channeled through Village Unit Cooperatives rather than to farmers directly. Disbursal of credit by the cooperatives to farmers groups based on plans drawn up by the groups themselves to define their needs. Repayment of loans and interest is made after harvest-time. The contents of KUT are as shown in Table VI-15.

(5) Village Unit Cooperative (KUD)

Village Unit Cooperative (KUD) is established for the purpose of motivation and support of farm production in Indonesia. The organization of KUD is under Ministry of Cooperative. The prime activities of KUD are: 1) marketing channel of farm inputs and products, 2) post-harvest handling, 3) agricultural credit, and 4) banking service. The number of KUDs established until 1989 is 505 in North Sumatra, 474 in South Sulawesi and 152 in West Nusa Tenggara. The number of their members is about 299,000, 842,000 and 221,000, relatively. The scale of KUD is smaller in North Sumatra than in other provinces (refer to Table VI-16).

KUD is one of important marketing channels especially in rural area. According to the inventory survey, however, the marketing activity of KUD is still low in general for the Project area. The results show that the marketing services of KUDs are active only in 40 % of the total schemes.

3.2 Agro-economy in the Project

(1) Population

Average population and labor force size in the schemes are summarized in Table VI-17. Average population in village

irrigation schemes is about 310 per scheme, whereas that in land development schemes is widely variable depending on scheme area. Number of labor per household is about 3 in the schemes. As for labor by industry, ratio of farmers in total labor force is higher than national average of 56 % in 1989.

(2) Farm Size

According to the inventory results, average gross area of village irrigation schemes is 159 ha in North Sumatra, 310 ha in South Sulawesi and 429 ha in West Nusa Tenggara. Regarding to irrigated paddy field, however, the area is not so variable, i.e., 86 ha, 88 ha and 99 ha respectively. The average irrigated paddy field per farm household is expected to increase roughly from 0.3 ha to 0.4 ha for village irrigation schemes and from 0.5 ha to 0.6 - 0.8 ha for land development schemes, based on the inventory survey.

(3) Land Ownership and Land Status

The present conditions of land ownership and land status in the schemes are shown in Table VI-18. More than half land owning farmers settles themselves in the scheme area, and the number of land owners living in outside of the kabupaten is very small in average. It is expected that there are little problem on land ownership except some schemes.

Most of land in the schemes is belong to private land, although there are some kabupaten or state-owned land. Land boundary of property land is clear in the almost all schemes.

(4) Field Extension Worker

According to the inventory survey, field extension worker plays active performance in the more than 80 % of the schemes. The schemes in which there is no field extension worker amount to less than 3 % in the whole schemes (refer to Table VI-19).

(5) Intensification Program

Insus program is widely introduced to the most schemes in the three provinces. Supra Insus, most intensive program, extends to 20 % of the schemes in West Nusa Tenggara province, and fewer in the other two provinces. Compared with provincial average which is in terms of introduced area by intensification programs, introduction of Supra Insus program delays up to now

due to some relatively unsuitable conditions of the project area (refer to Table VI-19).

(6) Village Unit Cooperative

Village unit cooperative (KUD) is one of marketing channels on farm inputs and farm products. According to the inventory survey, however, the marketing activity of KUD is still low in general for the project area (refer to Table VI-19).

3.3 Agro-economy in Representative Schemes

(1) Population and Farm Household

Average population and number of farm households in the study schemes are summarized in Table VI-20. The average scheme in North Sumatra and South Sulawesi has about 600 of population and about 120 farm households. In West Nusa Tenggara the average size of scheme is smaller with about 800 people and 170 farm households.

(2) Farm Size

Average farm size per farm household in the representative schemes is calculated based on land use survey and number of household, as shown in Table VI-20. Presently average farmer manage 0.37 ha of irrigated paddy field in North Sumatra and 0.50 ha in West Nusa Tenggara. As for other farm lands, plantation land, which size is as large as irrigated paddy field, has important roll for farm management in North Sumatra. Acreage of irrigated paddy field will increase and one of other farm land has deceasing trend in future.

(3) Farm Inputs

The interview survey was carried out in terms of crop budget of major food crops. The survey results of crop budget of paddy, maize, soybean and peanut are shown in Table VI-21 to Table VI-25. However, since the number of sample farmer is not enough on palawija crops, the data is used just as referential figures.

In cultivation of paddy, average amount of fertilizer is approximately 250 kg/ha in each province. The fertilizer applied into 1 ha paddy field consists of about 150 kg of Urea, 70 kg of TSP and 30 kg of KCl. Farm chemicals, such as pesticide are

dosed at the rate of 1.0 to 1.6 liter/ha. Labor input is about 130 to 140 man-day/ha, of which more than 50 % is family labor themselves.

(4) Farm Economy

On the basis of the crop budget analysis and interview survey, farm economic analysis was carried out for typical farm households of the 30 representative schemes. The results are as shown in Table VI-26.

About 86 % of the income originates from agricultural products, so non-agricultural income accounts for only small portion in family finances. The major part of non-agricultural income comes from agricultural works at other farmers' fields. On the other hand, about 63 % of expenditure is for purchase of foods. According to the survey on farmers' family finances in the scheme areas, they have only a few surplus, and some farm households suffers from a deficit. Therefore, the construction or rehabilitation costs of agricultural infrastructure are hardly paid by farmers themselves.

Table VI-1 HARVEST AREA, YIELD RATE AND PRODUCTION BY PROVINCE DURING 1985-1990
(1/2)

| Province | Year | Wet Paddy | | | Upland Paddy | | | Total Paddy | | |
|--------------------|-------|-----------|--------------|----------------|--------------|--------------|----------------|-------------|--------------|----------------|
| | | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) |
| North Sumatra | 1985 | 525,431 | 3.76 | 1,977,867 | 86,919 | 1.97 | 171,057 | 612,350 | 3.51 | 2,148,924 |
| | 1986 | 505,937 | 3.78 | 1,913,325 | 76,519 | 2.02 | 154,497 | 582,456 | 3.55 | 2,067,822 |
| | 1987 | 569,454 | 3.78 | 2,152,146 | 87,200 | 1.92 | 167,047 | 656,654 | 3.53 | 2,319,193 |
| | 1988 | 592,775 | 3.91 | 2,318,139 | 80,110 | 2.06 | 164,799 | 672,885 | 3.69 | 2,482,938 |
| | 1989 | 589,523 | 4.02 | 2,369,841 | 79,900 | 2.14 | 171,033 | 669,423 | 3.80 | 2,540,874 |
| | *1990 | 466,201 | 3.97 | 1,850,714 | 54,274 | 2.23 | 120,793 | 520,475 | 3.79 | 1,971,507 |
| ** Average | | 556,624 | 3.85 | 2,146,264 | 82,130 | 2.02 | 165,687 | 638,754 | 3.62 | 2,311,950 |
| South Sulawesi | 1985 | 663,300 | 4.01 | 2,656,825 | 18,960 | 1.74 | 33,009 | 682,260 | 3.94 | 2,689,834 |
| | 1986 | 666,410 | 4.06 | 2,707,626 | 19,525 | 1.79 | 34,891 | 685,935 | 4.00 | 2,742,517 |
| | 1987 | 639,952 | 3.96 | 2,534,218 | 16,690 | 1.70 | 28,436 | 656,642 | 3.90 | 2,562,654 |
| | 1988 | 681,093 | 4.13 | 2,810,973 | 15,348 | 1.88 | 28,848 | 696,441 | 4.08 | 2,839,821 |
| | 1989 | 771,493 | 4.25 | 3,277,101 | 15,344 | 2.00 | 30,706 | 786,837 | 4.20 | 3,307,807 |
| | *1990 | 480,487 | 4.39 | 2,108,811 | 10,771 | 2.12 | 22,802 | 491,258 | 4.34 | 2,131,613 |
| ** Average | | 684,450 | 4.08 | 2,797,349 | 17,173 | 1.82 | 31,178 | 701,623 | 4.02 | 2,828,527 |
| West Nusa Tenggara | 1985 | 234,823 | 3.89 | 913,770 | 16,445 | 1.68 | 27,628 | 251,268 | 3.75 | 941,398 |
| | 1986 | 231,798 | 3.91 | 907,191 | 14,898 | 1.71 | 25,490 | 246,696 | 3.78 | 932,681 |
| | 1987 | 230,331 | 4.02 | 925,908 | 13,958 | 1.69 | 23,646 | 244,289 | 3.89 | 949,554 |
| | 1988 | 233,511 | 4.20 | 981,657 | 16,224 | 1.77 | 28,677 | 249,735 | 4.05 | 1,010,334 |
| | 1989 | 250,509 | 4.31 | 1,078,900 | 17,101 | 1.85 | 31,658 | 267,610 | 4.15 | 1,110,558 |
| | *1990 | 242,014 | 4.42 | 1,069,485 | 14,630 | 1.99 | 29,075 | 256,644 | 4.28 | 1,098,560 |
| ** Average | | 236,194 | 4.07 | 961,485 | 15,725 | 1.74 | 27,420 | 251,920 | 3.92 | 988,905 |

| Province | Year | Maize | | | Cassava | | | Sweet potato | | |
|--------------------|-------|-----------|--------------|----------------|-----------|--------------|----------------|--------------|--------------|----------------|
| | | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) |
| North Sumatra | 1985 | 46,909 | 1.93 | 90,675 | 19,018 | 12.10 | 230,118 | 14,838 | 9.30 | 137,993 |
| | 1986 | 58,866 | 1.86 | 109,373 | 19,789 | 12.50 | 247,362 | 14,335 | 9.20 | 131,882 |
| | 1987 | 63,801 | 2.21 | 140,681 | 20,777 | 11.80 | 245,169 | 13,662 | 9.50 | 129,790 |
| | 1988 | 81,383 | 2.05 | 166,509 | 27,379 | 12.10 | 331,283 | 15,089 | 9.70 | 146,362 |
| | 1989 | 85,378 | 2.33 | 198,759 | 37,510 | 12.20 | 457,627 | 19,200 | 8.10 | 155,524 |
| | *1990 | 58,250 | 2.27 | 132,345 | 20,927 | 10.80 | 226,014 | 10,889 | 8.80 | 95,826 |
| ** Average | | 67,267 | 2.07 | 141,199 | 24,895 | 12.14 | 302,312 | 15,425 | 9.16 | 140,310 |
| South Sulawesi | 1985 | 263,201 | 1.44 | 379,799 | 33,237 | 10.50 | 348,988 | 9,161 | 8.20 | 75,120 |
| | 1986 | 314,106 | 1.55 | 486,550 | 36,755 | 11.80 | 433,709 | 9,675 | 8.30 | 80,302 |
| | 1987 | 284,129 | 1.55 | 440,968 | 31,890 | 11.50 | 366,739 | 8,429 | 6.60 | 55,634 |
| | 1988 | 321,074 | 1.56 | 501,839 | 41,084 | 10.90 | 447,815 | 8,581 | 7.20 | 61,786 |
| | 1989 | 230,751 | 1.61 | 371,278 | 51,457 | 11.20 | 576,319 | 8,802 | 8.40 | 73,936 |
| | *1990 | 253,403 | 1.71 | 432,306 | 26,549 | 11.70 | 310,621 | 5,115 | 9.30 | 47,567 |
| ** Average | | 282,652 | 1.54 | 436,087 | 38,885 | 11.18 | 434,714 | 8,930 | 7.74 | 69,356 |
| West Nusa Tenggara | 1985 | 22,767 | 1.52 | 34,606 | 14,794 | 9.70 | 143,502 | 7,527 | 9.10 | 68,496 |
| | 1986 | 24,097 | 1.72 | 41,447 | 11,208 | 10.60 | 118,805 | 8,818 | 9.50 | 83,771 |
| | 1987 | 18,541 | 1.54 | 28,460 | 11,188 | 10.30 | 115,233 | 6,404 | 10.30 | 65,964 |
| | 1988 | 22,628 | 1.69 | 38,128 | 10,881 | 10.50 | 114,248 | 9,419 | 10.20 | 96,078 |
| | 1989 | 26,573 | 1.82 | 48,310 | 15,221 | 11.30 | 172,000 | 8,466 | 11.10 | 93,973 |
| | *1990 | 19,834 | 2.09 | 41,532 | 8,478 | 11.50 | 97,493 | 1,151 | 11.40 | 13,119 |
| ** Average | | 22,921 | 1.66 | 38,190 | 12,658 | 10.48 | 132,758 | 8,127 | 10.04 | 81,656 |

| Province | Year | Peanut | | | Soybean | | | Green Pea*** | | |
|----------|------------|--------------|-----------------|-------------------|--------------|-----------------|-------------------|--------------|-----------------|-------------------|
| | | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) | Area (ha) | Yield (t/ha) | Production (t) |
| North | 1985 | 13,082 | 1.18 | 15,450 | 11,398 | 0.89 | 10,133 | 2,220 | 0.91 | 2,018 |
| Sumatra | 1986 | 12,241 | 1.22 | 14,959 | 21,965 | 0.92 | 20,274 | 3,619 | 0.95 | 3,423 |
| | 1987 | 18,975 | 1.06 | 20,133 | 26,009 | 1.08 | 27,986 | 5,678 | 0.92 | 5,242 |
| | 1988 | 24,750 | 1.02 | 25,245 | 29,467 | 1.10 | 32,296 | 8,094 | 0.94 | 7,645 |
| | 1989 | 23,240 | 0.92 | 21,334 | 24,056 | 1.06 | 25,403 | 10,547 | 0.94 | 9,966 |
| | *1990 | 12,719 | 0.88 | 11,244 | 16,098 | 1.08 | 17,321 | | | |
| | ** Average | 18,458 | 1.08 | 19,424 | 22,579 | 1.01 | 23,218 | 6,032 | 0.93 | 5,659 |
| South | 1985 | 40,087 | 1.09 | 43,815 | 18,278 | 0.93 | 16,999 | | | |
| Sulawesi | 1986 | 53,364 | 1.22 | 65,051 | 34,763 | 1.02 | 35,493 | | | |
| | 1987 | 47,177 | 1.09 | 51,187 | 38,108 | 1.04 | 39,747 | | | |
| | 1988 | 54,223 | 1.00 | 53,952 | 38,533 | 1.00 | 38,610 | 57,889 | 0.89 | 51,779 |
| | 1989 | 39,280 | 0.91 | 35,627 | 23,888 | 1.10 | 26,181 | 35,751 | 0.86 | 30,710 |
| | *1990 | 33,579 | 0.82 | 27,367 | 23,140 | 1.21 | 27,999 | | | |
| | ** Average | 46,826 | 1.06 | 49,926 | 30,714 | 1.02 | 31,406 | 46,820 | 0.88 | 41,245 |
| West | 1985 | 10,702 | 0.97 | 10,360 | 60,981 | 0.84 | 51,163 | 28,586 | 0.44 | 12,460 |
| Nusa | 1986 | 15,385 | 1.27 | 19,524 | 92,467 | 0.98 | 90,710 | 28,085 | 0.41 | 11,606 |
| Tenggara | 1987 | 18,075 | 1.18 | 21,292 | 77,758 | 1.06 | 82,657 | 27,840 | 0.39 | 10,876 |
| | 1988 | 16,108 | 1.11 | 17,816 | 98,843 | 1.05 | 103,785 | 30,444 | 0.40 | 12,133 |
| | 1989 | 19,045 | 1.10 | 20,988 | 118,289 | 1.08 | 127,516 | 37,808 | 0.40 | 15,122 |
| | *1990 | 10,313 | 0.95 | 9,756 | 74,255 | 0.99 | 73,141 | | | |
| | ** Average | 15,863 | 1.12 | 17,996 | 89,668 | 1.00 | 91,166 | 30,553 | 0.41 | 12,439 |

Source: Statistik Indonesia 1989, Biro Pusat Statistik.
Statistik Indonesia 1990, Biro Pusat Statistik.

Note *: Preliminary figures for the period of January to August 1990.

Note **: Average for 5 years from 1985 to 1989.

Note ***: Source: Sumatera Utara Dalam Angka 1989
Sulawesi Selatan Dalam Angka 1989
Nusa Tenggara Barat Dalam Angka 1989

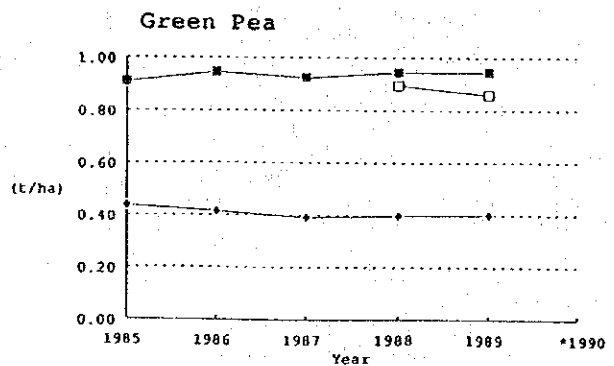
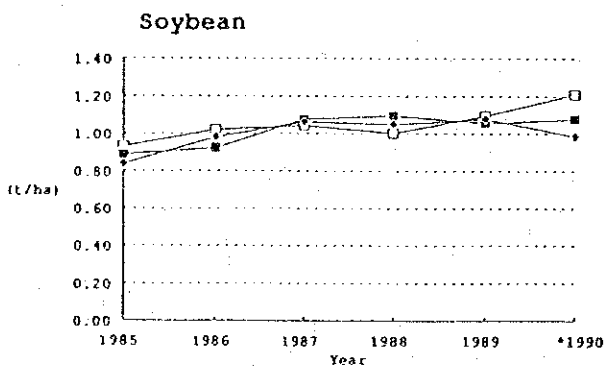
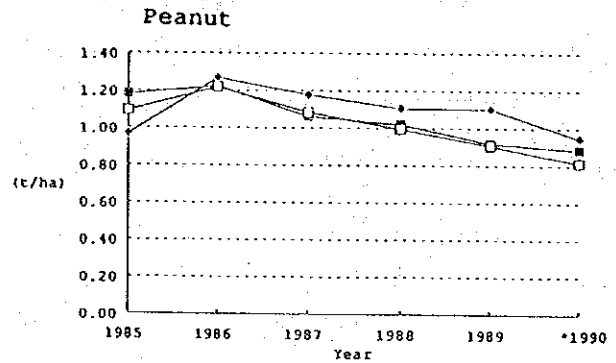
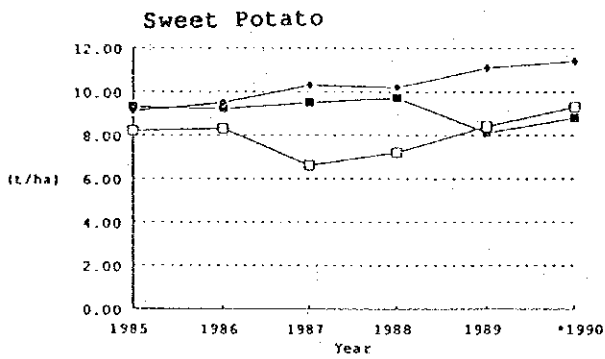
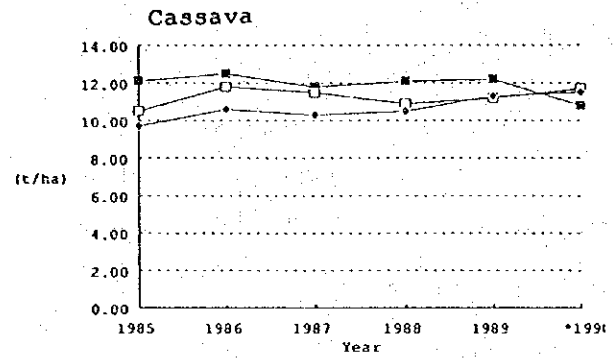
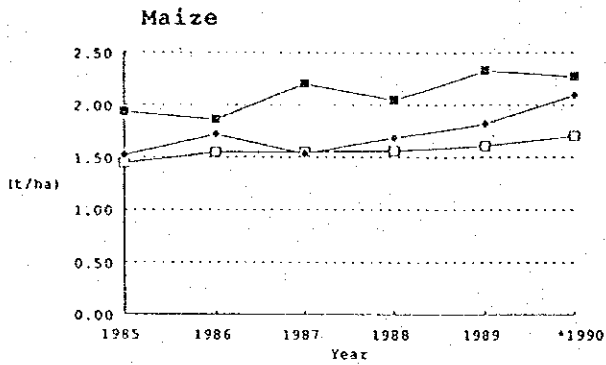
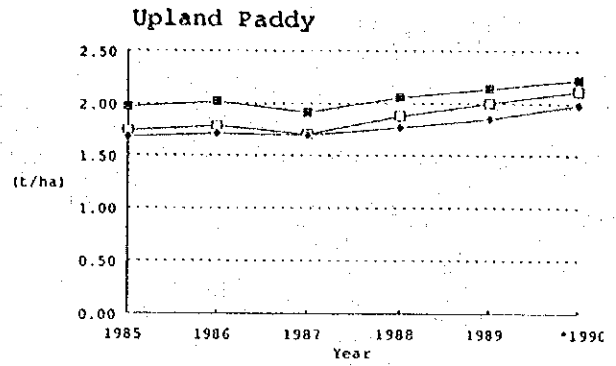
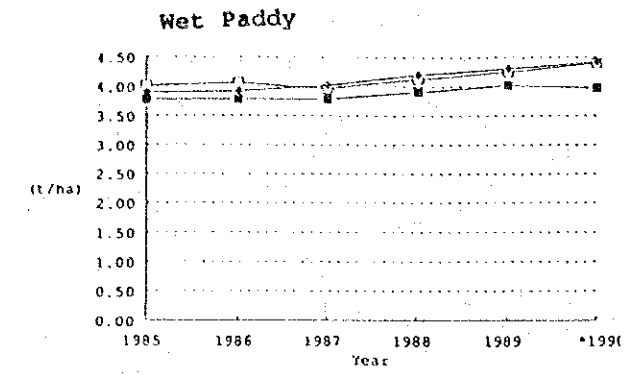


Fig. VI-1 YIELD RATE OF FOOD CROPS IN THE 3 PROVINCES DURING 1985 TO 1990

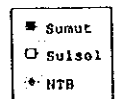


Table VI-2 SELF-SUFFICIENCY IN RICE BY KABUPATEN IN 1989

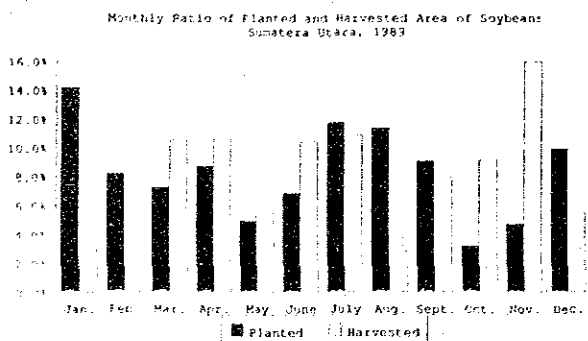
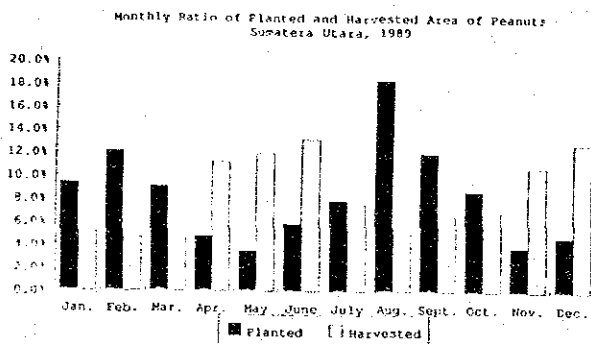
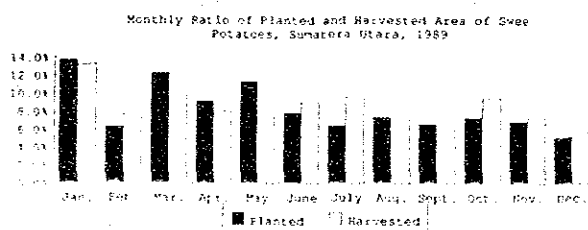
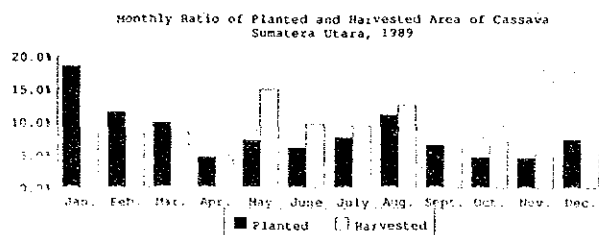
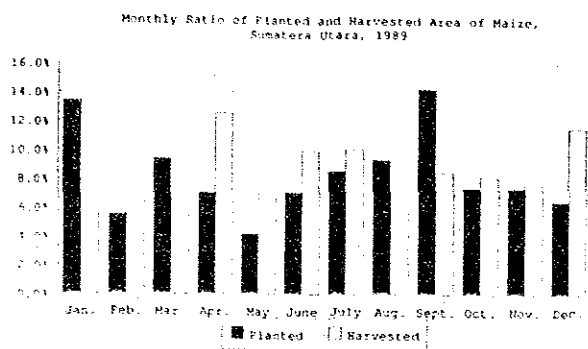
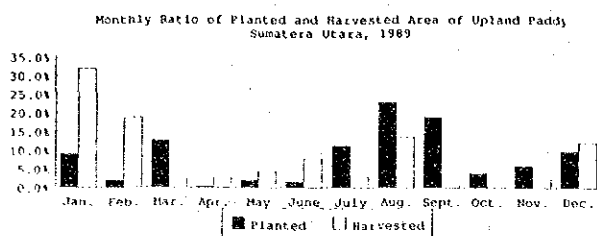
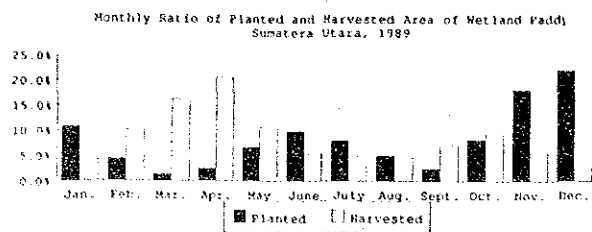
| Kabupaten/ Kotamadya | Gross Production | | Seeds (ton) | Animal Food (ton) | Waste (ton) | Production (Rice) (ton) | Demand (Rice) (ton) | Surplus +/ (ton) |
|---------------------------|------------------|------------------|----------------|-------------------------|----------------|-------------------------------|---------------------------|------------------------|
| | (Paddy) (ton) | (Rice) (ton) | | | | | | |
| North Sumatra | 2,617,383 | 1,779,820 | 27,578 | 52,348 | 206,773 | 1,493,122 | 1,384,232 | 108,890 |
| Nias | 98,267 | 66,822 | 1,377 | 1,965 | 7,763 | 55,717 | 81,192 | -25,476 |
| Tapanuli Selatan | 354,599 | 241,127 | 3,517 | 7,092 | 28,013 | 202,505 | 126,841 | 75,663 |
| Tapanuli Tengah | 84,991 | 57,794 | 939 | 1,700 | 6,714 | 48,440 | 38,714 | 9,727 |
| Tapanuli Utara | 250,855 | 170,581 | 2,542 | 5,017 | 19,818 | 143,205 | 101,580 | 41,625 |
| Laguhan Batu | 262,652 | 178,603 | 2,820 | 5,253 | 20,750 | 149,781 | 94,878 | 54,903 |
| Asahan | 237,304 | 161,367 | 2,533 | 4,746 | 18,747 | 135,340 | 114,902 | 20,438 |
| Simalungun | 352,510 | 239,707 | 3,694 | 7,050 | 27,848 | 201,114 | 137,049 | 64,065 |
| Dairi | 80,258 | 54,575 | 1,106 | 1,605 | 6,340 | 45,524 | 40,724 | 4,799 |
| Karo | 62,473 | 42,482 | 816 | 1,249 | 4,935 | 35,481 | 35,710 | -229 |
| Deli Serdang | 567,233 | 385,718 | 5,407 | 11,345 | 44,811 | 324,156 | 210,494 | 113,662 |
| Langkat | 214,630 | 145,948 | 2,313 | 4,293 | 16,956 | 122,387 | 104,680 | 17,707 |
| Medan | 24,079 | 16,374 | 226 | 482 | 1,902 | 13,764 | 250,136 | -236,373 |
| Binjai | 18,545 | 12,611 | 198 | 371 | 1,465 | 10,577 | 21,993 | -11,417 |
| Tebing Tinggi | 5,463 | 3,715 | 51 | 109 | 432 | 3,123 | 13,502 | -10,379 |
| Tanjung Balai | 3,524 | 2,396 | 37 | 70 | 278 | 2,011 | 11,837 | -9,826 |
| South Sulawesi | 3,307,807 | 2,249,309 | 30,875 | 66,156 | 261,317 | 1,890,960 | 901,984 | 988,976 |
| Selayar | 4,522 | 3,075 | 57 | 90 | 357 | 2,570 | 12,982 | -10,412 |
| Bulukumba | 138,192 | 93,971 | 1,280 | 2,764 | 10,917 | 79,010 | 44,672 | 34,338 |
| Bantaeng | 49,883 | 33,920 | 487 | 998 | 3,941 | 28,495 | 18,765 | 9,730 |
| Jeneponto | 40,762 | 27,718 | 574 | 815 | 3,220 | 23,108 | 35,376 | -12,267 |
| Takalar | 75,323 | 51,220 | 670 | 1,506 | 5,951 | 43,093 | 26,154 | 16,939 |
| Gowa | 161,554 | 109,857 | 1,430 | 3,231 | 12,763 | 92,433 | 53,636 | 38,797 |
| Sinjai | 62,439 | 42,459 | 666 | 1,249 | 4,933 | 35,611 | 24,760 | 10,850 |
| Bone | 432,457 | 294,071 | 4,344 | 8,649 | 34,164 | 246,914 | 86,975 | 159,939 |
| Maros | 154,450 | 105,026 | 1,185 | 3,089 | 12,202 | 88,550 | 31,153 | 57,397 |
| Pangkep | 118,147 | 80,340 | 978 | 2,363 | 9,334 | 67,666 | 31,397 | 36,269 |
| Barru | 67,307 | 45,769 | 534 | 1,346 | 5,317 | 38,572 | 19,186 | 19,386 |
| Soppeng | 166,240 | 113,043 | 1,502 | 3,325 | 13,133 | 95,083 | 32,724 | 62,359 |
| Wajo | 410,455 | 279,109 | 4,213 | 8,209 | 32,426 | 234,262 | 50,802 | 183,460 |
| Sidrap | 370,199 | 251,735 | 2,754 | 7,404 | 29,246 | 212,332 | 30,138 | 182,194 |
| Pinrang | 337,884 | 229,761 | 2,906 | 6,758 | 26,693 | 193,404 | 38,403 | 155,002 |
| Enrekang | 45,541 | 30,968 | 455 | 911 | 3,598 | 26,005 | 18,890 | 7,115 |
| Luwu | 344,054 | 233,957 | 3,329 | 6,881 | 27,180 | 196,566 | 83,678 | 112,888 |
| Tator | 119,447 | 81,224 | 1,206 | 2,389 | 9,436 | 68,193 | 46,495 | 21,698 |
| Polmas | 130,483 | 88,728 | 1,352 | 2,610 | 10,308 | 74,459 | 53,221 | 21,238 |
| Majene | 11,847 | 8,056 | 136 | 237 | 936 | 6,747 | 17,421 | -10,673 |
| Mamuju | 45,385 | 30,862 | 626 | 908 | 3,585 | 25,742 | 22,664 | 3,078 |
| Ujung Pandang | 16,737 | 11,381 | 152 | 335 | 1,322 | 9,572 | 110,150 | -100,577 |
| Pare-Pare | 4,499 | 3,059 | 40 | 90 | 355 | 2,574 | 12,345 | -9,771 |
| West Nusa Tenggara | 1,110,558 | 755,179 | 10,501 | 22,211 | 87,734 | 634,733 | 418,947 | 215,786 |
| Lombok Barat | 183,111 | 124,515 | 1,626 | 3,662 | 14,466 | 104,762 | 102,252 | 2,509 |
| Lombok Tengah | 280,301 | 190,605 | 2,583 | 5,606 | 22,144 | 160,272 | 89,784 | 70,488 |
| Lombok Timur | 268,205 | 182,379 | 2,339 | 5,364 | 21,188 | 153,488 | 108,117 | 45,371 |
| Sumbawa | 155,683 | 105,864 | 1,652 | 3,114 | 12,299 | 88,800 | 46,254 | 42,545 |
| Dompu | 73,716 | 50,127 | 807 | 1,474 | 5,824 | 42,022 | 16,996 | 25,025 |
| Bima | 149,542 | 101,689 | 1,494 | 2,991 | 11,814 | 85,390 | 55,544 | 29,847 |

Remarks: Rice Production = Gross Paddy Production * 0.68 - Seeds (39.24 kg/ha) - Animal Food (2 %) - Wasted (7.9 %).

Rice Demand = Population * 134 kg/capita/year.

Source: Agricultural Survey, Production of Cereals in Indonesia, 1990. BPS.

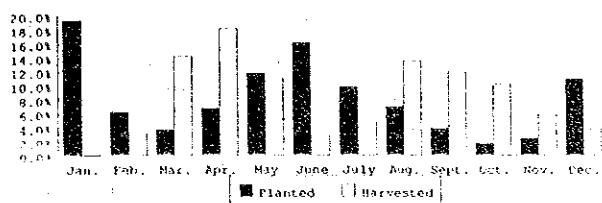
Neiraca Bahan Makanan Di Indonesia (Food Balance Sheet for Indonesia) 1989-1990. BPS



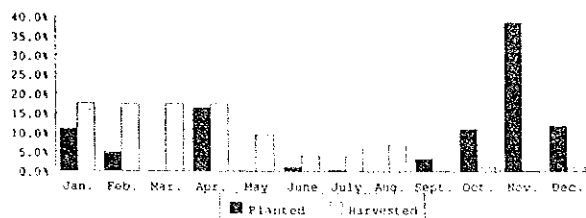
North Sumatra

Fig. VI-2 MONTHLY RATIO OF PLANTED AND HARVESTED AREA OF FOOD CROPS IN 1989

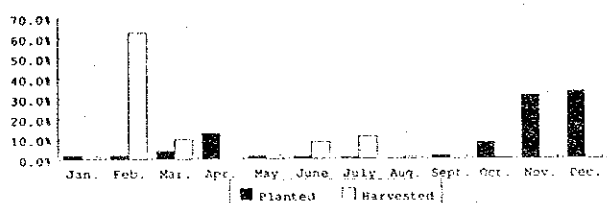
Monthly Ratio of Planted and Harvested Area of Wetland Paddy
Sulawesi Selatan, 1989



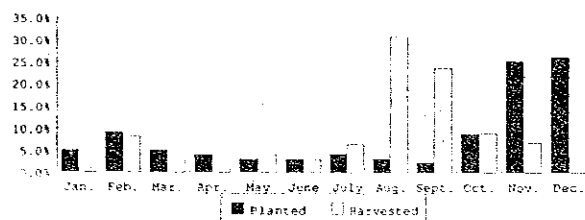
Monthly Ratio of Planted and Harvested Area of Upland Paddy
Sulawesi Selatan, 1989



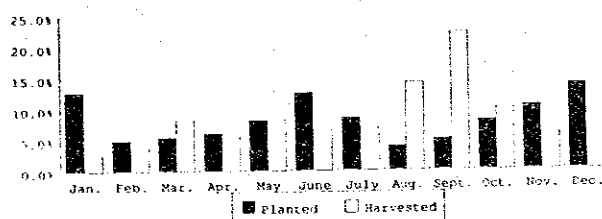
Monthly Ratio of Planted and Harvested Area of Maize,
Sulawesi Selatan, 1989



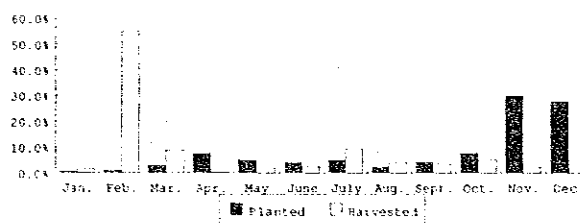
Monthly Ratio of Planted and Harvested Area of Cassava
Sulawesi Selatan, 1989



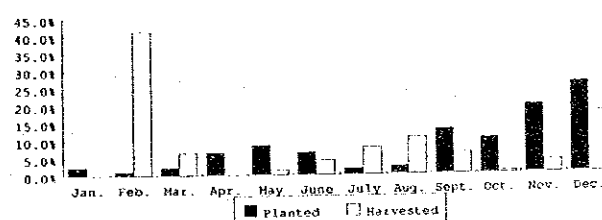
Monthly Ratio of Planted and Harvested Area of Sweet
Potatoes, Sulawesi Selatan, 1989



Monthly Ratio of Planted and Harvested Area of Peanuts
Sulawesi Selatan, 1989

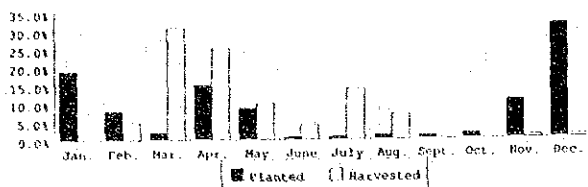


Monthly Ratio of Planted and Harvested Area of Soybean
Sulawesi Selatan, 1989

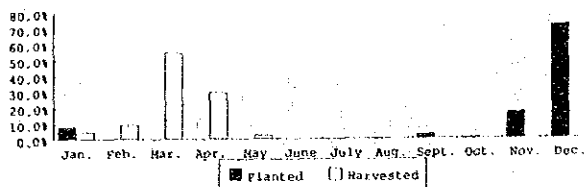


South Sulawesi

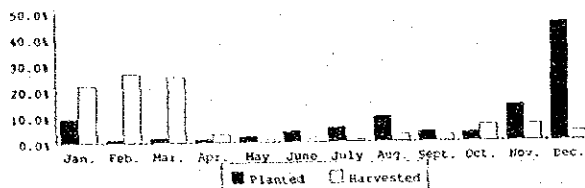
Monthly Ratio of Planted and Harvested Area of Wetland Paddy
Nusa Tenggara Barat, 1989



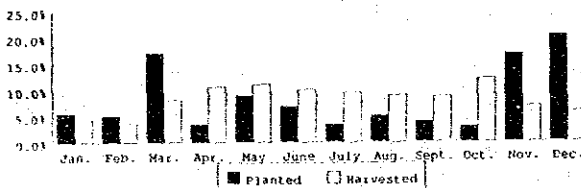
Monthly Ratio of Planted and Harvested Area of Upland Paddy
Nusa Tenggara Barat, 1989



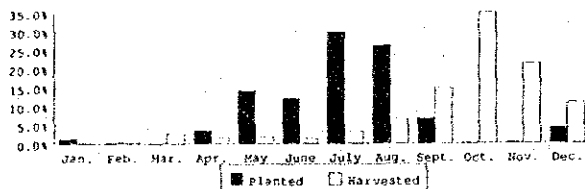
Monthly Ratio of Planted and Harvested Area of Maize,
Nusa Tenggara Barat, 1989



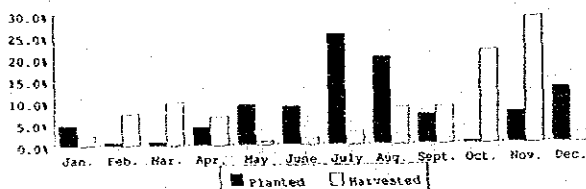
Monthly Ratio of Planted and Harvested Area of Cassava,
Nusa Tenggara Barat, 1989



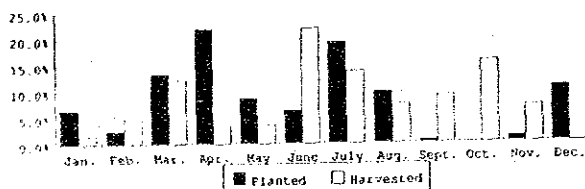
Monthly Ratio of Planted and Harvested Area of Sweet
Potatoes, Nusa Tenggara Barat, 1989



Monthly Ratio of Planted and Harvested Area of Peanuts,
Nusa Tenggara Barat, 1989



Monthly Ratio of Planted and Harvested Area of Soybean,
Nusa Tenggara Barat, 1989



NTB

Table VI-3 ESTIMATION OF CROPPING INTENSITY OF WET PADDY IN WETLAND BY IRRIGATION STATUS (1989)

| | Unit | North Sumatra | South Sulawesi | West Nusa Tenggara |
|-------------------------------------|------|---------------|----------------|--------------------|
| 1. Technical Irrigation | | | | |
| Total area | (ha) | 51,317 | 123,648 | 37,727 |
| Single cropping area | (ha) | 478 | 22,446 | 2,904 |
| Double cropping area | (ha) | 50,839 | 101,202 | 34,823 |
| Cropping Intensity | (%) | 199% | 182% | 192% |
| 2. Semi Technical Irrigation | | | | |
| Total area | (ha) | 62,831 | 41,391 | 76,292 |
| Single cropping area | (ha) | 12,188 | 14,960 | 44,863 |
| Double cropping area | (ha) | 50,643 | 26,431 | 31,429 |
| Cropping Intensity | (%) | 181% | 164% | 141% |
| Sub Total (1+2) | | | | |
| Total area | (ha) | 114,148 | 165,039 | 114,019 |
| Single cropping area | (ha) | 12,666 | 37,406 | 47,767 |
| Double cropping area | (ha) | 101,482 | 127,633 | 66,252 |
| Cropping Intensity | (%) | 189% | 177% | 158% |
| 3. Non Technical Irrigation | | | | |
| Total area | (ha) | 159,015 | 151,062 | 38,469 |
| Single cropping area | (ha) | 69,069 | 58,200 | 24,359 |
| Double cropping area | (ha) | 89,946 | 92,862 | 14,110 |
| Cropping Intensity | (%) | 157% | 161% | 137% |
| 4. Rainfed | | | | |
| Total area | (ha) | 209,540 | 256,719 | 39,334 |
| Single cropping area | (ha) | 165,257 | 225,788 | 39,029 |
| Double cropping area | (ha) | 44,283 | 30,931 | 305 |
| Cropping Intensity | (%) | 121% | 112% | 101% |
| 5. Tidal | | | | |
| Total area | (ha) | 9,204 | 990 | 5,242 |
| Single cropping area | (ha) | 7,195 | 990 | 5,242 |
| Double cropping area | (ha) | 2,009 | 0 | 0 |
| Cropping Intensity | (%) | 122% | 100% | 100% |
| 6. Others | | | | |
| Total area | (ha) | 49,925 | 15,533 | 185 |
| Single cropping area | (ha) | 47,756 | 14,068 | 185 |
| Double cropping area | (ha) | 2,169 | 1,465 | 0 |
| Cropping Intensity | (%) | 104% | 109% | 100% |
| Sub Total (3+4+5+6) | | | | |
| Total area | (ha) | 427,684 | 424,304 | 83,230 |
| Single cropping area | (ha) | 289,277 | 299,046 | 68,815 |
| Double cropping area | (ha) | 138,407 | 125,258 | 14,415 |
| Cropping Intensity | (%) | 132% | 130% | 117% |
| TOTAL (1+2+3+4+5+6) | | | | |
| Total area | (ha) | 541,832 | 589,343 | 197,249 |
| Single cropping area | (ha) | 301,943 | 336,452 | 116,582 |
| Double cropping area | (ha) | 239,889 | 252,891 | 80,667 |
| Cropping Intensity | (%) | 144% | 143% | 141% |

Source: Agricultural Survey: Land Area by Utilization for Outside of Java, 1989. BPS

Table VI-4 AREA DISTRIBUTION BY RICE VARIETY AND PROVINCE
(APRIL 1987 TO MAY 1988)

| Variety | Sumut | | Variety | Sulsel | | Variety | NTB | | Variety | Indonesia | |
|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|-------|--------------|--------------|-------|
| | Area (ha) | Ratio | | Area (ha) | Ratio | | Area (ha) | Ratio | | Area (ha) | Ratio |
| Varlok | 141,465 | 30.7% | PB42 | 186,016 | 32.4% | PB36 | 130,264 | 68.6% | PB36 | 1,670,987 | 18.8% |
| IR46 | 115,349 | 25.0% | IR48 | 57,449 | 10.0% | Kr.Agam | 30,896 | 16.3% | Cisadane | 1,559,898 | 17.6% |
| Bahbolon | 43,037 | 9.3% | Cisadane | 50,760 | 8.9% | Semeru | 9,895 | 5.2% | Varlok | 1,483,051 | 16.7% |
| IR64 | 38,394 | 8.3% | IR46 | 47,438 | 8.3% | Varlok | 6,238 | 3.3% | IR64 | 758,598 | 8.6% |
| Unggul lama | 31,549 | 6.8% | PB36 | 45,103 | 7.9% | Cimanuk | 3,996 | 2.1% | PB42 | 406,237 | 4.6% |
| BaBahbutong | 23,349 | 5.1% | Kelara | 22,554 | 3.9% | Cisokan | 1,554 | 0.8% | Kr.Agam | 387,622 | 4.4% |
| Kelara | 20,554 | 4.5% | Varlok | 18,065 | 3.1% | Dodokan | 1,487 | 0.8% | IR46 | 326,243 | 3.7% |
| Galur Lain | 16,427 | 3.6% | PB54 | 16,188 | 2.8% | PB56 | 1,110 | 0.6% | Semeru | 258,368 | 2.9% |
| PB36 | 6,303 | 1.4% | IR64 | 13,848 | 2.4% | Unggul lama | 685 | 0.4% | IR48 | 178,738 | 2.0% |
| Semeru | 4,621 | 1.0% | Galur Lain | 12,588 | 2.2% | Bg.Wonto | 659 | 0.3% | Galur Lain | 139,093 | 1.6% |
| PB42 | 3,934 | 0.9% | Citarum | 10,330 | 1.8% | Sadang | 551 | 0.3% | Citanduy | 133,485 | 1.5% |
| PB56 | 3,402 | 0.7% | Ck.Pundung | 10,008 | 1.7% | VUB. | 533 | 0.3% | PB54 | 109,708 | 1.2% |
| Cisadane | 3,242 | 0.7% | PB38 | 9,877 | 1.7% | Porong | 500 | 0.3% | Barito | 98,477 | 1.1% |
| Cisokan | 1,739 | 0.4% | PB28 | 8,581 | 1.5% | Cisadane | 433 | 0.2% | Unggul lama | 98,034 | 1.1% |
| Makmur | 1,438 | 0.3% | PB52 | 8,499 | 1.5% | Galur Lain | 275 | 0.1% | Kelara | 88,827 | 1.0% |
| PB32 | 1,282 | 0.3% | PB26 | 6,020 | 1.0% | Bahbolon | 173 | 0.1% | Cisokan | 81,640 | 0.9% |
| IR65 | 557 | 0.1% | Sadang | 5,612 | 1.0% | Kelara | 147 | 0.1% | Sadang | 80,718 | 0.9% |
| PB54 | 467 | 0.1% | Cipunegara | 4,183 | 0.7% | Citanduy | 68 | 0.0% | Bahbolon | 74,268 | 0.8% |
| Cimandiri | 454 | 0.1% | PB50 | 3,894 | 0.7% | PB8 | 67 | 0.0% | Ck.Pundung | 67,728 | 0.8% |
| PB52 | 434 | 0.1% | Semeru | 3,686 | 0.6% | Jangkok | 46 | 0.0% | Cipunegara | 66,572 | 0.8% |
| Pelita-1 | 429 | 0.1% | Cimanuk | 3,280 | 0.6% | Cipunegara | 45 | 0.0% | PB52 | 59,713 | 0.7% |
| Adil | 414 | 0.1% | Kr.Agam | 2,937 | 0.5% | PB52 | 45 | 0.0% | Bg.Wonto | 54,163 | 0.6% |
| C4-63 | 400 | 0.1% | Porong | 2,879 | 0.5% | PB32 | 44 | 0.0% | Porong | 46,394 | 0.5% |
| Tondano | 373 | 0.1% | Unggul lama | 2,804 | 0.5% | PB29 | 39 | 0.0% | PB56 | 45,141 | 0.5% |
| Citanduy | 258 | 0.1% | PB56 | 2,674 | 0.5% | PB42 | 30 | 0.0% | Cisanggarung | 44,269 | 0.5% |
| Kr.Agam | 249 | 0.1% | Ayung | 2,318 | 0.4% | Serayu | 29 | 0.0% | PB38 | 37,984 | 0.4% |
| PB26 | 225 | 0.0% | PB29 | 2,097 | 0.4% | PB50 | 27 | 0.0% | PB50 | 37,752 | 0.4% |
| Ck.Pundung | 156 | 0.0% | Bahbolon | 1,549 | 0.3% | PB28 | 25 | 0.0% | C4-63 | 35,954 | 0.4% |
| Bt.Agam | 144 | 0.0% | Tondano | 1,420 | 0.2% | Ck.Pundung | 11 | 0.0% | PB5 | 35,647 | 0.4% |
| PB28 | 133 | 0.0% | C4-63 | 1,291 | 0.2% | Citarum | 8 | 0.0% | BaBahbutong | 31,941 | 0.4% |
| Bt.Ombilin | 80 | 0.0% | Bt.Agam | 1,245 | 0.2% | Asahan | 5 | 0.0% | Adil | 31,856 | 0.4% |
| Ayung | 60 | 0.0% | Serayu | 1,098 | 0.2% | BaBahbutong | 5 | 0.0% | Pelita-1 | 29,971 | 0.3% |
| PB50 | 38 | 0.0% | IR65 | 965 | 0.2% | PB30 | 2 | 0.0% | PB32 | 23,564 | 0.3% |
| Singkarak | 38 | 0.0% | Citanduy | 616 | 0.1% | PB38 | 1 | 0.0% | Sentani | 23,358 | 0.3% |
| Atomita2 | 10 | 0.0% | Adil | 588 | 0.1% | Adil | 0 | 0.0% | Pelita-2 | 22,798 | 0.3% |
| Arias | 0 | 0.0% | BaBahbutong | 553 | 0.1% | Arias | 0 | 0.0% | Citarum | 19,346 | 0.2% |
| Asahan | 0 | 0.0% | PH5 | 512 | 0.1% | Atomita2 | 0 | 0.0% | Serayu | 15,931 | 0.2% |
| Atomital | 0 | 0.0% | PB34 | 493 | 0.1% | Atomital | 0 | 0.0% | PB8 | 15,225 | 0.2% |
| Barito | 0 | 0.0% | PB30 | 483 | 0.1% | Ayung | 0 | 0.0% | Cimandiri | 14,320 | 0.2% |
| Batur | 0 | 0.0% | Pelita-1 | 447 | 0.1% | Barito | 0 | 0.0% | Bt.Agam | 12,656 | 0.1% |
| Bg.Wonto | 0 | 0.0% | Cimandiri | 401 | 0.1% | Batur | 0 | 0.0% | Kapuas | 12,054 | 0.1% |
| Brantas | 0 | 0.0% | Pelita-2 | 300 | 0.1% | Brantas | 0 | 0.0% | PB28 | 11,725 | 0.1% |
| Bt.Pane | 0 | 0.0% | Bt.Ombilin | 262 | 0.0% | Bt.Agam | 0 | 0.0% | Singkarak | 10,575 | 0.1% |
| Ciliwung | 0 | 0.0% | Bg.Wonto | 242 | 0.0% | Bt.Ombilin | 0 | 0.0% | PB30 | 9,785 | 0.1% |
| Cimanuk | 0 | 0.0% | Makmur | 238 | 0.0% | Bt.Pane | 0 | 0.0% | Bt.Ombilin | 9,739 | 0.1% |
| Cipunegara | 0 | 0.0% | Brantas | 214 | 0.0% | C4-63 | 0 | 0.0% | Makmur | 9,465 | 0.1% |
| Cisanggarung | 0 | 0.0% | Gemar | 212 | 0.0% | Ciliwung | 0 | 0.0% | Cimanuk | 9,361 | 0.1% |
| Citarum | 0 | 0.0% | Ciliwung | 180 | 0.0% | Cimandiri | 0 | 0.0% | PB26 | 9,199 | 0.1% |
| Dodokan | 0 | 0.0% | Cisanggarung | 138 | 0.0% | Cisanggarung | 0 | 0.0% | Tuntang | 8,114 | 0.1% |
| Gata | 0 | 0.0% | PB32 | 136 | 0.0% | Gata | 0 | 0.0% | Ayung | 7,076 | 0.1% |
| Gemar | 0 | 0.0% | PB8 | 103 | 0.0% | Gemar | 0 | 0.0% | Tondano | 6,692 | 0.1% |
| IR48 | 0 | 0.0% | Barito | 97 | 0.0% | IR46 | 0 | 0.0% | Gemar | 6,422 | 0.1% |
| Jangkok | 0 | 0.0% | Tajum | 14 | 0.0% | IR48 | 0 | 0.0% | VUB. | 5,850 | 0.1% |
| Kapuas | 0 | 0.0% | Asahan | 7 | 0.0% | IR64 | 0 | 0.0% | Asahan | 5,551 | 0.1% |
| Mahakam | 0 | 0.0% | Atomital | 4 | 0.0% | IR65 | 0 | 0.0% | Progo | 5,503 | 0.1% |
| Maninjanu | 0 | 0.0% | Arias | 0 | 0.0% | Kapuas | 0 | 0.0% | Bt.Pane | 5,088 | 0.1% |
| PB20 | 0 | 0.0% | Atomita2 | 0 | 0.0% | Mahakam | 0 | 0.0% | Ranan | 4,835 | 0.1% |
| PB29 | 0 | 0.0% | Batur | 0 | 0.0% | Makmur | 0 | 0.0% | Tajum | 3,380 | 0.0% |
| PB30 | 0 | 0.0% | Bt.Pane | 0 | 0.0% | Maninjanu | 0 | 0.0% | Atomital | 3,237 | 0.0% |
| PB34 | 0 | 0.0% | Cisokan | 0 | 0.0% | PB20 | 0 | 0.0% | Dodokan | 3,007 | 0.0% |
| PB38 | 0 | 0.0% | Dodokan | 0 | 0.0% | PB26 | 0 | 0.0% | Mahakam | 2,676 | 0.0% |
| PB5 | 0 | 0.0% | Gata | 0 | 0.0% | PB34 | 0 | 0.0% | IR65 | 2,634 | 0.0% |
| PB8 | 0 | 0.0% | Jangkok | 0 | 0.0% | PB5 | 0 | 0.0% | PB29 | 2,333 | 0.0% |
| Pelita-2 | 0 | 0.0% | Kapuas | 0 | 0.0% | PB54 | 0 | 0.0% | Brantas | 2,164 | 0.0% |
| Porong | 0 | 0.0% | Mahakam | 0 | 0.0% | Pelita-1 | 0 | 0.0% | Maninjanu | 1,722 | 0.0% |
| Progo | 0 | 0.0% | Maninjanu | 0 | 0.0% | Pelita-2 | 0 | 0.0% | PB20 | 1,260 | 0.0% |
| Ranan | 0 | 0.0% | PB20 | 0 | 0.0% | Progo | 0 | 0.0% | PB34 | 1,235 | 0.0% |
| Sadang | 0 | 0.0% | Progo | 0 | 0.0% | Ranan | 0 | 0.0% | Atomita2 | 649 | 0.0% |
| Sentani | 0 | 0.0% | Ranan | 0 | 0.0% | Sentani | 0 | 0.0% | Jangkok | 554 | 0.0% |
| Serayu | 0 | 0.0% | Sentani | 0 | 0.0% | Singkarak | 0 | 0.0% | Gata | 443 | 0.0% |
| Tajum | 0 | 0.0% | Singkarak | 0 | 0.0% | Tondano | 0 | 0.0% | Ciliwung | 180 | 0.0% |
| Tuntang | 0 | 0.0% | Tuntang | 0 | 0.0% | Tuntang | 0 | 0.0% | Arias | 0 | 0.0% |
| VUB. | 0 | 0.0% | VUB. | 0 | 0.0% | Tuntang | 0 | 0.0% | Batur | 0 | 0.0% |
| Total | 461,004 | | Total | 573,496 | | Total | 189,893 | | Total | 8,868,783 | |

Source: Laporan Hasil Inventarisasi Penyebaran Varietas Padi, 1990. Direktorat Bina Produksi Tanaman Pangan, Departmen Pertanian.