

SULTANATE OF OMAN

SOIL SURVEY AND LAND CLASSIFICATION PROJECT

OMA/87/011

SALALAH INTEGRATED STUDY

PRESENT LAND USE IN SALALAH

Muscat
March 1992

MINISTRY OF AGRICULTURE AND FISHERIES

FOOD & AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

This field document is one of a series of reports prepared during the course of the Salalah integrated study. The conclusions and recommendations given are those considered appropriate at the time of its preparation.

The material produced by the study is comprised of 29 colour maps, also available in digital format, computer databases on soil and crop water requirements, a computerized land evaluation system and 6 inter-related reports:

- The first report, which is the "Summary of Conclusions and Recommendations" is meant for decision makers.*
- The second report is titled " Land Resources Report" and describes the soil and water resources. The land evaluation chapter of this report contains information on crops, including potential yields and profits that can be achieved under improved management. This chapter is also the basis of cropping pattern recommendations.*
- The third report titled "Land Use Report" gives detailed statistics on land use and land cover. A very detailed analysis highlights the influence of farm size and water salinity on current cropping patterns. This information is used by most other reports.*
- The fourth report is the "Irrigation Report" which analyses current irrigation practices and proposes alternatives for improved water management. Detailed specifications as well as well as costing are included.*
- The fifth report is titled " Plant Production Report, Special Investigations". It contains analyses and recommendations on plant protection and weed control practices in Salalah. Similar information on micronutrients is also included. The last section of this report contains an analysis of the livestock sector by staff of the Directorate General of Agricultural Research. Monographs on the major crops of the area were also produced and published separately.*
- The sixth report is the "Farming Systems Report" which contains a detailed analysis of the socio-economic constraints on the farm households. Marketing and credit are also dealt with in this report.*

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ACKNOWLEDGEMENT

The project management wishes to express its' appreciation to Mr. P.S. Chhikara who has done all the field work in a commendable manner assisted by Mr. Ahmed Mukbali.

The useful and efficient participation of the extensionists of the MAF Directorate General of Agriculture and Fisheries Wealth in Salalah is greatfully acknowledged. They have helped in locating farms boundaries and in identifying the farms owners.

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1. Introduction

This report is part of the integrated agricultural study of the Salalah plain. Its' main objective was to supply the multidisciplinary team which carried out the integrated study with detailed information on the land use and land-cover.

It not only gives areas under each major crop at the time of the survey but also attempts to unveil and analyze the relationships which exist between the land use and the farm-size distribution as well as physical land variables.

The digitizing of the maps and the use of a geographic information system (GIS) have allowed a very powerful data analysis that would have been otherwise impossible. Another important advantage of the use of a GIS is that data storage and retrieval as well as map updating become much easier.

The land use database built by the project needs maintenance as land use changes with time. Periodic land use surveys need to be done in the future to keep the information up to date. The information included in this report is useful to all those involved in agricultural development and to planners in general. It provides statistics on the land use of the study area.

This study focused on agricultural land use and did not attempt to integrate urban land use.

This is the first time in Oman that such a detailed land use study is done using a GIS as a tool.

2. Methodology

The project prepared, in cooperation with the National Survey Authority (NSA) of the Ministry of Defence, the technical terms of reference of a tender to acquire new color aerial photography of the study area. Subsequently the MAF awarded the contract to MAPS Co. from Sharjah which flew the study area in March 1990. The contractor delivered negative and positive color films at scale 1/20,000 and paper prints at 1/20,000, 1/10,000 and 1/5,000.

Initially the positive films at 1:20,000 scale were examined under the zoom stereoscope and a tentative legend was prepared with appropriate symbols for the different land uses present in the area. Due to the small size of the cultivated plots and to the heterogeneity of the land cover, only limited results could be obtained with stereoscopic examination. Therefore it was decided to carry out a comprehensive field survey using photographic prints at 1:10,000 and 1: 5,000 scale.

The 1:10,000 scale prints, fitted with transparent stable overlays, were used in the field to map farm boundaries and the land cover within the farms representing them with appropriate symbols according to the legend. This field information was transferred daily onto clean overlays on the 1:5,000 scale photographic prints.

The maps were then finalized in the office and given to the geographic information (GIS) section. Subsequently the overlays were digitized, rectified by computer in UTM projection using reference points from available 1/5,000 scale orthophoto maps. Final color maps at 1:10,000 (8 sheets) and a generalized map at 1: 25,000 scales were then generated with the GIS.

The land cover information stored in the GIS was also used to analyze the present cropping pattern in the study area. It has been possible through the GIS to overlay the land cover information onto water salinity and soil maps. This made it possible to determine the physical factors that influence the present land use.

Farm boundaries were marked on the basis of their fences, walls or other limits like the limits of cultivated plots as shown by the farm owner or the laborer present in the farm. Though these boundaries have been checked and confirmed by the extensionists of the MAF, the maps produced are not of a cadastral nature and cannot be considered as a legal source to determine land property. In a few cases it was difficult to demarcate the boundaries owing to their irregular internal distribution.

Single lines of trees along the road or along farm borders such as coconut, decorative plants etc. when not mappable at 1:10,000 scale have been considered with adjoining plots. For

mixed plots, percentages have been assigned to each component to indicate the relative proportions of the different trees. These percentages are by necessity somewhat subjective since they are based on the estimation of the number of trees.

In small traditional farms different kinds of short grasses, such as buffel grass which resembles Rhodes grass, are grown. When these grasses are small or recently harvested they are difficult to distinguish, and therefore all such grasses have been mapped together as short grasses.

Vegetables were all mapped under the same symbol because the plots are generally very small and intricate.

3. General considerations

The ruins of the medieval frankincense port of Balid confirm that Salalah has been an important settlement since a very long time. Salalah has had trade with Omani possessions in East Africa and the Indian subcontinent during centuries. The monsoon type of the local climate as well as the availability of good irrigation water made it possible for Omani merchants and sailors to introduce in Salalah a large number of plants of the humid tropics. Coconut, banana, papaya and elephant grass are a few examples of tropical crops which were introduced.

The introduction of new crops is still continuing either in an organized way by the Agricultural Research Station of the MAF and the royal farms or in an illegal and uncontrolled way by migrant workers dominantly from the Indian subcontinent. These migrant workers have introduced several vegetable crops and spices in order to keep their usual diet. Kerela, snake gourd, curcuma are but a few of many crops introduced by them. Although an inventory of weeds of the area is not available it is likely that many of them were also introduced. In this situation it is quite difficult to identify indigenous plants from introduced ones but it is certain that the former have suffered from the stiff competition of the latter.

Three different kinds of agricultural land use patterns occur in the study area. These are the traditional coastal belt, the large modern farms and the recently developed small farms.

3.1 The coastal belt

This belt of traditional farms stretches along the coast over about 15 km from West Awqadain to South Dahariz. It reaches a maximum width of 2 km in the western part of Qarad. The irregular shape of the farms as well as their dominant size of 3 to 10 feddan are peculiar features of this area.

There is evidence which suggests that Hafa, East and Central Salalah districts are the oldest farmed areas in the plain. Indeed these districts have the highest proportion of holdings smaller than 3 feddans suggesting that division of land due to inheritance has taken place over a longer time. Furthermore the oldest coconut plantations are in these areas. It is likely that the choice of the first settlers in the area was motivated by the triple advantage of having good water, shallow aquifer and good soils.

In spite of the presence of good soils and water, farming in Qarad has probably been less attractive due to the increased depth of the watertable. The availability of mechanical pumps in the last few decades has probably promoted agricultural expansion in this district.

It is very unlikely that West Salalah, Awqadain East and West as well as South Dahariz have ever had good water. Therefore it can be assumed that they were mostly put under cultivation recently and not more than a few decades for the oldest parts.

3.2 The large modern farms

These are generally recently established large commercial, Government or royal farms. In contrast with the small farms which have a heterogenous land-cover including very small plots, these farms grow crops in sizeable tracts. Rhodes grass under center pivot or spray gun irrigation systems are the dominant crops. The royal farms however grow a large number of different crops.

The ecology of these large farms is totally different from that of small farms because wind can blow faster over the crops hence increasing their evapotranspiration rate.

3.3 The recently developed small farms

These farms were all recently developed, probably in the framework of Government land distribution programmes. This is shown by the regular rectangular shape of these farms which occur always in organized groupings.

This type of farms form the majority of the following districts: Sahalnawt (with the exception of Sahalnawt Dhofar Cattle Feed farm), North Dahariz, Al Wadi, North Hospital and North Awqadain.

Although the number of farms in this type is large their total area is much less than the two other types previously described because their average size is very small.

4. General land use

Table 1 gives the statistics of land use in the study area. It shows that out of 3,543 hectares covered by the land use survey, crops and fallow cover respectively 75 and 7.6 percent. Therefore 82.6 percent of the study area are cultivated. The unused area inside the farms amounts to only 8.5 percent. These figures reflect the very high density of cultivation and the dominance of perennial crops.

Farm buildings cover 4.6 percent of the area whereas newly established farms, not yet cultivated and enclosed uncultivated land (enclosures) amount respectively to 0.5 and 1.6 percent. Abandoned farms are only two and cover only 0.1 percent of the area. Lawns and other ornamental plants cover 1.1 percent of the study area.

Apart from the agricultural land uses mentioned above, non-agricultural categories like cemeteries and excavation sites have also been included in the maps to help the user locate and account respectively for 0.9 and 0.1 percent of the surveyed area.

Table 1.

Land use in Salalah Plain (1991)

Land use	Area in hectares	Area in feddan	Percentage
Net cropped area	2660	6331	75.00
Fallow land	268	638	7.60
Unused/vacant/wasteland	301	717	8.50
Farm buildings	163	388	4.60
New farms	16	38	0.50
Enclosures	55	131	1.55
Abandoned farms	3	7	0.10
Parks and ornamental plants	40	96	1.13
Reservoirs	0.7	1.6	0.02
Cemeteries	34.3	82	1.00
Excavation sites	2	5	0.10
Total	3543	8436	100

Table 2 shows that there are 291 feddans which are intercropped. These are mostly grasses and vegetables grown generally under coconut trees. This area has been taken into account in the cropping pattern analysis. For example one feddan of coconut intercropped with vegetables is counted once as one feddan of coconut and again as one feddan of vegetables. It must be realized however that the intercropped area represents only 4.6 percent of the net cropped area.

All the analysis that follows is based on a total area of 7068.7 feddans instead of 7262 as shown in table 2. This is due to the fact that 84.2 feddans of greenhouses/nurseries and minor field crops such as sugarcane and maize were not accounted for. This was also the case for 109.1 feddans where water quality information could not be obtained generally due to access difficulty. The area hence unaccounted for amounts to only about 2.7 percent of the total area.

Table 2.

Agricultural Landuse in Salalah Plain, 1991
(Taqa excluded)

Farms Identification	Area Hectares	Area Feddans
Total Crop Area	2782	6624
Including Intercropped Area	122	291
Net Cropped Area	2660	6333
Fallow	268	638
Net cultivated Area + Fallow	2928	7262

Appendix 1. gives the detailed statistics about each crop in each large farm separately and globally for the small farms.

5. Farms classification

Since all the enclosed land is not cultivated it was decided to count the "active farms", that were really growing crops at the time of the survey.

Dahariz extension district has the highest number of farms (270) followed by Hafa-Qarad (259), Salalah (163) and Awqadain (104). The total of the study area is 796 farms.

Table 3 shows also that 90 percent of the farms are 10 feddans or smaller and that 97 percent are 20 feddans or smaller.

All farms in Awqadain are 20 feddans or smaller and all those in Salalah are 50 feddans.

Table 3.

Total Number of "Active" Farms By Size Class
In Each Extension District

Salalah 1991

Extension District	Total Area (feddan)	Farm Size In Feddan						
		Less 3	3 to 6	6 to 10	10 to 20	20 to 50	50 to 100	More 100
HAFQ-QARAD	259 32.5%	77 29.7%	94 36.3%	58 22.4%	20 7.7%	5 1.9%	2 0.8%	3 1.2%
AWQADAIN	104 13.1%	32 30.8%	40 38.5%	21 20.2%	11 10.6%			
DAHARIZ	270 33.9%	116 43.0%	89 33.0%	41 15.2%	12 4.4%	7 2.6%	3 1.1%	2 0.7%
SALALAH	163 20.5%	28 17.2%	83 50.9%	40 24.5%	11 6.7%	1 0.6%		
Total Area	796 100.0%	253 31.8%	306 38.4%	160 20.1%	54 6.8%	13 1.6%	5 0.6%	5 0.6%
Cumulative	100.0%	31.8%	70.2%	90.3%	97.1%	98.7%	99.4%	100.0%

Table 4 shows that farms 10 feddans or smaller (90 percent of all farms) operate about 41 percent of the cultivated area whereas larger farms (10 percent of all farms) operate 59 percent.

Hafa-Qarad extension district and Dahariz are the largest cultivated area extension districts with respectively 2900.8 and 2858.8 feddans. Salalah district follows with 829.2 feddans and Awqadain comes last with 479.9 feddans.

Table 4.

Total Cultivated Area By Farm Class
In Each Extension District

Salalah 1991

Extension District	Total Area (feddan)	Farm Size In Feddan						
		Less 3	3 to 6	6 to 10	10 to 20	20 to 50	50 to 100	More 100
Hafa-Qarad	2900.8 41.0%	134.7 4.6%	416.4 14.4%	443.8 15.3%	239.1 8.2%	115.4 4.0%	122.7 4.2%	1428.6 49.2%
Awqadain	479.9 6.8%	60.0 12.5%	130.3 27.2%	160.6 33.5%	128.9 26.9%			
Dahariz	2858.8 40.4%	177.4 62.0%	370.1 12.9%	285.7 10.0%	171.4 6.0%	193.4 6.8%	183.4 6.4%	1477.8 51.7%
Salalah	829.2 11.7%	44.9 5.4%	369.2 44.5%	292.6 35.3%	89.4 10.8%	33.0 4.0%		
Total Area	7068.76 100.0%	417.1 5.9%	1286.0 18.2%	1182.7 16.7%	628.9 8.9%	341.8 4.86%	306.1 4.3%	2906.3 41.1%
Cumulative	100.0%	5.9%	24.1%	40.8%	49.7%	54.6%	58.9%	100.0%

Table 5 gives the average cultivated area in each farm-size category by extension district. This table again highlights the tiny size of farms in the category less than 3 feddans in Dahariz extension district.

Table 5.

Average Cultivated Area By Farm size Class
Salalah 1991 (By Extension District)

Extension District	Total Area (feddan)	Farm Size in Feddan						
		Less 3	3 to 6	6 to 10	10 to 20	20 to 50	50 to 100	More 100
HAFA-QARAD								
Total Area	2900.8	134.7	416.4	443.8	239.1	115.4	122.7	1428.6
Farm Number	259	77	94	58	20	5	2	3
Average Area	11.2	1.7	4.4	7.7	12.0	23.1	61.3	476.2
AWQADAIN								
Total Area	479.9	60.0	130.3	160.6	128.9			
Farm Number	104	32	40	21	11			
Average Area	4.6	1.9	3.3	7.6	11.7			
DAHARIZ								
Total Area	2858.8	177.4	370.1	285.7	171.4	193.4	183.4	1477.8
Farm Number	270	116	89	41	12	7	3	2
Average Area	10.6	1.5	4.2	7.0	14.3	27.6	61.1	739.9
SALALAH								
Total Area	829.2	44.9	369.2	292.6	89.4	33.0		
Farm Number	163	28	83	40	11	1		
Average Area	5.1	1.6	4.4	7.3	8.1	33.0		
Total Area	6068.7	417.1	1286.0	1182.7	628.9	341.8	306.1	2906.3
Total Farm Number	796	253	306	160	54	13	5	5
Average Area	8.9	1.6	4.2	7.4	11.6	26.3	61.2	581.3

6. Current cropping pattern

6.1 Global analysis

The current cropping pattern is determined by both socio-economical and physical factors.

In section 5 of this report as well as in the farming system report it was shown that different farm-size categories have different socio-economical characteristics. Therefore farm-size categories were chosen as a variable to analyze socio-economical interaction with the current cropping pattern.

As discussed in the soils report, the soils of the study area are relatively homogeneous because they derive from the same highly calcareous parent material. They also have only limited lateral variation due the small extent of the cultivated area. It must however be stressed that locally, as is the case in parts of Awqadain, strongly saline and poorly drained soils are the main physical factor determining the current cropping pattern.

Irrigation water salinity remains on a global basis the main physical factor determining the current cropping pattern in the study area.

6.2 Analysis by farm-size categories

Table 6 shows that farm-size influences strongly the cropping pattern and that across the board averages hide substantial differences that are highlighted when farm-size categories are considered separately.

6.2.1 Category less than 3 feddans

In this category fodder and banana occupy respectively 31.5 and 31.4 percent of the cropped area. Coconut and vegetable take the third and fourth place with respectively 15.3 and 10.4 percent. Papaya and citrus represent respectively 3.7 and 1.3 percent of the total cropped area. Other fruit trees occupy 1.9 percent and fallow 4.4 percent.

6.2.2 Category 3 to 6 feddans

In this category fodder and banana occupy respectively 33.4 and 25.8 percent of the cropped area. Coconut and vegetable take the third and fourth place with respectively 17.4 and 12.5 percent. Papaya and citrus represent respectively 2.2 and 1 percent of the total cropped area. Other fruit trees occupy 1 percent and fallow 6.7 percent.

Table 6.

Total Acreage of Each Main Crop And Fallow
Salalah 1991

Farm Size	Total Area Feddan	Crop and Fallow										
		B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F
<3 Feddan	417.9 5.9%	131.3 31.4%	15.6 3.7%	5.6 1.3%	64.0 15.3%	7.9 1.9%	4.2 1.0%	101.6 24.3%	26.0 6.2%	131.8 31.5%	43.3 10.4%	18.4 4.4%
3 to 6 feddan	1286.6 18.2%	332.0 25.8%	28.2 2.2%	13.2 1.0%	223.5 17.4%	12.4 1.0%	10.6 0.8%	305.0 23.7%	114.0 8.9%	429.6 33.4%	161.1 12.5%	86.5 6.7%
6 to 10 feddan	1182.8 16.7%	305.4 25.8%	39.7 3.4%	14.1 1.2%	247.5 20.9%	10.5 0.9%	11.1 0.9%	217.3 18.4%	94.3 8.0%	322.6 27.3%	181.9 15.4%	61.0 5.2%
Total Area <10 feddan	2887.3 40.9%	768.7 26.6%	83.5 2.9%	32.9 1.1%	535.0 18.5%	30.8 1.1%	25.9 0.9%	624.0 21.6%	234.3 8.1%	884.1 30.6%	386.3 13.4%	165.9 5.7%
Total Area >10 feddan	4181.4 59.1%	266.5 6.4%	66.9 1.6%	34.1 0.8%	544.4 13.0%	189.3 4.5%	6.3 0.2%	2368.3 56.6%	56.1 13.3%	2430.7 58.1%	174.4 4.2%	472.0 11.3%
Grand Total	7068.7 100.0%	1035.2 14.6%	150.4 2.1%	67.1 0.9%	1079.4 15.3%	220.1 3.1%	32.2 0.5%	2992.3 42.3%	290.3 4.1%	3314.9 46.9%	560.7 7.9%	637.9 9.0%

A: Alfalfa

B: Banana

C: Citrus

F: Fallow

K: Coconut

Ot: Fruit trees other than those listed here

P: Papaya

Rs: Short grasses, mostly rhodes grass and buffel grass

Rt: Tall grasses, mostly elephant grass

V: Vegetable

6.2.3 Category 6 to 10 feddans

In this category fodder and banana occupy respectively 27.3 and 25.8 percent of the cropped area. Coconut and vegetable take the third and fourth place with respectively 20.9 and 15.4 percent. Papaya and citrus represent respectively 3.4 and 1.2 percent of the total cropped area. Other fruit trees occupy 0.9 percent and fallow 5.2 percent.

6.2.4 Global considerations on farms 10 feddans or less

Since farms 10 feddans or smaller represent 90 percent of the farm population, it is interesting to draw some global conclusions on this category.

Table 6 shows that fodder and banana occupy respectively 30.6 and 26.6 percent of the cropped area. Coconut and vegetable take the third and fourth place with respectively 18.5 and 13.4 percent. Papaya and citrus represent respectively 2.9 and 1.1 percent of the total cropped area. Other fruit trees occupy 1.1 percent and fallow 5.7 percent.

It is interesting to note the trends of the various crops when farm-size increases. The area under fodder, especially short grasses, tends to decrease although the peak for fodder is in the class 3 to 6 feddans. This is due to an increase in area under tall grasses (mostly elephant grass). The area under banana decreases also but stabilizes at about 26 percent. Coconut and vegetables tend to replace fodder and banana when farm-size increases. Other crops like papaya, citrus and other miscellaneous fruit trees occupy a constantly small percentage of the area.

The crops hierarchy is constant in all categories of farms smaller than 10 feddans with fodder, Banana, Coconut and vegetables taking the first, second, third and fourth place.

6.2.5 Global considerations on farms larger than 10 feddans

Since farms larger than 10 feddans represent only 10 percent of the farm population, it is convenient to study this category globally.

Table 6 shows that fodder and coconut occupy the first and second place with respectively 58.1 and 13 percent of the cropped area. Banana and miscellaneous fruit trees and vegetables take the third, fourth and fifth place with respectively 6.4 , 4.5 and 4.2 percent. Papaya, citrus and fallow represent respectively 1.6 , 0.8 and 5.7 percent of the total cropped area in this category.

Fodder, especially rhodes grass are by far the dominant crop

in this category of farms. The 13 percent covered by coconut are not representative of all the farms in this category. Actually the royal Razat farm alone grows about 230 feddans of coconut which represent 21.3 percent of all coconut grown in the study area and 42.3 percent of the coconut grown in farms bigger than 10 feddans. It is interesting to note that miscellaneous fruit trees reach 4.5 percent.

6.3 Analysis by water salinity class

Irrigation water salinity varies widely between farms and between areas and is expected to influence strongly the cropping pattern. However in order to highlight the influence of water salinity large farms should not be considered as they mostly grow rhodes grass even if they have good water. Therefore the analysis will be restricted to farms 10 feddans or smaller.

Appendices 4 and 5 give a detailed analysis for the categories less than 3 feddans, 3 to 6 feddans and 6 to 10 feddans. The results were grouped in table 8 in order to facilitate a global analysis. The area irrigated with water of mixed salinity classes is not used for the analysis since it may include any levels of salinity. It is represent only 1 percent of the irrigated area of farm-size 10 feddans or smaller.

6.3.1 Water salinity less than 3 dS/m

This is the best water. Banana is by far the dominant crop with 35.1 percent of the area followed by fodder (21.3 percent), coconut (17.6 percent) vegetables (13.7 percent) and papaya (5.9 percent). Fallow represents only 3 percent of the area.

6.3.2 Water salinity 3 to 5 dS/m

Banana is still the dominant crop with 31.1 percent of the area followed by fodder (27.2 percent), coconut (18.5 percent) and vegetables (14.9 percent). Fallow represents 4.9 percent of the area.

6.3.3 Water salinity 5 to 7 dS/m

Fodder take now the first place with 41.2 percent of the area followed by coconut (16.5 percent), Banana (15.5 percent) and vegetables (14.6 percent). Fallow represents 10 percent of the area.

Table 7.

Total Acreage Of Each Main Crop And Fallow By Water Salinity Class
Salalah 1991 (Small farms 10 feddan or less)

Farm Size Water Salinity	Total Area (Feddan)	Crops and Fallow										
		B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F
< 3 dS/m	1037.1 35.9%	363.83 35.1%	60.89 5.9%	23.58 2.3%	182.3 17.6%	12.53 1.2%	4.83 0.5%	146.1 14.1%	69.91 6.7%	220.84 21.3%	142.23 13.7%	30.86 3.0%
3-5 dS/m	1009.9 35.0%	314.44 31.1%	17.82 1.8%	6.58 0.7%	187.02 18.5%	9.29 0.9%	8.75 0.9%	169.59 16.8%	96.56 9.6%	274.90 27.2%	150.56 14.9%	49.28 4.9%
5-7 dS/m	470.8 16.3%	73.15 15.5%	2.35 0.5%	2.10 0.4%	77.56 16.5%	5.54 1.2%	3.08 0.7%	141.48 30.0%	49.46 10.5%	194.02 41.2%	68.85 14.6%	47.26 10.0%
7-10 dS/m	230.9 8.0%	11.63 5.0%	1.86 0.8%	0.04 0.0%	47.88 20.7%	2.9 1.3%	4.94 2.1%	103.96 45.0%	15.40 6.7%	124.3 53.8%	22.88 9.9%	19.36 8.4%
> 10 dS/m	109.6 3.8%		0.48 0.4%	0.04 0.0%	31.47 28.7%	0.31 0.3%	4.25 3.9%	52.49 47.9%	1.17 1.1%	57.91 52.8%	1.11 1.0%	18.29 16.7%
Mixed	29.1 1.0%	5.7 15.8%	0.1 0.5%	0.6 0.5%	8.8 17.3%	0.2 1.2%	0.0 0.6%	10.4 30.4%	1.8 10.3%	12.1 41.2%	0.7 13.9%	0.9 9.6%
Total Area	2887.3 100.0%	768.7 26.6%	83.5 2.9%	32.9 1.1%	535.0 18.5%	30.8 1.1%	25.9 0.9%	624.0 21.6%	234.3 8.1%	884.1 30.6%	386.3 13.4%	165.9 5.7%

A: Alfalfa B: Banana C: Citrus F: Fallow

K: Coconut Ot: Fruit trees other than those listed here

P: Papaya Rs: Short grasses, mostly rhodes grass and buffel
grass

Rt: Tall grasses, mostly elephant grass

V: Vegetable

6.3.4 Water salinity 7 to 10 dS/m

Fodder account now for more than half the cropped area with 53. percent followed by coconut (20.7 percent), vegetable (9.9 percent) ar banana (only 5 percent). Fallow represents 8.4 percent of the area.

6.3.5 Water salinity more than 10 dS/m

The area under fodder decreases slightly to 52.8 percent followed k coconut (28.7 percent). The area under vegetables falls to a mere 1 percer and banana disappears. Fallow increases to 16.7 percent of the area.

6.3.6 Global considerations

From the above it appears that banana is the dominant crop below a salinity of 5 dS/cm. It is a secondary crop in the 5 to 7 dS/m water salinity range and a marginal one from 7 to 10 dS/m. It disappears completely beyond 10 dS/m.

Papaya covers a significant area only below 3 dS/m, probably due to economical reasons. The slight increase of its' share of the cropping pattern in the salinity class 7 to 10 dS/m is consistent with the fact that it resists salinity better than banana.

Citrus are significant only when water salinity is less than 5 dS/m and virtually disappear beyond.

The area share of coconut in the cropping pattern increases steadily with increasing water salinity levels and this is consistent with the higher resistance of this crop to salinity. There is however a distortion in this trend in the water salinity range below 5 dS/m. This is probably due to the fact that the oldest coconut plantations are in the districts of Salalah Centre and Hafa which have a dominant water salinity of less than 5 dS/m. These plantation were made before banana cultivation was made attractive by a guaranteed price and market.

Fodder's share of the cropped area increases clearly and rapidly with increasing salinity levels as these crops are the most resistant to salinity. It is however interesting to note that if the respective proportions of short grasses and alfalfa increase steadily with increasing salinity, tall grasses represented mostly by elephant grass reach a peak in the salinity range 5 to 7 dS/m then eventually decrease. This show that elephant grass is less resistant to salinity than rhodes grass.

Vegetables occupy a nearly steady percentage (about 14 to 15 percent) of the area in the salinity range 3 to 7 dS/m then decrease rapidly to about 1 percent beyond 10 dS/m.

Fallow make about 3 to 5 percent of the crop area below 5 dS/m then jump to 8 to 10 percent in the 5 to 10 dS/m water salinity range. Beyond 10 dS/m fallow occupies about 16.7 percent of the area. This shows that cultivation becomes increasingly unprofitable with increasing salinity levels.

6.4 Global analysis by extension district

Table 8 and in a more detailed manner appendix 3 show that in all extension districts forage crops are dominant. Coconut is the second crop in Dahariz and Salalah, banana is second in Hafa-Qarad and vegetables in Awqadain.

Table 8.

Total Acreage Of Each Main Crop In Each Extension District
Salalah 1991

Extension District	Crops											
	Total Area (Feddan)	B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F
HAFI-QARAD	2900.8 41.0%	536.5 18.5%	69.2 2.4%	32.3 1.1%	393.4 13.6%	56.8 2.0%	5.9 0.2%	1273.2 43.9%	84.1 2.9%	1363.1 47.0%	193.0 6.7%	256.0 8.8%
AWQADAIN	479.9 6.8%	42.9 8.9%	1.8 0.4%	0.8 0.2%	87.6 18.3%	4.9 1.0%	3.0 0.6%	168.0 35.0%	28.1 5.9%	199.2 41.5%	91.9 19.1%	50.4 10.5%
DAHARIZ	2858.8 40.4%	287.7 10.1%	65.5 2.3%	29.7 1.0%	406.6 14.2%	146.2 5.1%	17.9 0.6%	1400.8 49.0%	59.7 2.1%	1478.4 51.7%	164.3 5.7%	280.0 9.8%
SALALAH	829.2 11.7%	168.1 20.3%	13.9 1.7%	4.2 0.5%	191.7 23.1%	12.2 1.5%	5.4 0.7%	150.3 18.1%	118.4 14.3%	274.2 33.1%	111.6 13.5%	51.4 6.2%
Total Area	7068.7 100.0%	1035.2 14.6%	150.4 21.4%	67.1 0.9%	1079.4 15.3%	220.1 3.1%	32.2 0.5%	2992.3 42.3%	290.3 4.1%	3314.9 46.9%	560.7 7.9%	637.9 9.0%

A: Alfalfa

B: Banana

C: Citrus

F: Fallow

K: Coconut

Ot: Fruit trees other than those listed here

P: Papaya

Rs: Short grasses, mostly rhodes grass and buffel grass

Rt: Tall grasses, mostly elephant grass

V: Vegetable

7. Land use legend

The existing land use legend is given below:

Map symbol	Land use
	MAIN FRUIT CROPS
B	banana
XB	banana mixed with other fruit trees/crops
K	coconut
KY	young coconut
XK	coconut mixed with other fruit trees/crops
C	lime
CY	young lime
XC	lime mixed with other fruit trees/crops
P	papaya
PY	young papaya
PX	papaya mixed with other fruit trees/crops
	OTHER FRUIT CROPS
Od	avocado
Ob	ber
Or	bread fruit
Co	citrus excluding lime
Coy	young citrus excluding lime
Oc	chico (sapota)
Oa	custard apple
D	date
Of	fig
Ov	grape
Og	guava
Ogy	young guava
Oj	karonda
M	mango
Oe	olive
Op	pomegranate
Ot	tamarind
Ow	tropical almond
On	conocabec
Ol	frankicence
X	other mixed fruit crops
	OPEN LANDS
F	fallow land (current)
Fz	old fallow land
W	unused/vacant/waste land
N	new farms
E	enclosure
Z	abandoned farm
	MISCELLANEOUS USE
Fj	reservoir
Ct	cemetery
Ex	excavation
RO	recreational land, parks, ornamental plants
S	farm buildings
NA	non-agricultural land

Identification	Crops	Area (ha)	Area (fed.)
DHO FAR CATTLE FEED Co GARZIZ	Lime	0.13	0.3
	Citrus other than lime	0.13	0.3
	Coconut	1.07	2.5
	Chico (Sapota)	0.09	0.2
	Tropical almond	0.27	0.6
	Papaya	0.09	0.2
	Rhodesgrass	370.22	881.5
	Total	372.00	885.7
DHO FAR CATTLE FEED Co SAHALNAWT	Banana	7.25	17.3
	Coconut	5.56	13.2
	Rhodesgrass	278.51	663.1
	Total	291.32	693.6
MAF LIVESTOCK RESEARCH	Rhodes grass	118.02	281.0
	Fallow	20.15	48.0
	Total	138.17	329.0
MAF BALID	Coconut	2.80	6.7
	Rhodesgrass	11.00	26.2
	Total	13.80	32.9
MAF COCONUT PLANTATION	Coconut	52.63	125.3
	Total	52.63	125.3

Identification	Crops	Area (ha)	Area (fed.)
MAF AGRICULTURAL RESEARCH STATION	Alfalfa	0.21	0.5
	Banana	0.75	1.8
	Lime	1.85	4.4
	Citrus excluding lime	1.01	2.4
	Date palm	0.27	0.7
	Greenhouse/nursery	1.53	3.7
	Coconut	2.63	6.3
	Young coconut	4.90	11.7
	Mango	0.59	1.4
	Custard apple	0.77	1.8
	Chico (Sapota)	0.33	0.8
	Fig	0.18	0.4
	Guava	0.71	1.7
	Frankincense	0.46	1.1
	Pomegranate	0.21	0.5
	Tamarind	0.27	0.6
	Tropical almond	0.11	0.3
	Papaya	1.07	2.5
	Vegetables	1.04	2.5
	Fallow	72.02	171.5
	Total	90.92	216.5
RAZAT FARM	Banana	6.17	14.7
	Lime	1.86	4.4
	Citrus excluding lime	6.75	16.1
	Greenhouse/nursery	3.57	8.5
	Sugar cane	0.64	1.5
	Maize	12.47	29.7
	Coconut	94.39	224.7
	Young coconut	2.37	5.6
	Custard apple	2.43	5.8
	Ber	1.27	3.0
	Chico (Sapota)	2.15	5.1
	Avocado	0.63	1.5
	Olive	0.66	1.6
	Fig	1.56	3.7
	Guava	4.59	10.9
Conocabec	0.93	2.2	

Identification	Crops	Area (ha)	Area (fed.)
RAZAT FARM (Cont'd)	Bread fruit	0.58	1.4
	Tamarind	1.02	2.4
	Grapes	13.14	31.3
	Tropical almond	10.47	24.9
	Papaya	5.59	13.3
	Young papaya	2.52	6.0
	Rhodesgrass	97.35	231.8
	Vegetables	12.77	30.4
	Fallow	60.19	143.3
	Total		346.07
OTHER FARMS	Alfalfa	13.68	32.6
	Alfalfa intercropped	0.63	1.5
	Banana	423.90	1009.3
	Lime	24.31	57.9
	Citrus exluding lime	9.36	22.3
	Young citrus excl. lime	0.94	2.2
	Young lime	0.28	0.7
	Date palm	0.07	0.2
	Greenhouse/nursery	6.51	15.5
	Sugar cane	1.64	3.9
	Sugar cane intercropped	1.42	3.4
	Maize	3.98	9.5
	Maize intercropped	3.58	8.5
	Coconut	264.13	628.9
	Young coconut	42.92	102.2
	Mango	0.83	2.0
	Custard apple	5.28	12.6
	Young custard apple	1.47	3.5
	Ber	0.88	2.1
	Chico (Sapota)	3.54	8.4
	Young chico (Sapota)	0.30	0.7
	Avocado	0.49	1.2
	Fig	1.91	4.5
	Young fig	0.09	0.2
	Guava	6.03	14.4
	Young Guava	0.64	1.5
	Apple	0.02	0.0
	Indian Blackberry (Jamun)	0.33	0.8
	Karanda	0.14	0.3
	Frankincense	0.48	1.2
	Mulberry	0.15	0.3
Wood apple	0.65	1.5	
Pomegranate	3.99	9.5	
Young Pomegranate	0.50	1.2	
Lovloo	0.06	0.1	
Bread Fruit	0.16	0.4	
Kaswood	0.31	0.7	

Identification	Crops	Area (ha)	Area (fed.)
OTHER FARMS (Cont'd)	Cherry	0.16	0.4
	Grapes	2.34	5.6
	Tropical Almond	1.45	3.4
	Soursop	0.36	0.9
	Carambola	0.54	1.3
	Papaya	53.88	128.3
	Young Papaya	0.47	1.1
	Short Grasses	336.71	801.7
	Short grasses intercropped	63.05	150.1
	Tall Grasses	102.50	244.1
	Tall grasses intercropped	22.36	53.2
	Vegetables	190.85	454.4
	Vegetables intercropped	31.02	73.9
	Fallow	109.87	261.6
	total	1741.15	4145.6

Appendix 2 Total Cultivated Area By Farm Size Class In Each Extension District
Salalah 1991

Extension District	Total Area (feddan)	Farm Size In Feddan						
		Less 3	3 to 6	6 to 10	10 to 20	20 to 50	50 to 100	More 100
HAFI-QARAD	2900.8	134.7	416.4	443.8	239.1	115.4	122.7	1428.6
	41.0%	4.6%	14.4%	15.3%	8.2%	4.0%	4.2%	49.2%
Al Hafa	495.8	98.7	221.6	140.8	34.7			
	7.0%	19.9%	44.7%	28.4%	7.0%			
Al Qarad	2405.0	36.1	194.8	303.0	204.4	115.4	122.7	1428.6
	34.0%	1.5%	8.1%	12.6%	8.5%	4.8%	5.1%	59.4%
AWQADAIN	479.9	60.0	130.3	160.6	128.9			
	6.8%	12.5%	27.2%	33.5%	26.9%			
Awqadain East	174.8	11.7	46.3	55.2	61.3			
	2.5%	6.7%	26.5%	31.6%	35.1%			
Awqadain North	72.0	4.2	63.2	4.5				
	1.0%	5.8%	87.8%	6.3%				
Awqadain West	175.0	2.8	11.9	92.9	67.6			
	2.5%	1.6%	6.8%	53.1%	38.6%			
North Hospital	58.1	41.3	8.9	7.9				
	0.8%	71.1%	15.3%	13.6%				
DAHARIZ	2858.8	177.4	370.1	285.7	171.4	193.4	183.4	1477.8
	40.4%	6.2%	12.9%	10.0%	6.0%	6.8%	6.4%	51.7%
Dahariz North	845.2	145.4	151.3	120.9	140.3	104.0	183.4	
	12.0%	17.2%	17.9%	14.3%	16.6%	12.3%	21.7%	
Dahariz South	451.0	26.6	165.1	146.1	31.1	81.6		
	6.4%	5.9%	36.6%	32.4%	6.9%	18.1%		
Sahalnawt	778.3	5.4	53.7	18.7		7.8		693.5
	11.0%	0.7%	6.9%	2.4%		1.0%		89.1%
Razat	784.3							784.3
	11.1%							100.0%
SALALAH	829.2	44.9	369.2	292.6	89.4	33.0		
	11.7%	5.4%	44.5%	35.3%	10.8%	4.0%		
Salalah Centre	78.3	14.1	36.2	28.0				
	1.1%	18.0%	46.2%	35.8%				
Salalah East	166.4	19.0	93.4	54.1				
	2.4%	11.4%	56.1%	32.5%				
Salalah West	402.1	8.0	118.6	155.2	87.2	33.0		
	5.7%	2.0%	29.5%	38.6%	21.7%	8.2%		
Al Wadi	182.4	3.8	121.1	55.3	2.2			
	2.6%	2.1%	66.4%	30.3%	1.2%			
Total Area	7068.7	417.1	1286.0	1182.7	628.9	341.8	306.1	2906.3
	100.0%	5.9%	18.2%	16.7%	8.9%	4.8%	4.3%	41.1%

Appendix. 3 Total Acreage Of Each Main Crop In Each Extension District
Salalah 1991

Extension District	Total Area (feddan)	Crops										
		B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F
HAFI-QARAD	2900.8	536.5	69.2	32.3	393.4	56.8	5.9	1273.2	84.1	1363.1	193.0	256.0
	41.0%	18.5%	2.4%	1.1%	13.6%	2.0%	0.2%	43.9%	2.9%	47.0%	6.7%	8.8%
Al Hafa	495.8	231.0	13.9	3.5	78.3	1.5	3.5	46.6	28.8	78.8	67.9	20.3
	7.0%	46.6%	2.8%	0.7%	15.8%	0.3%	0.7%	9.4%	5.8%	15.9%	13.7%	4.1%
Al Qarad	2405.0	305.4	55.3	28.9	315.1	55.3	2.4	1226.6	55.3	1284.3	125.1	235.7
	34.0%	12.7%	2.3%	1.2%	13.1%	2.3%	0.1%	51.0%	2.3%	53.4%	5.2%	9.8%
AWQADAIN	479.9	42.9	1.8	0.8	87.6	4.9	3.0	168.0	28.1	199.2	91.9	50.4
	6.8%	8.9%	0.4%	0.2%	18.3%	1.0%	0.6%	35.0%	5.9%	41.5%	19.1%	10.5%
Awqadain East	174.8	26.7	0.5	0.0	34.4	1.4	0.3	53.7	10.3	64.3	24.5	22.5
	2.5%	15.3%	0.3%	0.0%	19.7%	0.8%	0.2%	30.7%	5.9%	36.8%	14.0%	12.9%
Awqadain North	72.0	0.4	0.5	0.1	24.6	0.3	0.6	32.8		33.3		12.9
	1.0%	0.5%	0.7%	0.1%	34.2%	0.4%	0.8%	45.5%		46.3%		17.9%
Awqadain West	175.0	8.8	0.4	0.2	17.7	0.5	2.1	54.4	14.7	71.2	62.3	14.0
	2.5%	5.0%	0.2%	0.1%	10.1%	0.3%	1.2%	31.1%	8.4%	40.7%	35.6%	8.0%
North Hospital	58.1	7.1	0.4	0.6	10.9	2.7		27.2	3.1	30.3	5.1	1.0
	0.8%	12.2%	0.7%	1.0%	18.8%	4.6%		46.8%	5.4%	52.2%	8.8%	1.7%
DAHARIZ	2858.8	287.7	65.5	29.7	406.6	146.2	17.9	1400.8	59.7	1478.4	164.3	280.0
	40.4%	10.1%	2.3%	1.0%	14.2%	5.1%	0.6%	49.0%	2.1%	51.7%	5.7%	9.8%
Dahariz North	845.2	153.0	35.5	24.5	83.7	29.6	7.6	331.3	28.7	367.7	66.8	83.7
	12.0%	18.1%	4.2%	2.9%	9.9%	3.5%	0.9%	39.2%	3.4%	43.5%	7.9%	9.9%
Dahariz South	451.0	90.2	10.4	0.5	69.0	4.5	7.2	137.6	27.1	171.8	56.8	47.4
	6.4%	20.0%	2.3%	0.1%	15.3%	1.0%	1.6%	30.5%	6.0%	38.1%	12.6%	10.5%
Sahalnawt	778.3	29.6	0.0		23.3	2.3	3.1	699.7	3.9	706.7	10.1	5.4
	11.0%	3.8%	0.0%		3.0%	0.3%	0.4%	89.9%	0.5%	90.8%	1.3%	0.7%
Razat	784.3	14.9	19.6	4.7	230.6	109.8		232.1		232.1	30.6	143.5
	11.1%	1.9%	2.5%	0.6%	29.4%	14.0%		29.6%		29.6%	3.9%	18.3%
SALALAH	829.2	168.1	13.9	4.2	191.7	12.2	5.4	150.3	118.4	274.2	111.6	51.4
	11.7%	20.3%	1.7%	0.5%	23.1%	1.5%	0.7%	18.1%	14.3%	33.1%	13.5%	6.2%
Salalah Centre	78.3	19.3	1.1		19.7		0.3	8.7	18.9	27.9	8.0	2.3
	1.1%	24.7%	1.4%		25.2%		0.4%	11.1%	24.1%	35.6%	10.2%	2.9%
Salalah East	166.4	44.3	0.0		45.6	0.0	3.2	17.8	25.3	46.3	22.6	5.8
	2.4%	26.6%	0.9%		27.4%	0.1%	1.9%	10.7%	15.2%	27.8%	13.6%	3.5%
Salalah West	402.1	92.5	8.0	0.4	80.8	6.0	1.2	57.1	63.1	121.4	64.3	28.5
	5.7%	23.0%	2.0%	0.1%	20.1%	1.5%	0.3%	14.2%	15.7%	30.2%	16.0%	7.1%
Al Wadi	182.4	12.0	4.7	3.8	45.6	6.2	0.7	66.7	11.1	78.6	16.6	14.8
	2.6%	6.6%	2.6%	2.1%	25.0%	3.4%	0.4%	36.6%	6.1%	43.1%	9.1%	8.1%
Total Area in fed.	7068.7	1035.2	150.4	67.1	1079.4	220.1	32.2	2992.3	290.3	3314.9	560.7	637.9
In %		14.6%	2.1%	0.9%	15.3%	3.1%	0.5%	42.3%	4.1%	46.9%	7.9%	9.0%

Appendix. 4 Total Acreage Of Each Main Crop And Fallow By Water Salinity Class
Salalah 1991 (Small farms 6 feddans or less)

Farm size	Total Area (feddan)	Crops and Fallow											
		B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F	
< 3 feddan													
< 3 dS/m	180.48	68.77	12.6	2.84	23.16	3.01	1.19	28.83	9.67	39.69	22.65	7.76	
	43.2%	38.1%	7.0%	1.6%	12.8%	1.7%	0.7%	16.0%	5.4%	22.0%	12.5%	4.3%	
3-5 dS/m	152.71	50.35	2.95	2.21	26.95	3.29	1.17	35.07	9.30	45.54	15.60	5.82	
	36.5%	33.0%	1.9%	1.4%	17.6%	2.2%	0.8%	23.0%	6.1%	29.8%	10.2%	3.8%	
5-7 dS/m	52.57	10.55	0.08	0.49	7.77	1.49	0.41	21.89	4.14	26.44	4.18	1.57	
	12.6%	20.1%	0.2%	0.9%	14.8%	2.8%	0.8%	41.6%	7.9%	50.3%	8.0%	3.0%	
7-10 dS/m	21.70			0.04	3.70	0.11	0.86	11.80	2.58	15.24	0.52	2.09	
	5.2%			0.2%	17.1%	0.5%	4.0%	54.4%	11.9%	70.2%	2.4%	9.6%	
>10 dS/m	7.87				1.89		0.54	4.02	0.30	4.86		1.12	
	1.9%				24.0%		6.9%	51.1%	3.8%	61.8%		14.2%	
Mixed	2.55	1.64			0.56						0.35		
	0.6%	64.3%			22.0%						13.7%		
Total Area	417.88	131.3	15.6	5.6	64.0	7.9	4.2	101.6	26.0	131.77	43.3	18.4	
	100.0%	31.4%	3.7%	1.3%	15.3%	1.9%	1.0%	24.3%	6.2%	31.5%	10.4%	4.4%	
3 to 6 feddan													
< 3 dS/m	396.27	139.8	16.65	9.14	60.22	4.58	1.93	64.64	32.27	98.84	56.6	10.44	
	30.8%	35.3%	4.2%	2.3%	15.2%	1.2%	0.5%	16.3%	8.1%	24.9%	14.3%	2.6%	
3-5 dS/m	467.20	149.38	8.04	2.15	80.69	2.73	5.08	77.03	51.15	133.26	63.77	27.18	
	36.3%	32.0%	1.7%	0.5%	17.3%	0.6%	1.1%	16.5%	10.9%	28.5%	13.6%	5.8%	
5-7 dS/m	222.51	32.93	1.14	1.61	36.55	2.83	2.34	66.50	26.16	95.00	28.16	24.29	
	17.3%	14.8%	0.5%	0.7%	16.4%	1.3%	1.1%	29.9%	11.8%	42.7%	12.7%	10.9%	
7-10 dS/m	116.52	8.64	1.86		20.83	1.96	1.09	55.35	4.04	60.48	12.28	10.47	
	9.1%	7.4%	1.6%		17.9%	1.7%	0.9%	47.5%	3.5%	51.9%	10.5%	9.0%	
>10 dS/m	71.27		0.48	0.04	21.24	0.31	0.19	34.54	0.35	35.08		14.12	
	5.5%		0.7%	0.1%	29.8%	0.4%	0.3%	48.5%	0.5%	49.2%		19.8%	
Mixed	12.81	1.28		0.30	3.95			6.98		6.98	0.30		
	1.0%	10.0%		2.3%	30.8%			54.5%		54.5%	2.3%		
Total Area	1286.58	332.0	28.2	13.2	223.5	12.4	10.6	305.0	114.0	429.64	161.1	86.5	
	100.0%	25.8%	2.2%	1.0%	17.4%	1.0%	0.8%	23.7%	8.9%	33.4%	12.5%	6.7%	

A : Alfalfa B: Banana C: Citrus F: fallow K: Coconut

Ot: Fruit trees other than those listed here P: Papaya Rs: Short grasses, mostly rhodes grass and buffel grass

Rt: Tall grasses , mostly elephant grass V: Vegetable

Appendix. 5 Total Acreage Of Each Main Crop And Fallow By Water Salinity Class
Salalah 1991 (Small farms 6 to 10 feddans)

Farm size Water salinity	Total Area (feddan)	Crops and Fallow											
		B	P	C	K	Ot	A	Rs	Rt	A+Rs+Rt	V	F	
6 to 10 feddan													
< 3 dS/m	460.31	155.26	31.64	11.6	98.92	4.94	1.71	52.63	27.97	82.31	62.98	12.66	
	38.9%	33.7%	6.9%	2.5%	21.5%	1.1%	0.4%	11.4%	6.1%	17.9%	13.7%	2.8%	
3-5 dS/m	389.98	114.71	6.83	2.22	79.38	3.27	2.50	57.49	36.11	96.10	71.19	16.28	
	33.0%	29.4%	1.8%	0.6%	20.4%	0.8%	0.6%	14.7%	9.3%	24.6%	18.3%	4.2%	
5-7 dS/m	195.75	29.67	1.13		33.24	1.22	0.33	53.09	19.16	72.58	36.51	21.40	
	16.6%	15.2%	0.6%		17.0%	0.6%	0.2%	27.1%	9.8%	37.1%	18.7%	10.9%	
7-10 dS/m	92.63	2.99			23.35	0.83	2.99	36.81	8.78	48.58	10.08	6.80	
	7.8%	3.2%			25.2%	0.9%	3.2%	39.7%	9.5%	52.4%	10.9%	7.3%	
>10 dS/m	30.47				8.34		3.52	13.93	0.52	17.97	1.11	3.05	
	2.6%				27.4%		11.6%	45.7%	1.7%	59.0%	3.6%	10.0%	
Mixed	13.46	2.72	0.06	0.25	4.27	0.28		3.32	1.76	5.08		0.80	
	1.1%	20.2%	0.4%	1.9%	31.7%	2.1%	0.0%	24.7%	13.1%	37.7%	0.0%	5.9%	
Total Area	1182.60	305.4	39.7	14.1	247.5	10.5	11.1	217.3	94.3	322.62	181.9	61.0	
	100.0%	25.8%	3.4%	1.2%	20.9%	0.9%	0.9%	18.4%	8.0%	27.3%	15.4%	5.2%	

A : Alfalfa B: Banana C: Citrus F: fallow K: Coconut

Ot: Fruit trees other than those listed here P: Papaya Rs: Short grasses, mostly rhodes grass and buffel grass