Reconstructing and Interpreting Ancient Crop Management Practices:

Ethnobotanical Investigations into Traditional Dryland Farming in Northern Jordan

Carol Palmer

Vol. II

Figures, Tables, Appendices, & Plates

Thesis submitted in fulfilment of the Degree of
Doctor of Philosophy

Department of Archaeology and Prehistory,
University of Sheffield

September 1994

Table of Contents

Volume I

Volume II

Extended Table of Contents

Volume 1

Chapter 8 Reconstructing and Interpreting Ancient Crop Management Practices (cont.)

Figures

Volume II

Figures (cont.)

Figures (cont.)

Figures (cont.)

Figures (cont.)

Figures (cont.)

Figures (cont.)

Tables

Volume II

Tables (cont.)

Tables (cont.)

Tables (cont.)

Appendices

Volume II

Plates

Volume I Frontispiece. Weeding Wheat (March).

Volume II Frontispiece. Wheat Sheaves (June).

1. Evergreen Oak Forest near 'Ajlun.

2. Cultivation in the Hills.

3. Cultivation on the Plains.

4. Sampling a Wheat Field for Weeds. Recording taxa within a quadrat in field 34.

5. Dual Animal Tillage (2 cows) with Traditional Wooden Ard in the Hills. Note the extreme stoniness of the soil.

6. Traditional Ard Manufacture in el-Mazār.

7. Single Donkey Tillage with Iron Ard. Tilling between young summer crops on the Plains.

8. Tractor Tillage on the Plains. Note the large stone weighing down the plough.

9. Broadcast Sowing Wheat in December. The ard in the background is harnessed to two donkeys.

10. Weeds Growing along Field Edge.

11. Spring Tillage with a Traditional Ard. The hand in the top right-hand corner is trickling chick-peas into the furrow. The main weed (yellow flower) is *Chrysanthemum segetum.*

12. Planting Summer Crops (April).

13. Developing Summer Crops. Note the spacing between individual plants. The main crop in the foreground is sesame.

14. Hand-harvesting (pulling) Bitter-Vetch (May).

15. Heaps of Harvested Legumes Drying in the Sun.

16. Hand-Harvesting Wheat (June). The man to the right-hand side of the frame is using a local sickle (minjal). The field is roughly terraced and there are also field cairns.

17. Uprooted Barley in the Process of Drying.

18. Gathering Barley for Transportation.

19. Donkey Transporting Bitter-Vetch to the Threshing Floor.

20. Preparing Frīka. Scorching milk-ripe wheat.

21. Threshing Lentils by Machine.

22. Threshing Lentils by Trampling. The woman is turning-over the trampled crop using a three-pronged fork (sha'ūb).

23. Traditional Threshing Sledge (lawḥ ed-darāsa). The sledge is constructed from two oak boards and has on its underside (facing upwards in this photo) basalt pieces wedged into small square holes. The woman in the background is dehusking chick-peas using a small beating stick.

24. Winnowing Bitter-vetch with a Winnowing Fork (midhrāt).

25. Threshing Wheat with a Sledge Made from a Sheet of Corrugated Iron with Holes Punched Through.

26. Sieving Wheat with a Coarse Sieve (kirbāl).

27. Basalt Hand Rotary Quern (jārūsha). Sacks of wheat are stacked in the background.

28. Harvesting Olives (October). Olives are shaken or beaten off the tree and collected from sheets placed under its boughs.

29. Irrigated Orchard in the Wadi el-Yabis. The water is fed into different sections of the orchard by an intricate system of channels and each section is irrigated once every 10 days.

30. Young Olive Orchard with Trailing Vines near 'Ajlun.

31. Irrigated Orchard near the Wadi Yarmouk. Most of the trees are pomegranate but fig and prickly-pear line the perimeter.

32. Goats in Brushwood Pen. A mixture of introduced and local breeds.

33. Spreading Wild Grass on Roof for Drying before Storage.

34. Milking Sheep.

35. Shaking a Hide Bag (shiqwa) Held on a Tripod Stand. Traditional method used to separate curds and whey.

Figures

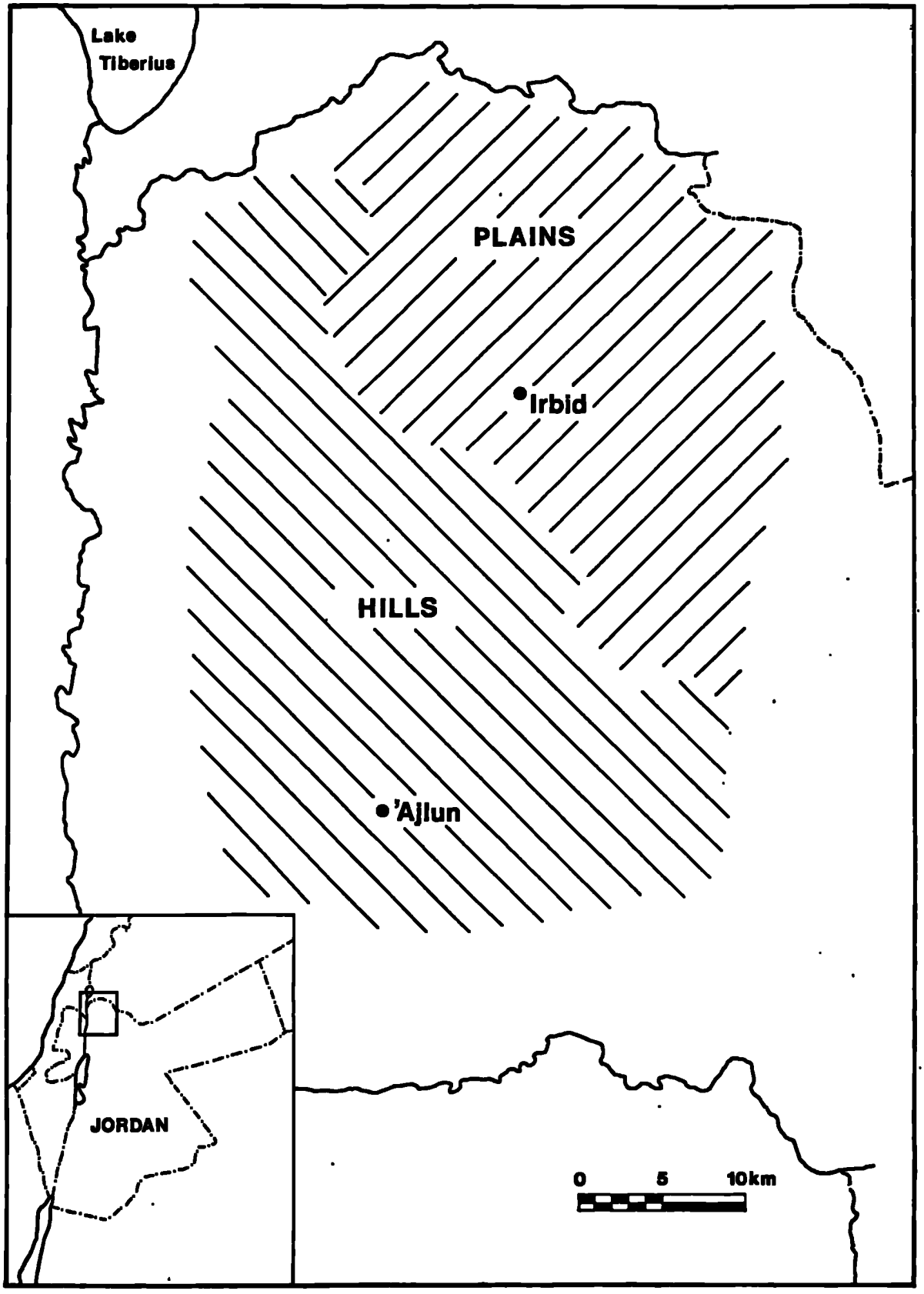


Figure 1.1 The Study Area. Northern Jordan - Plains and Hills.

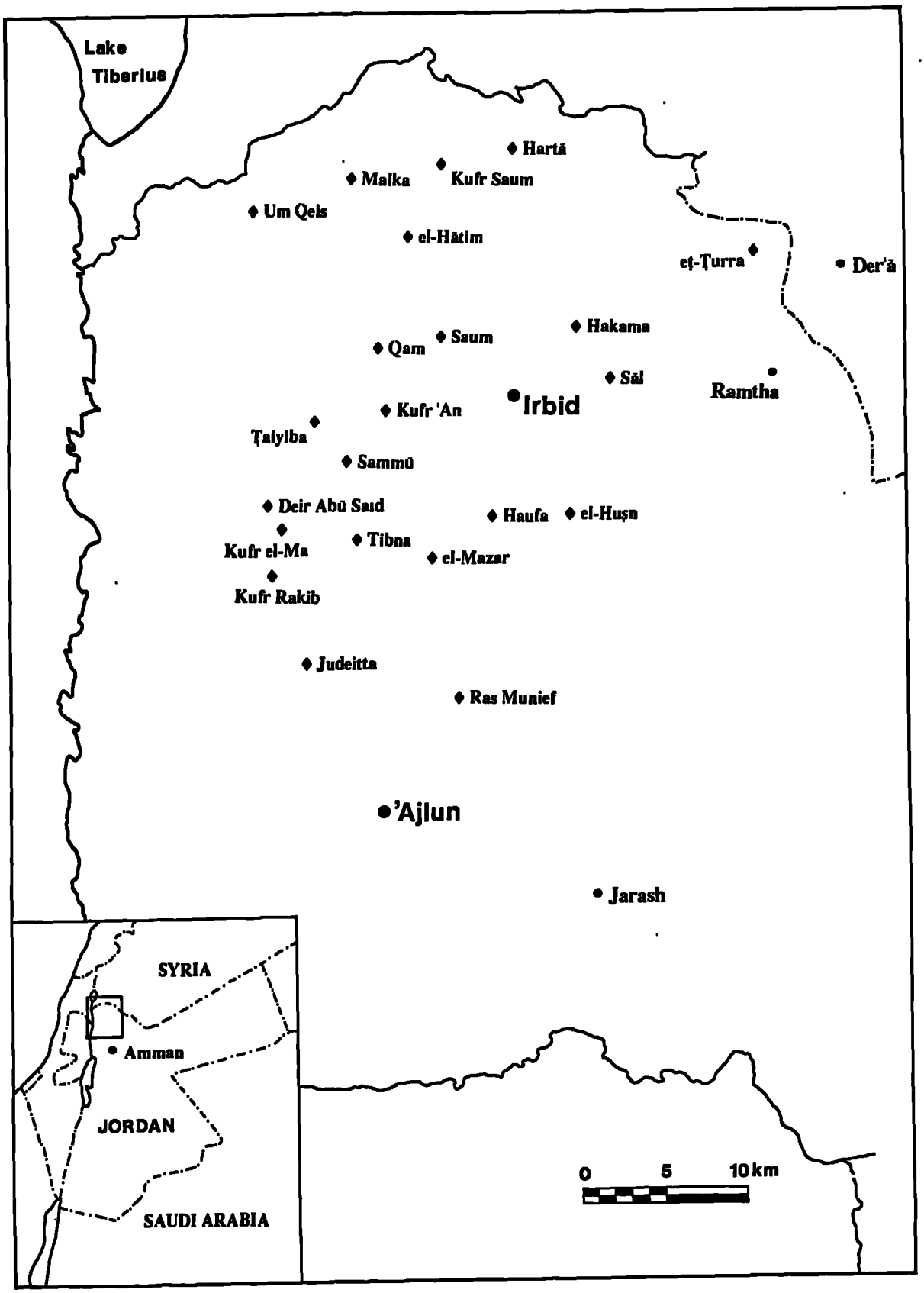


Figure 1.2 Place Names used in the Text.

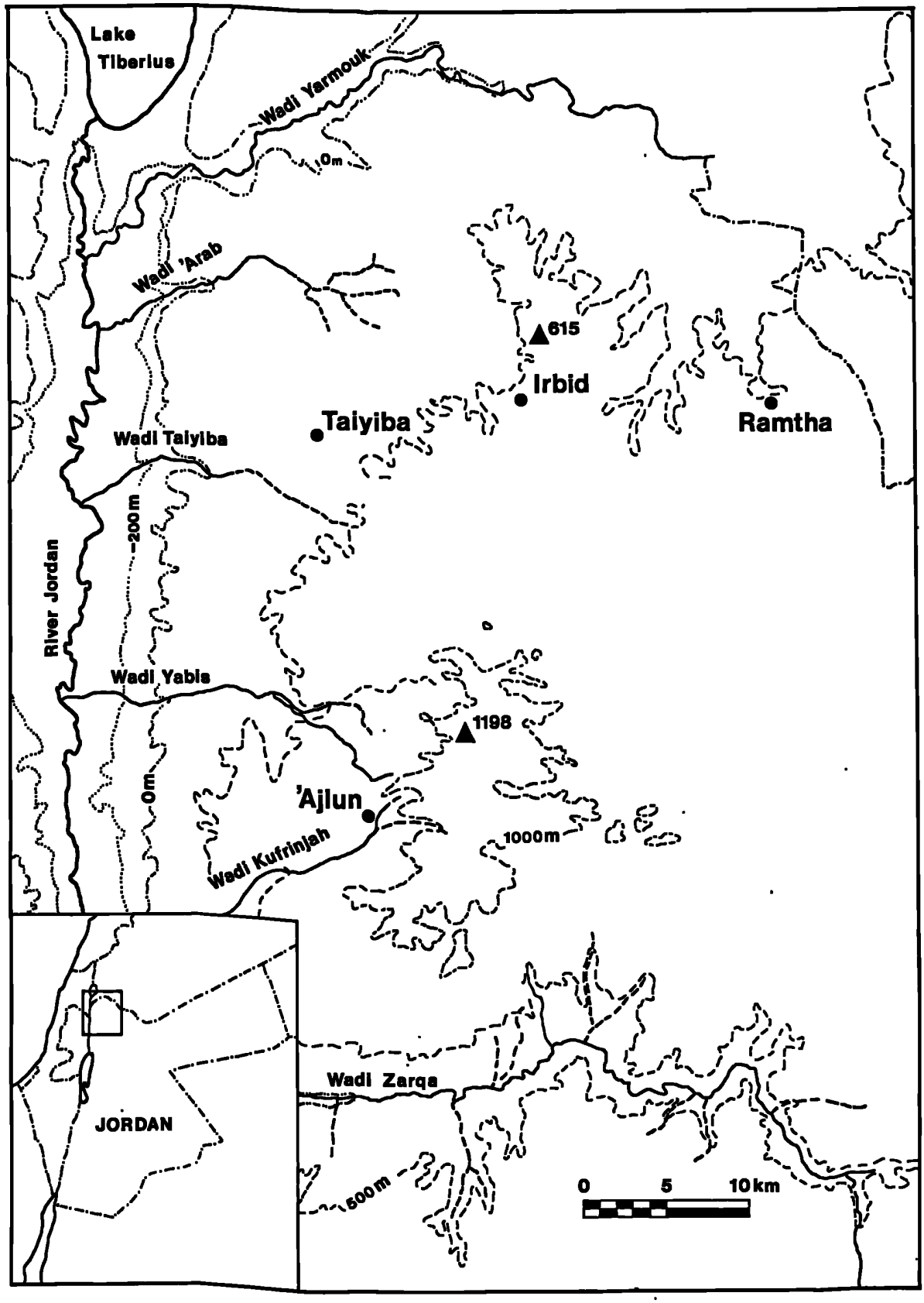


Figure 2.1 Topography of the Study Area.

Figure 2.2a **Irbid Plain** (Balqa limestone: Muwaqqar and Rijam formations) (after Mitchell & Howard 1978, 76-77). **1.** Gently undulating plain. **2.** Alluvial vales. **3.** Shallow wadis.

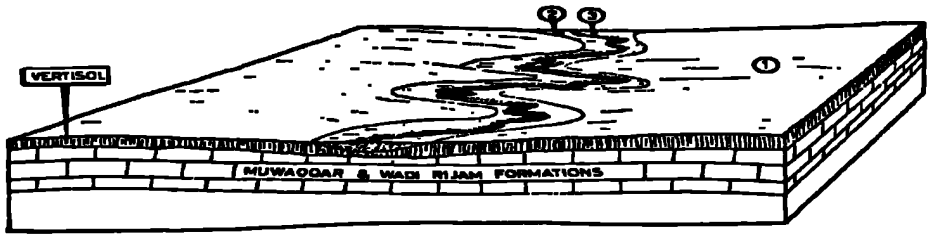
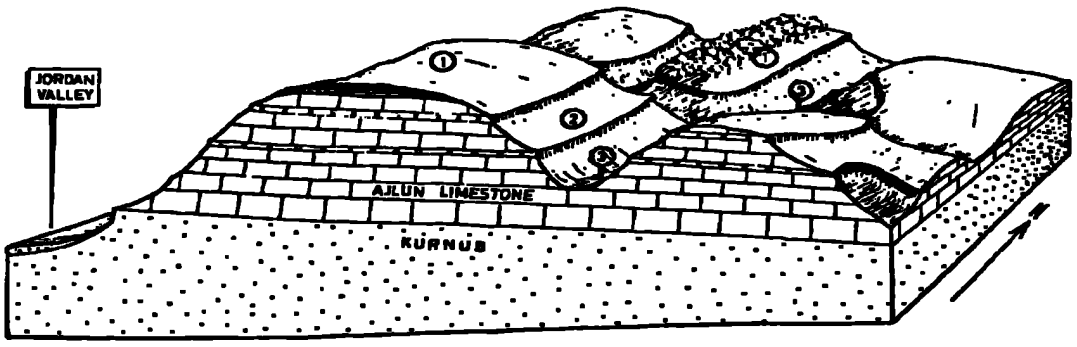


Figure 2.2b **High Upland on 'Ajlun Limestone** (after Mitchell & Howard 1978, 46-47). **1.** Tabular limestone summits. **2.** Limestone scarp slopes. **3.** Wadi floors.



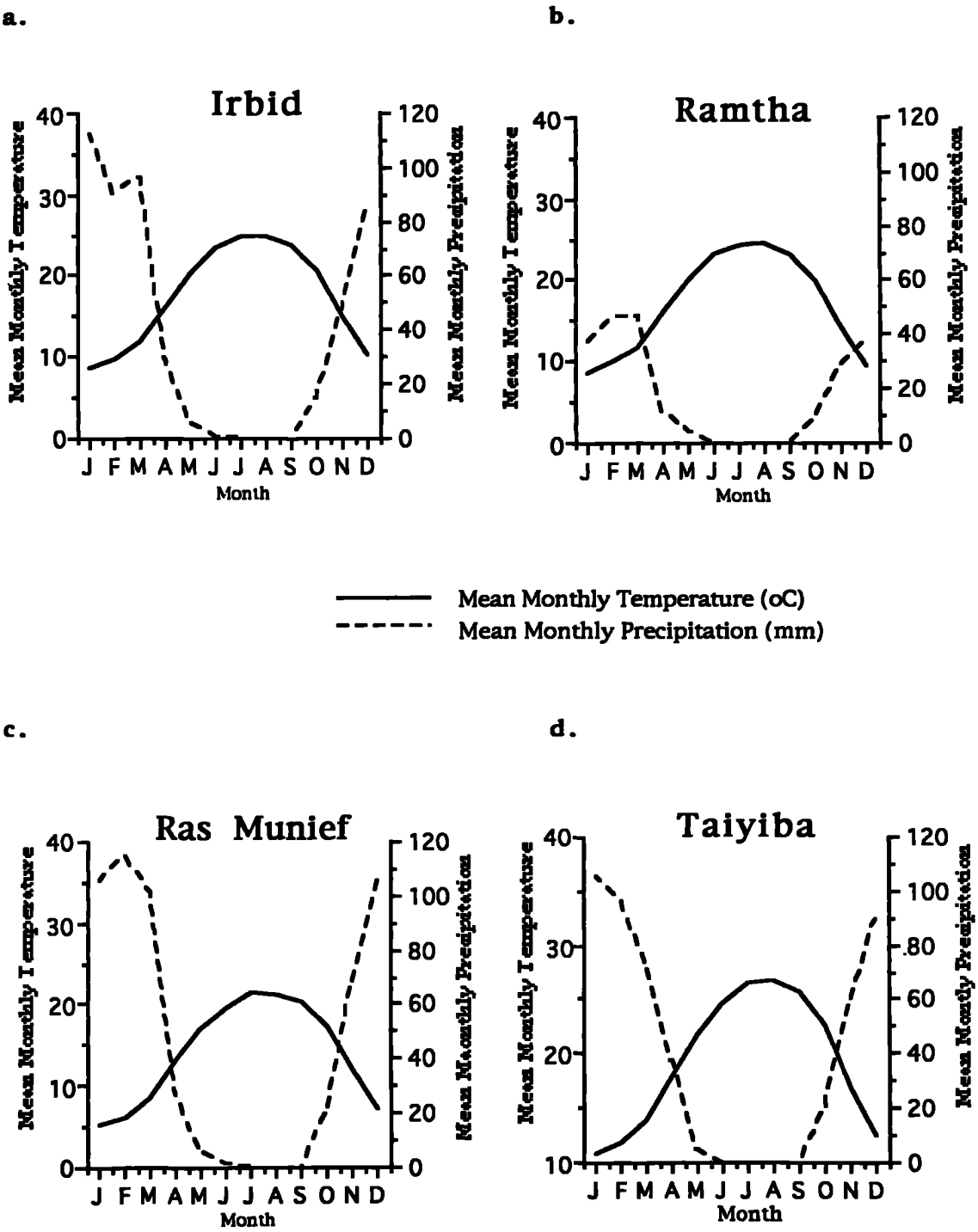


Figure 2.3a-d Mean Monthly Temperature (°C) and Precipitation (mm) at:
a. Irbid (1966-90) **b.** Ramtha (1976-87) **c.** Rās Munief ('Ajlun) (1976-90) **d.** Ṭaiyiba (1971-87).
Data kindly supplied by the Jordanian Meteorological Department.

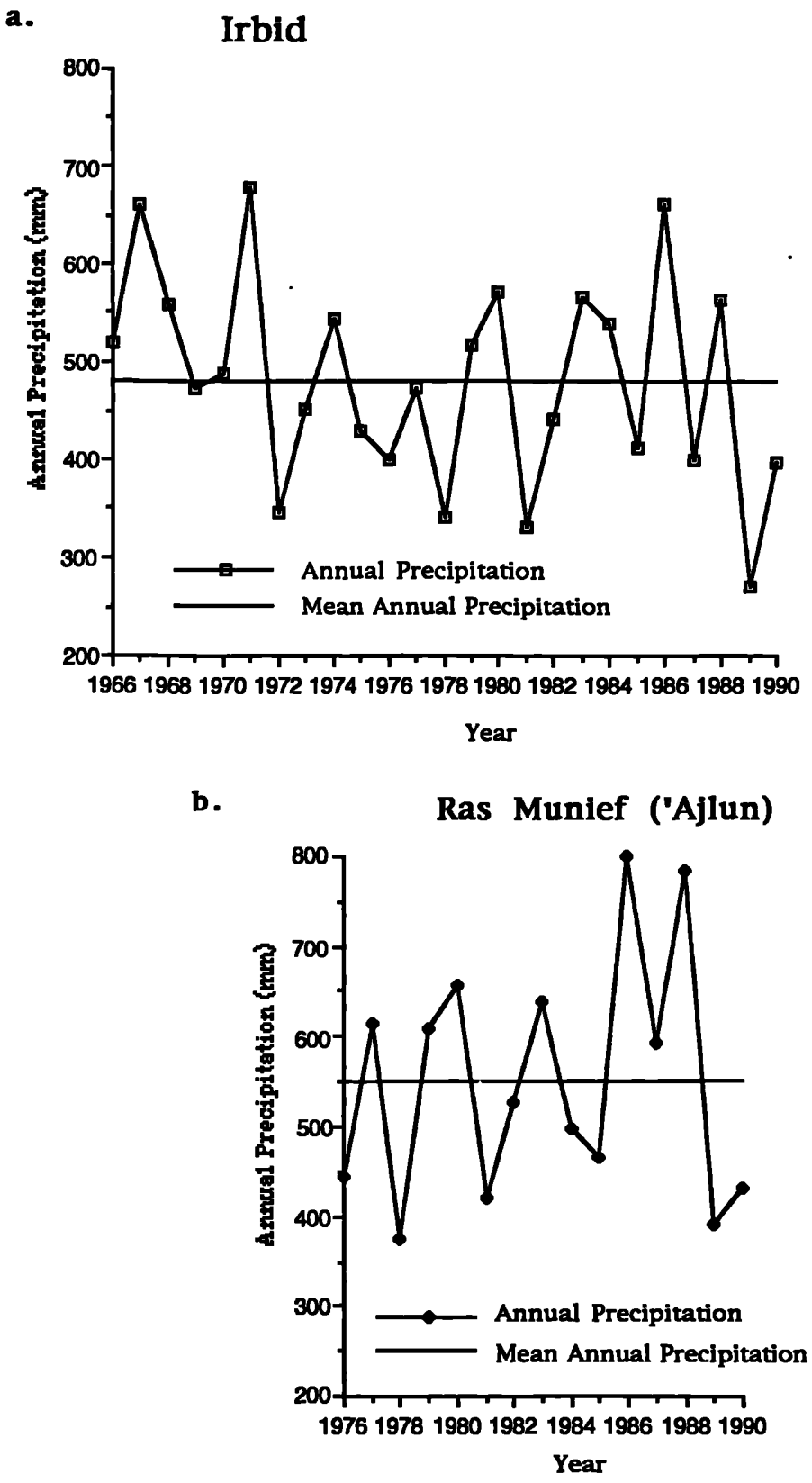


Figure 2.4a&b Annual Variation in Precipitation (mm) at:
a. Irbid and b. Rās Munief. Data kindly supplied by the Jordanian Meteorological Department.

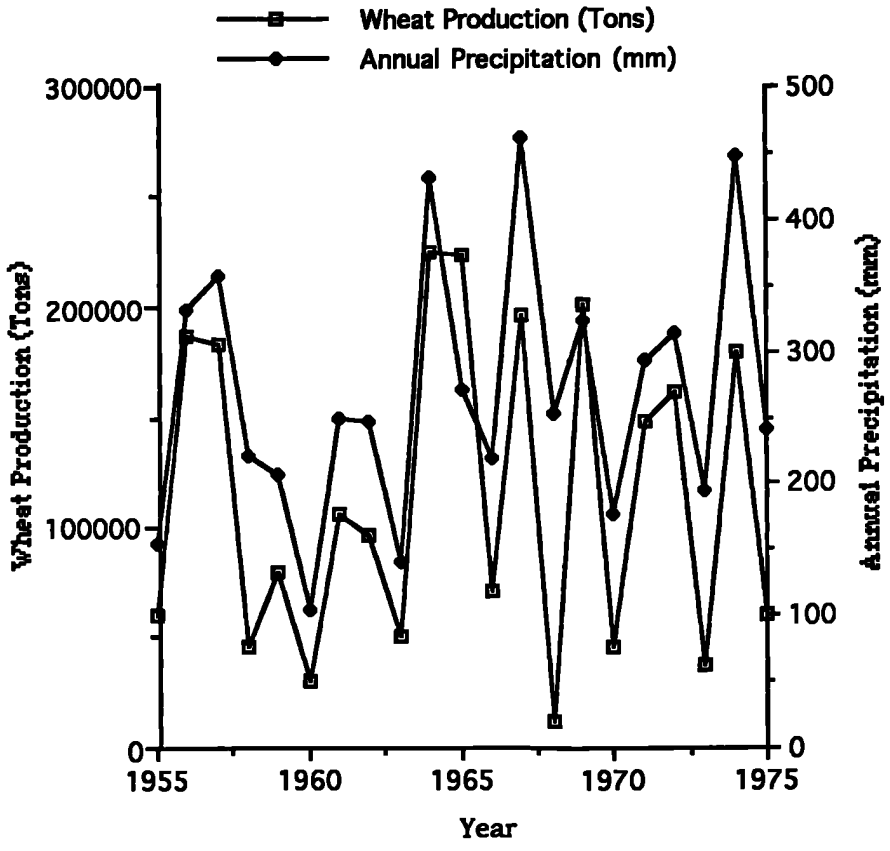


Figure 2.5 Fluctuations in Precipitation and Yield in Jordan 1955-75. (Source: yield statistics from el-Hurani 1989, 41; annual precipitation figures from the Jordanian Meteorological Department.)

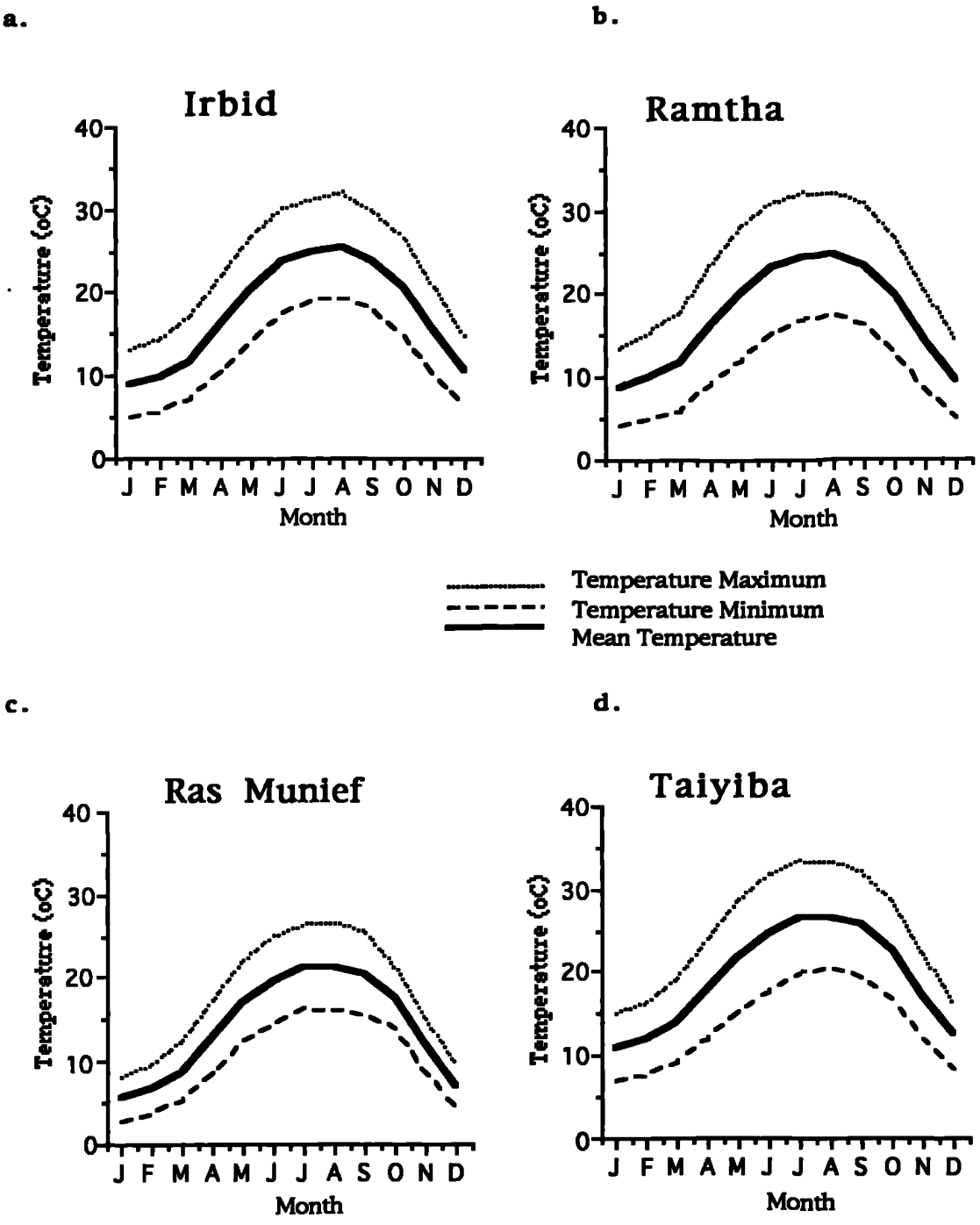


Figure 2.6a-d Average Monthly Mean, Maximum and Minimum Temperatures at: **a.** Irbid (1966-90) **b.** Ramtha (1976-87) **c.** Rās Munief ('Ajlun) (1976-90) **d.** Ṭaiyiba (1971-87).

Data kindly supplied by the Jordanian Meteorological Department.

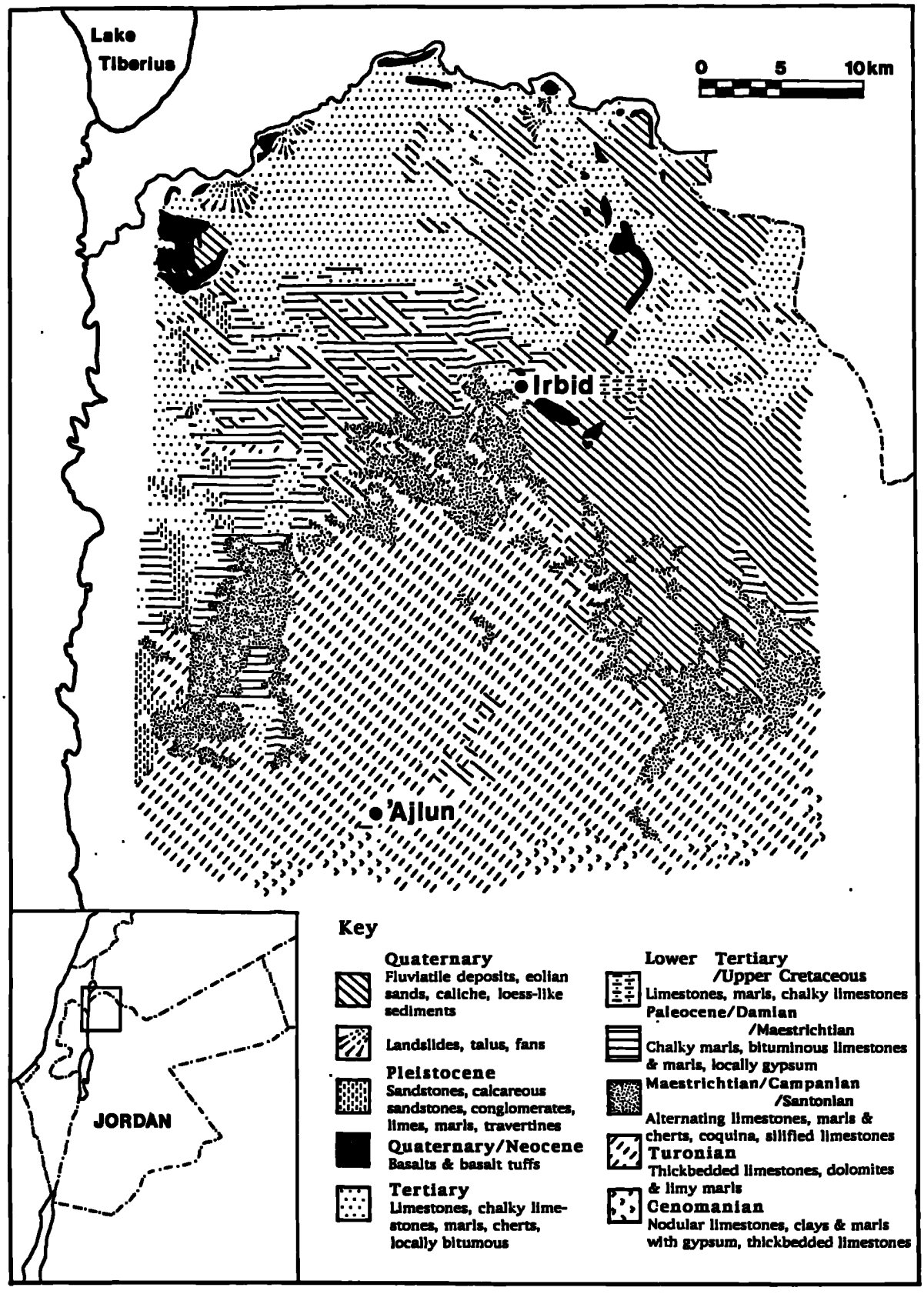


Figure 2.7 Geology of the Study Area (after Bender 1968). The 'Ajlun Series limestones were formed during the Cenomaniam and Turonian periods whilst the Balqa Series limestones were formed largely between the Tertiary and Santonian periods.

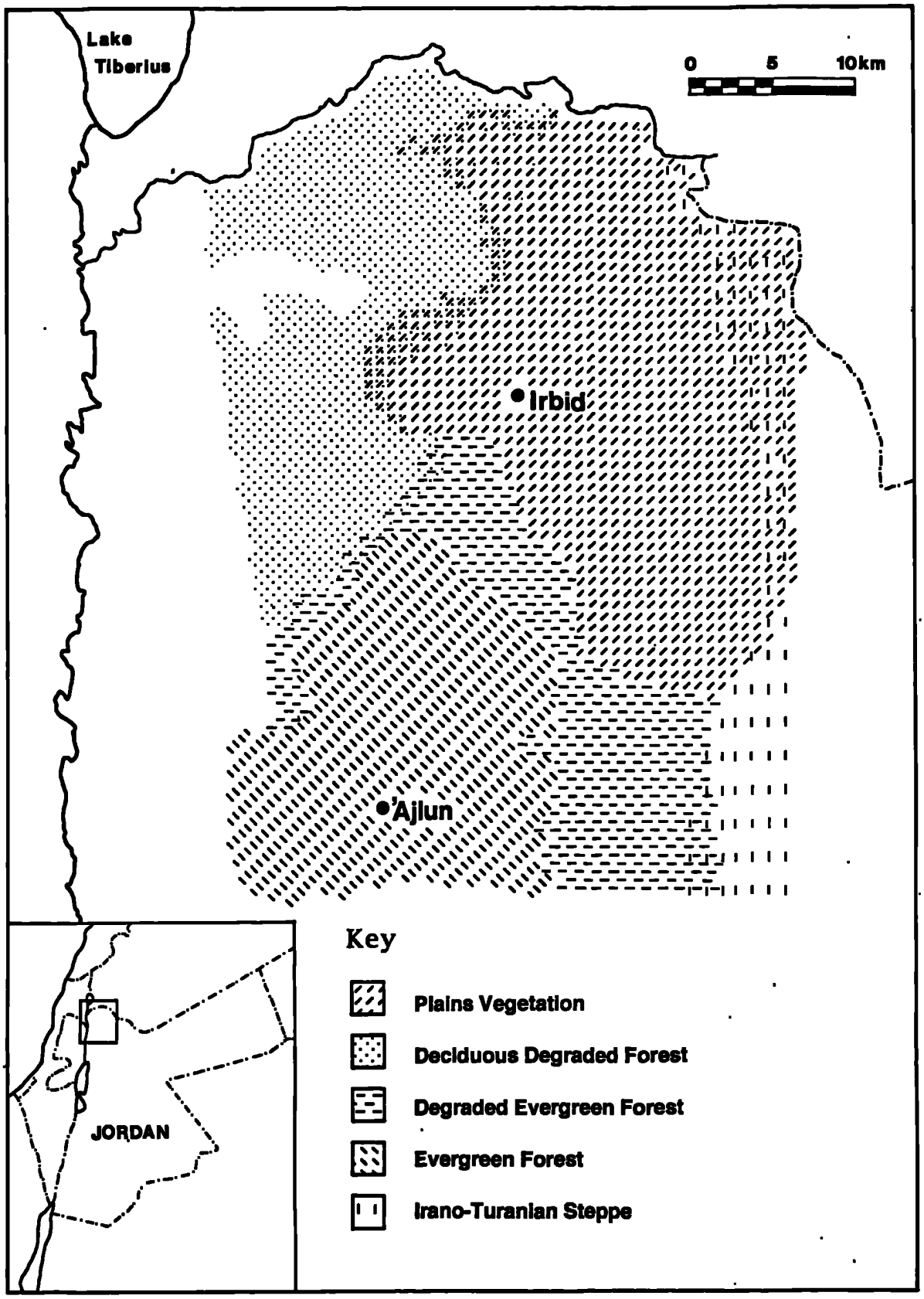


Figure 2.8 Vegetation Zones of the Study Area.

Figure 2.9 Phytosociological Hierarchy of Segetal Communities in Western Palestine (after M. Zohary 1949-50; M. Zohary 1973). Diagram only shows associations potentially applicable to the study area.

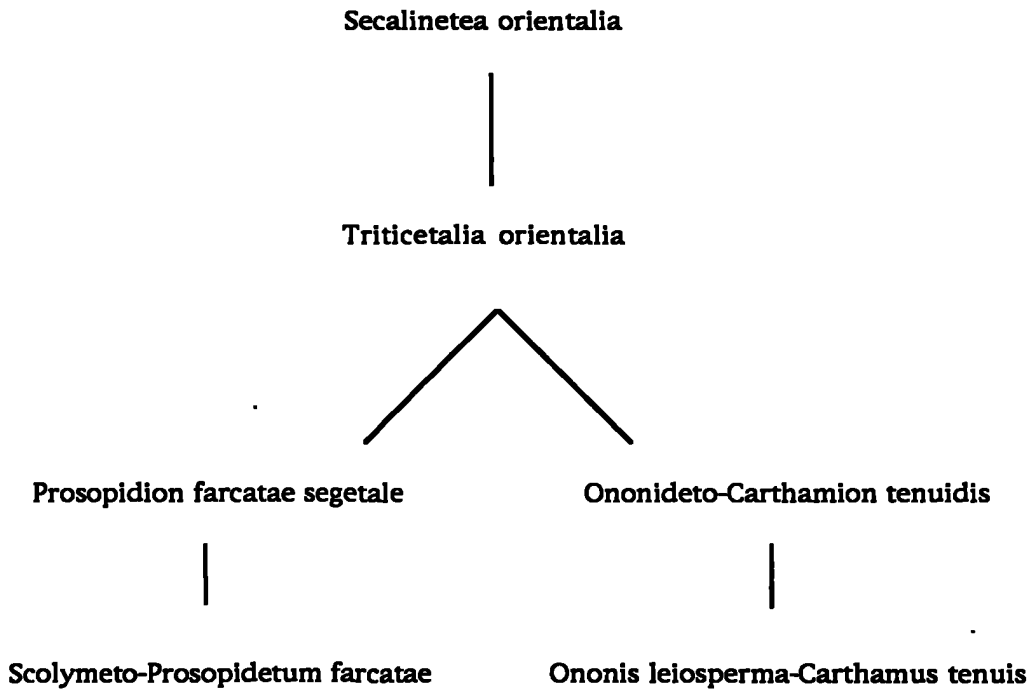
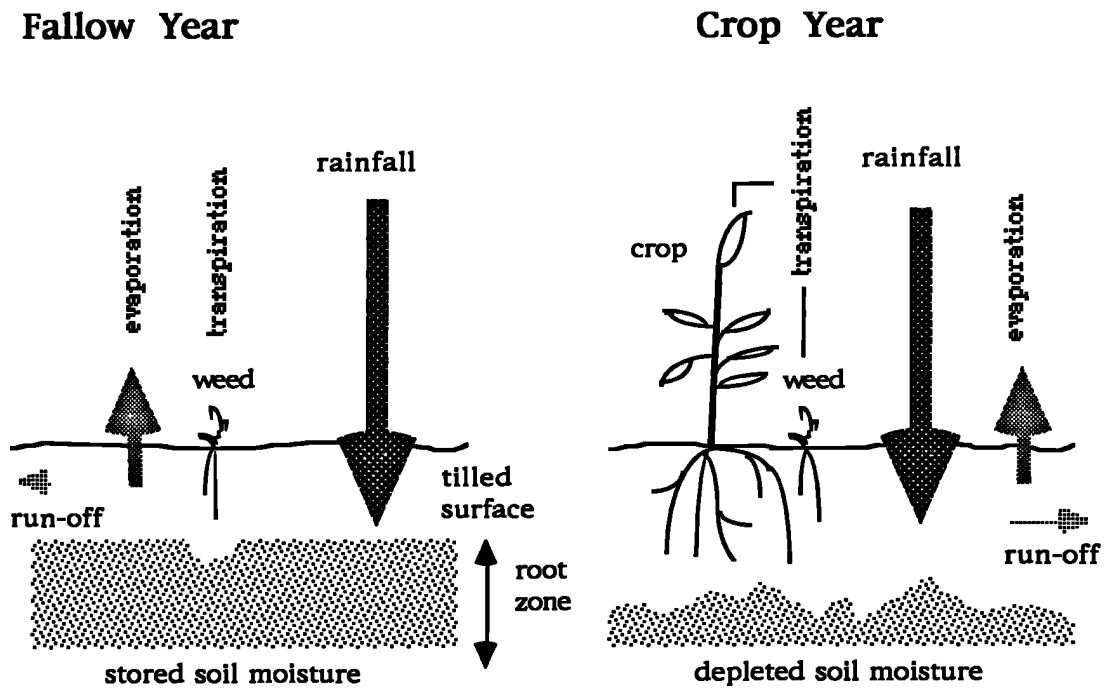


Figure 3.1 Simplified Representation of the Water Balance in a Wheat-Fallow Rotation (based on Janssen 1972: 249, Fig. 2.).



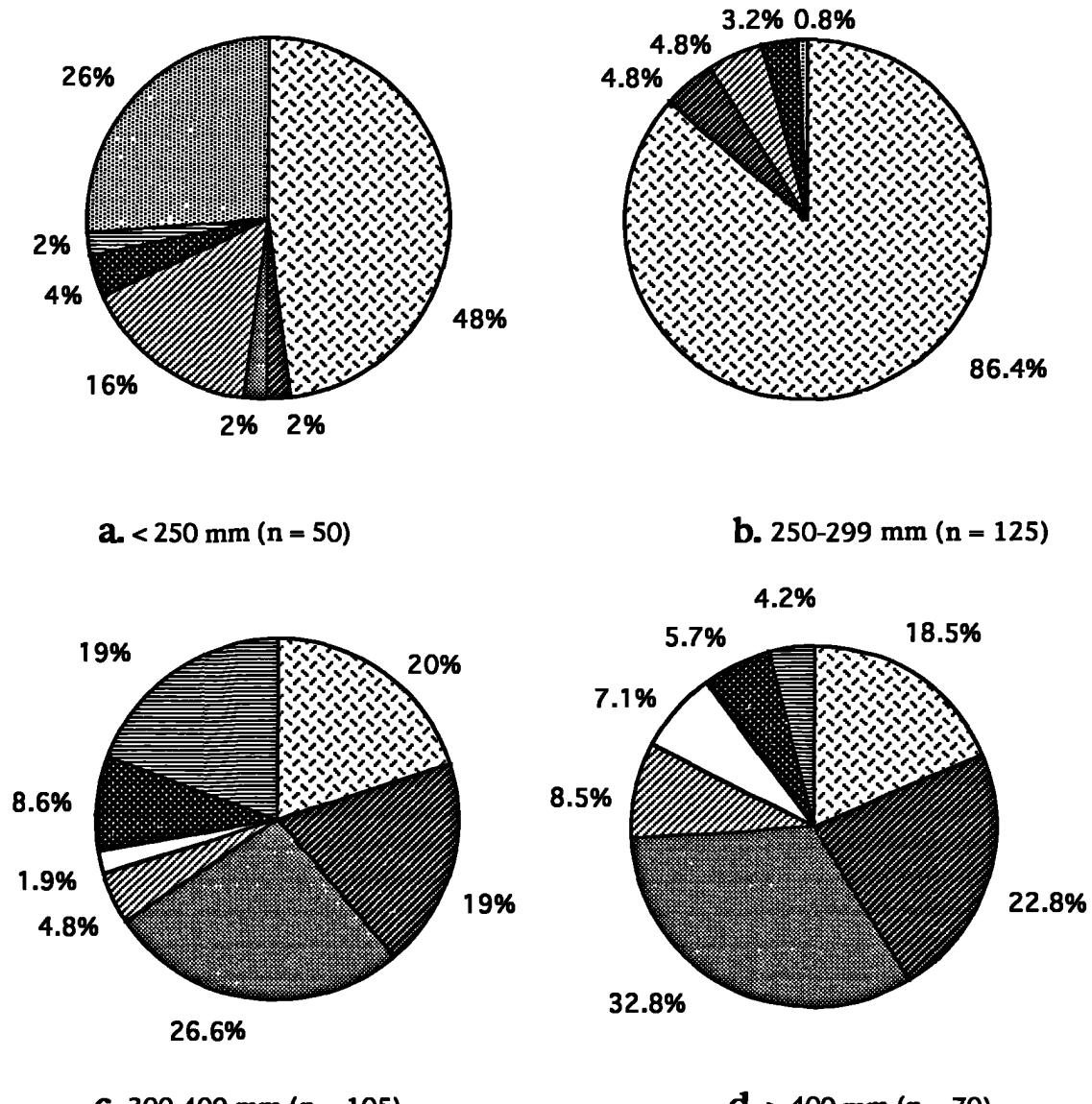


Figure 3.2 Cropping Sequences/Rotation Regimes used in Jordan - data from the *Wheat Baseline Data Survey* (el-Hurani, 1988).
Key: e.g. '< 250 mm' = annual precipitation; n = number of farmers interviewed.

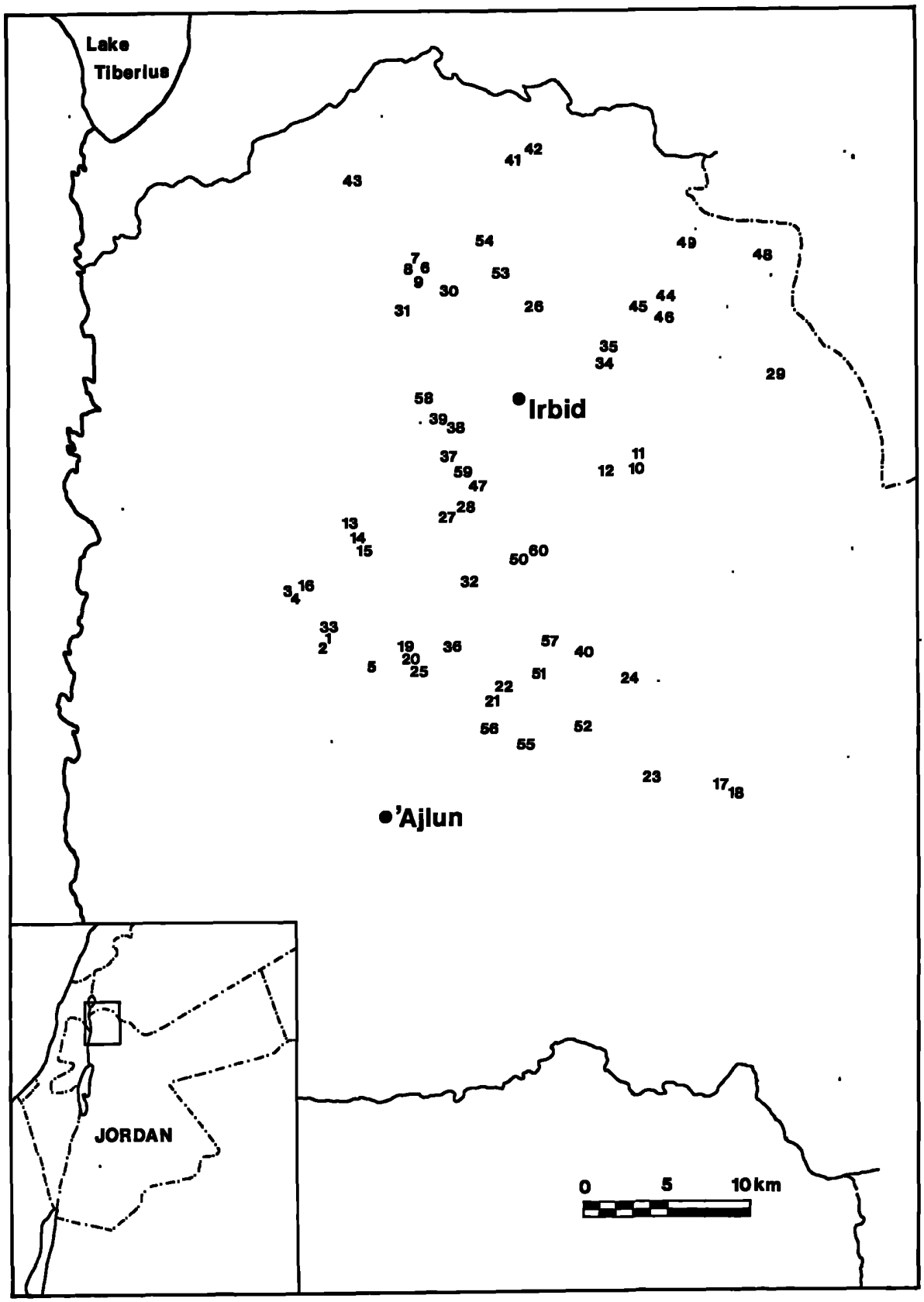


Figure 4.1 Location of the Sampled Fields (see next page for key).

Key to Fig. 4.1

Location of Sampled Fields (Farmer's village)

1. Rās Birqish
2. Rās Birqish
3. Kufr Rākib
4. Kufr Rākib
5. Irjan
6. el-Hātim
7. el-Hātim
8. el-Hātim
9. el-Hātim
10. eṣ-Ṣarīḥ
11. eṣ-Ṣarīḥ
12. eṣ-Ṣarīḥ
13. Tibna
14. Tibna
15. Tibna
16. Kufr Rākib
17. Qafqafa
18. Qafqafa
19. Zūbiya
20. Zūbiya
21. Sāmta
22. Sāmta
23. Kufr Khall
24. en-Nu'eima
25. Zūbiya
26. Beit Rās
27. Deir Yūsef
28. Deir Yūsef
29. Ramtha (er-Ramthā)
30. Fau'ara
31. Hawar
32. el-Mazār
33. Rās Birqish
34. Sāl
35. Hakama
36. Riḥāba
37. Kufr Yūba
38. Kufr Yūba
39. Kufr Yūba
40. Shaṭana/en-Nu'eima
41. Hartā
42. Hartā
43. Malkā
44. el-Mughaiyir
45. el-Mughaiyir
46. el-Mughaiyir
47. Haufa
48. eṭ-Ṭurra
49. esh-Shajara
50. el-Mazār
51. Shaṭana
52. en-Nu'eima/Ṣakhra
53. Kufr Jāyiz
54. el-Maghara
55. Ṣakhra
56. 'Afana
57. Shaṭana
58. Zaḥar
59. Nātifeh
60. Haufa

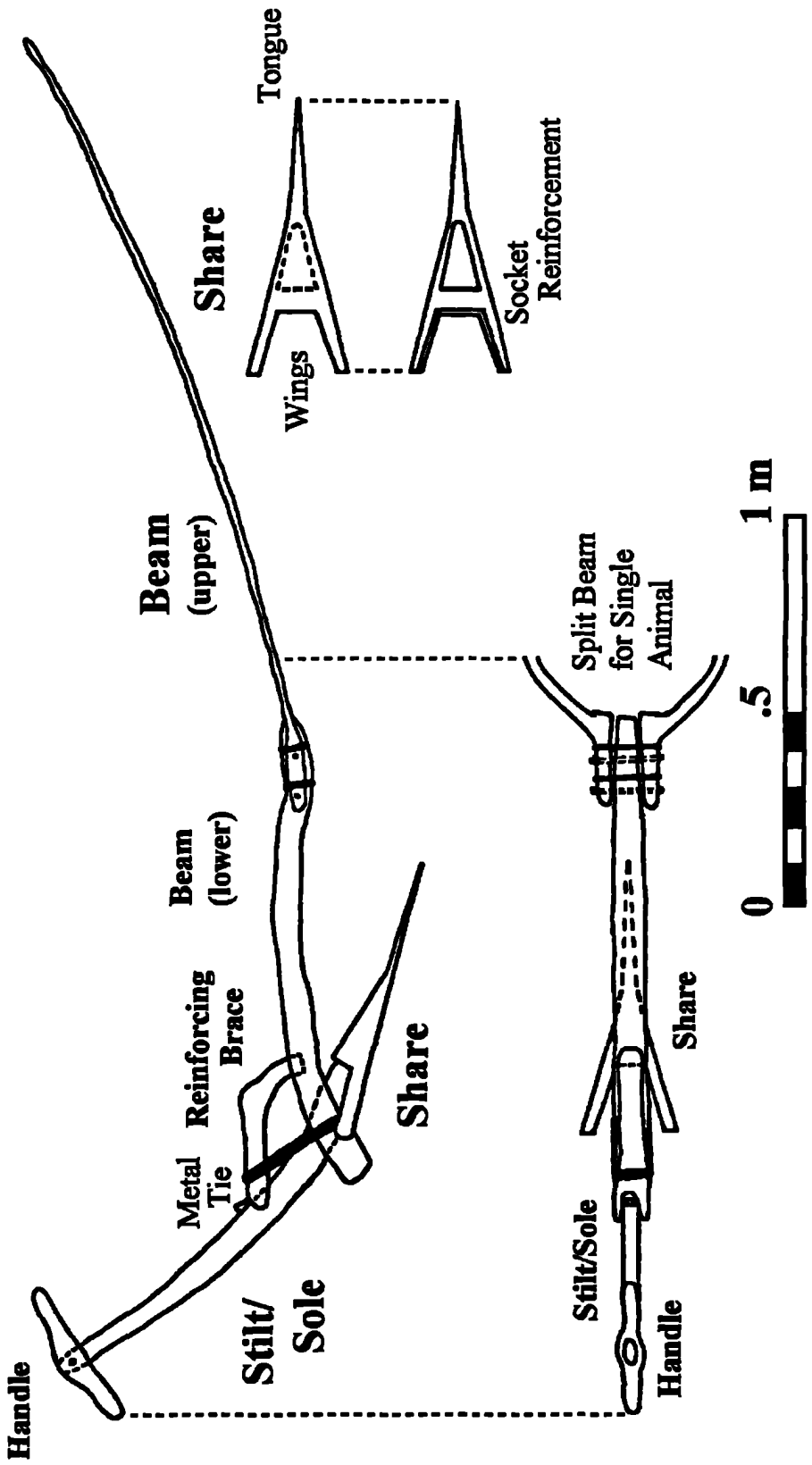


Figure 5.1 Ard (maharāth or 'awd harāth) for Single Horse Traction.

CROP	*September*	*October*	*November*	*December*	*January*	*February*	*March*	*April*	*May*	*June*	*July*	*August*
Winter Crops												
Wheat			--------Sow--------			Weeding				-Harvest—	-----Threshing---	
Barley			----------Sow----------							-Harvest-	——Threshing—	
Lentil					——Sow------				Harvest		——Threshing——	
Bitter Vetch						——Sow——			Harvest		——Threshing——	
Field Bean*					——Sow------				Harvest		——Threshing——	
Summer Crops												
Chickpeas	Till (shaqāq)						Till 1	Till 2/Sow			- Harvest——	
Watermelon	Till	"					Till 1	Till 2/Sow		Till 3		-Harvest——
Tomatoes	Till	"					Till 1	Till 2/Sow		Till 3		-Harvest——
Sesame	——Harvest	—Till					Till 1	Till 2	Till 3/Sow			
Bare Fallow	Till (sheqaq)					(manure)	Till 1	Till 2	Till 3 (?more)			
Tree/Fruit Crops												
Olive		——Harvest - pressing					-------- Till	--------- Till	--------- Till		---------	
Grape*								Prune - & Till	---------- Till	------- Till	------Harvest	
Fig	Harvest											

* Hills Only
Between Irbid and 'Ajlun, there may be up to 10-14 days difference in timing of agricultural episodes

Figure 5.2 The Agricultural Year in Northern Jordan.

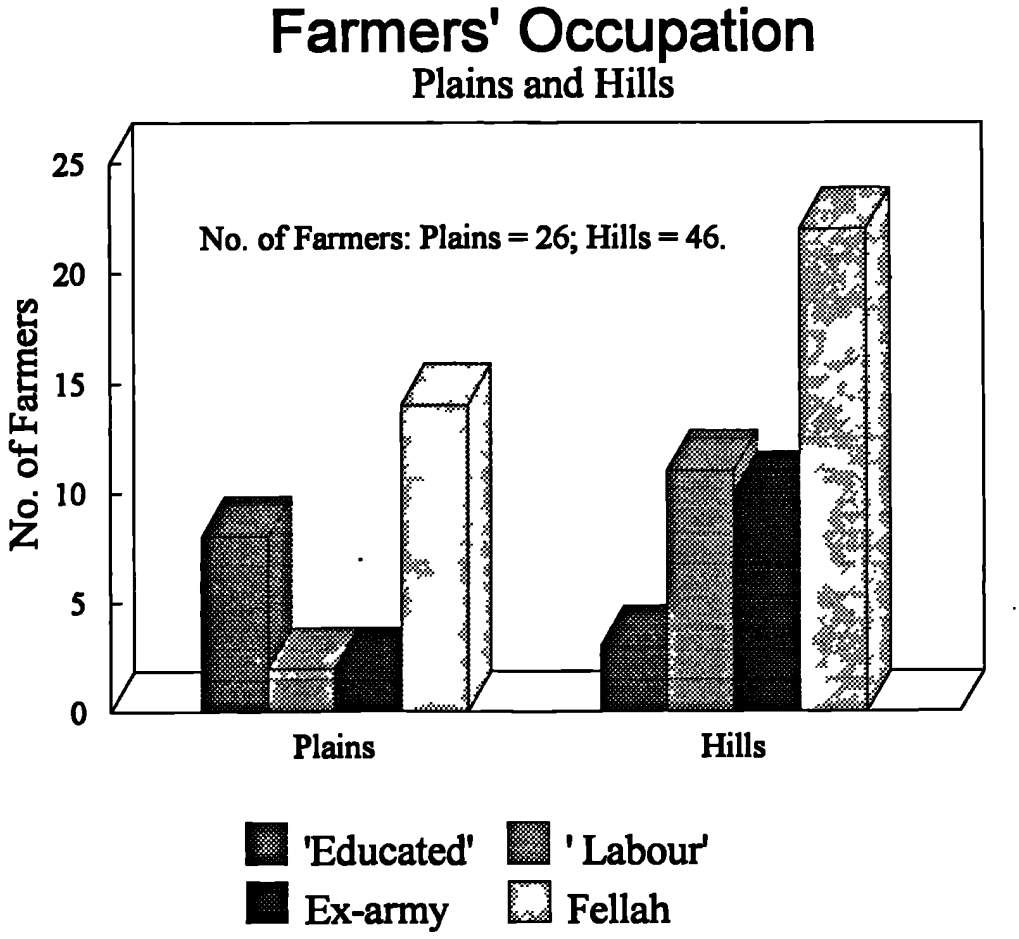


Figure 6.1 Farmers' Occupation on the Plains and in the Hills (source: Table 6.4).

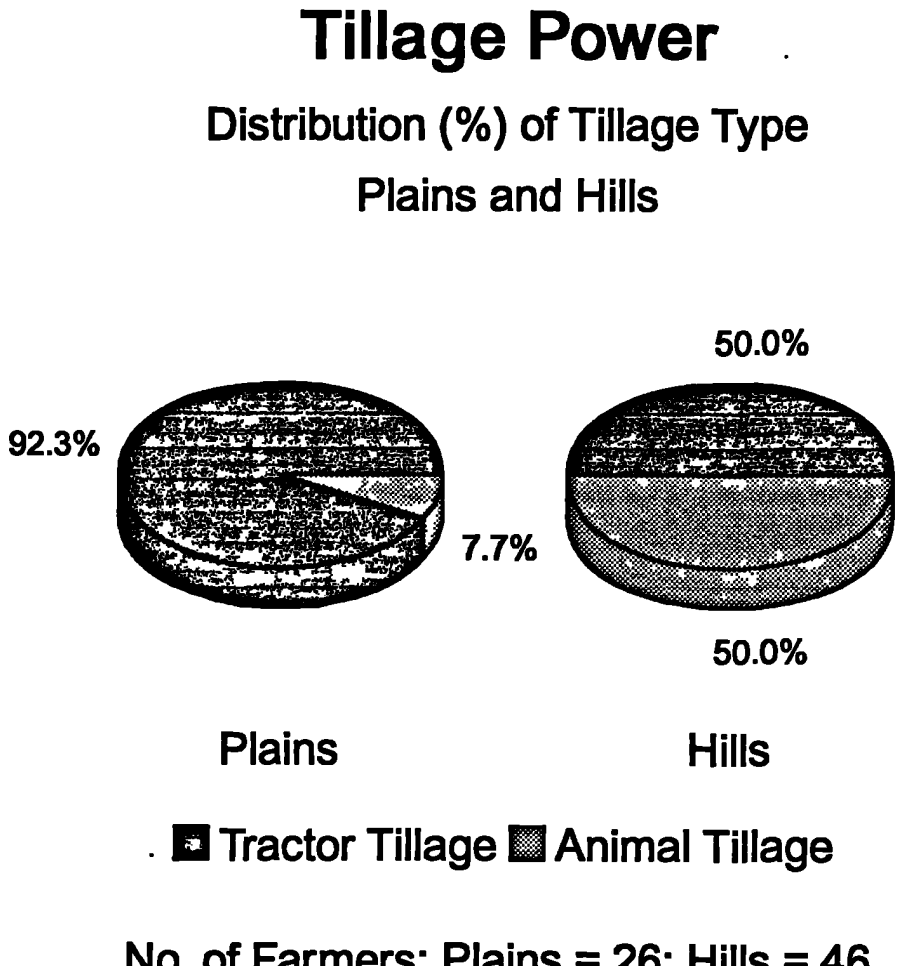


Figure 6.2 Tillage Power used by Farmers on the Plains and in the Hills (source: Table 6.7).

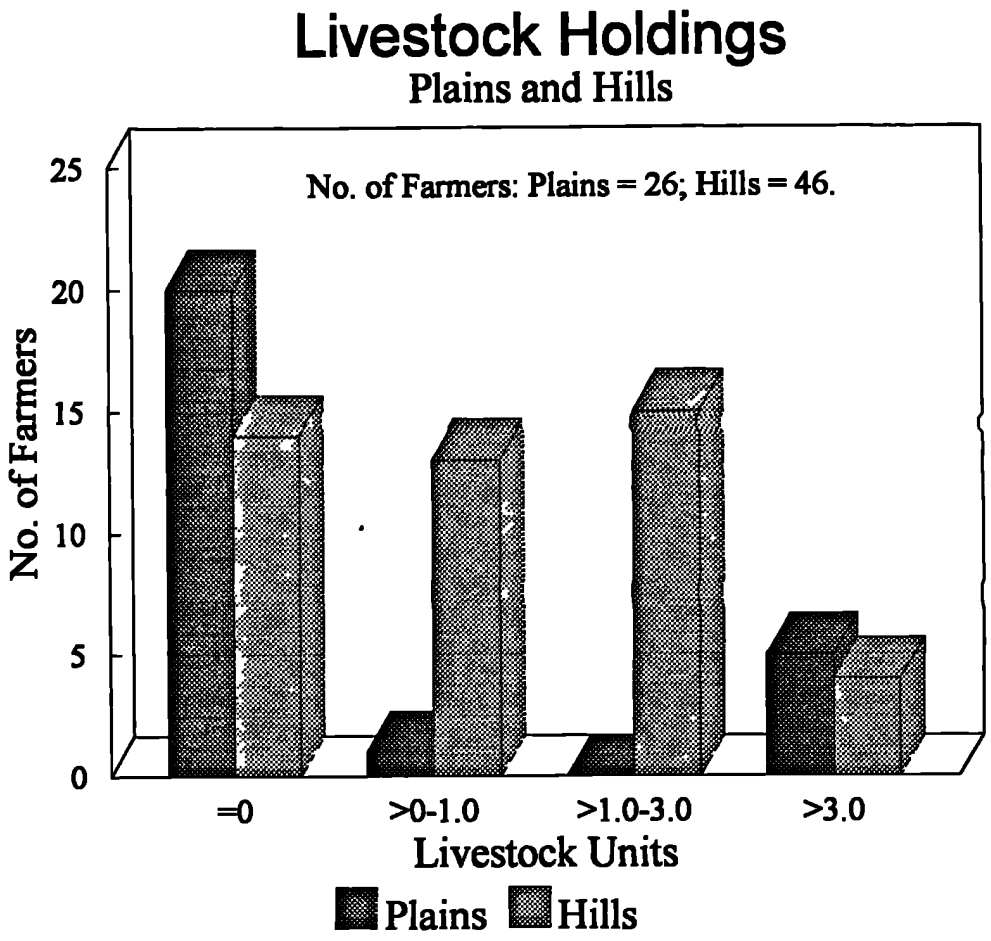


Figure 6.3 Livestock (FAO livestock units) Held by Farmers on the Plains and in the Hills (source: Table 6.10). FAO livestock units (After Dahl & Hjort 1976, 225; Table 10.1a): Cattle = 0.8 (Camel = 1); Goat/Sheep = 0.1 (Table 4.3).

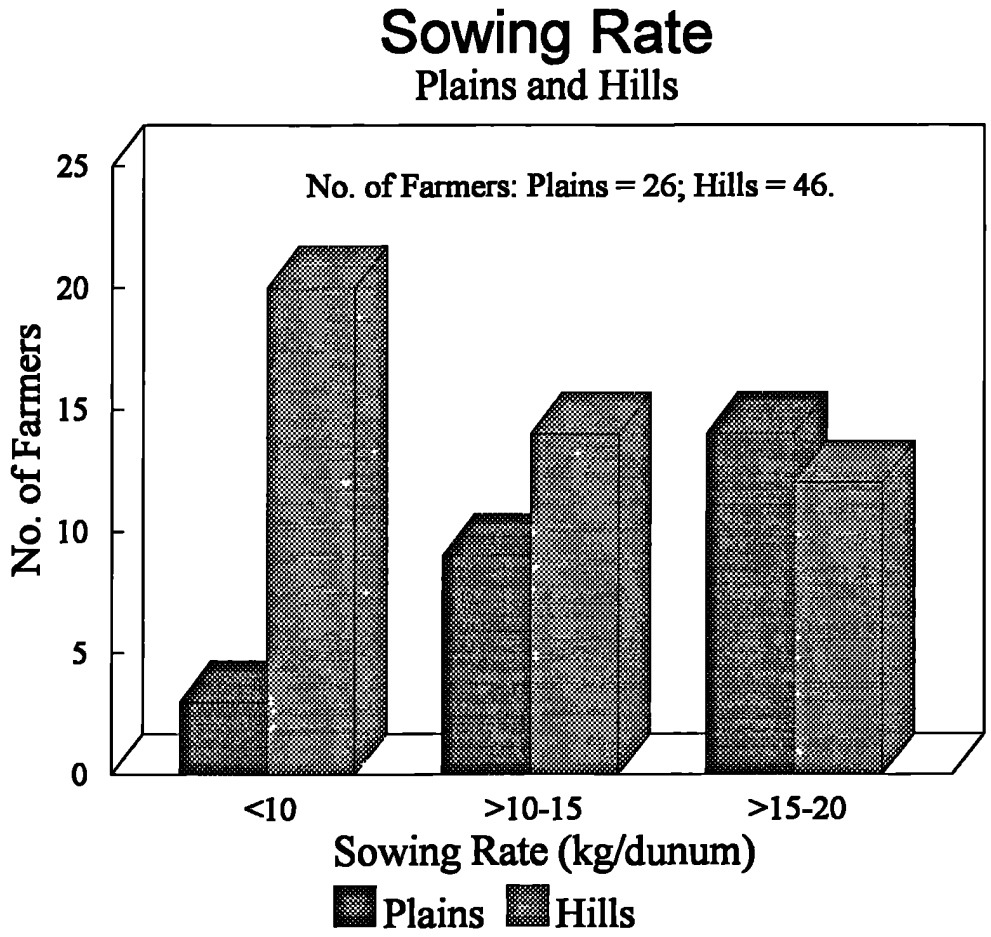


Figure 6.4 Sowing Rate (kg/dunum) on the Plains and in the Hills (source: Table 6.15).

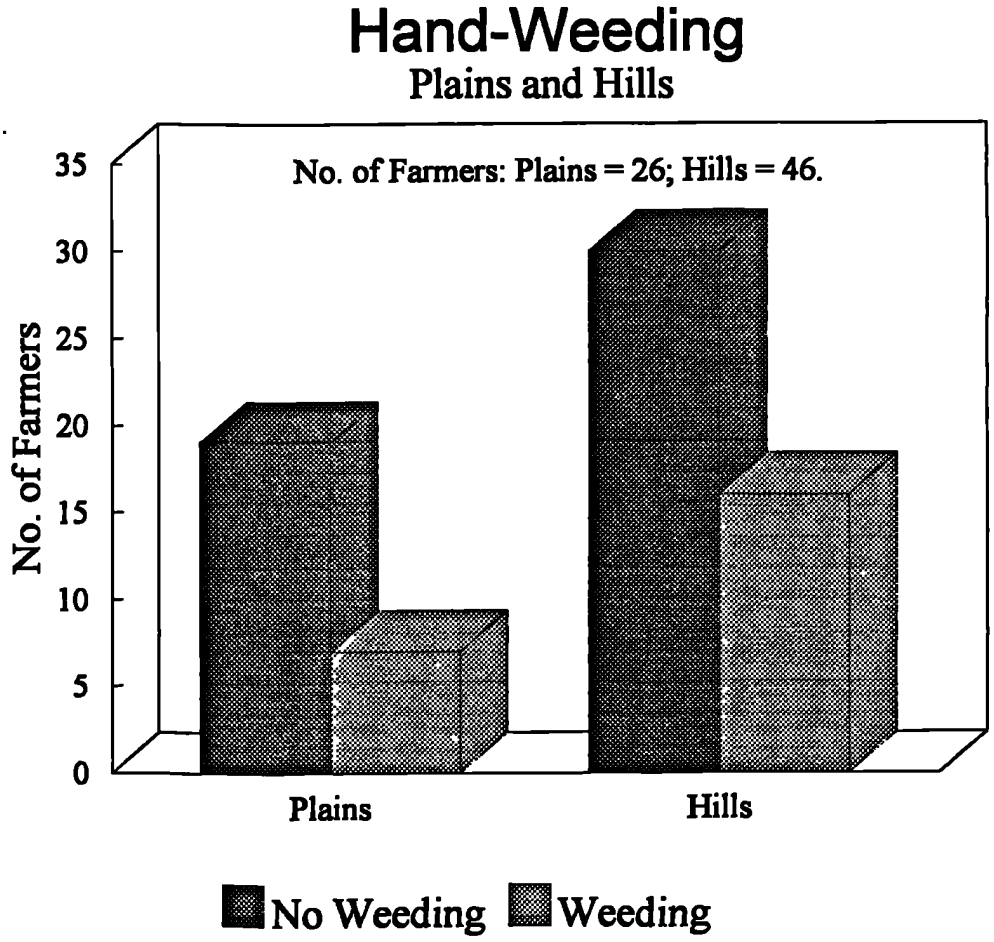


Figure 6.5 Hand-Weeding on the Plains and in the Hills (source: 6.16).

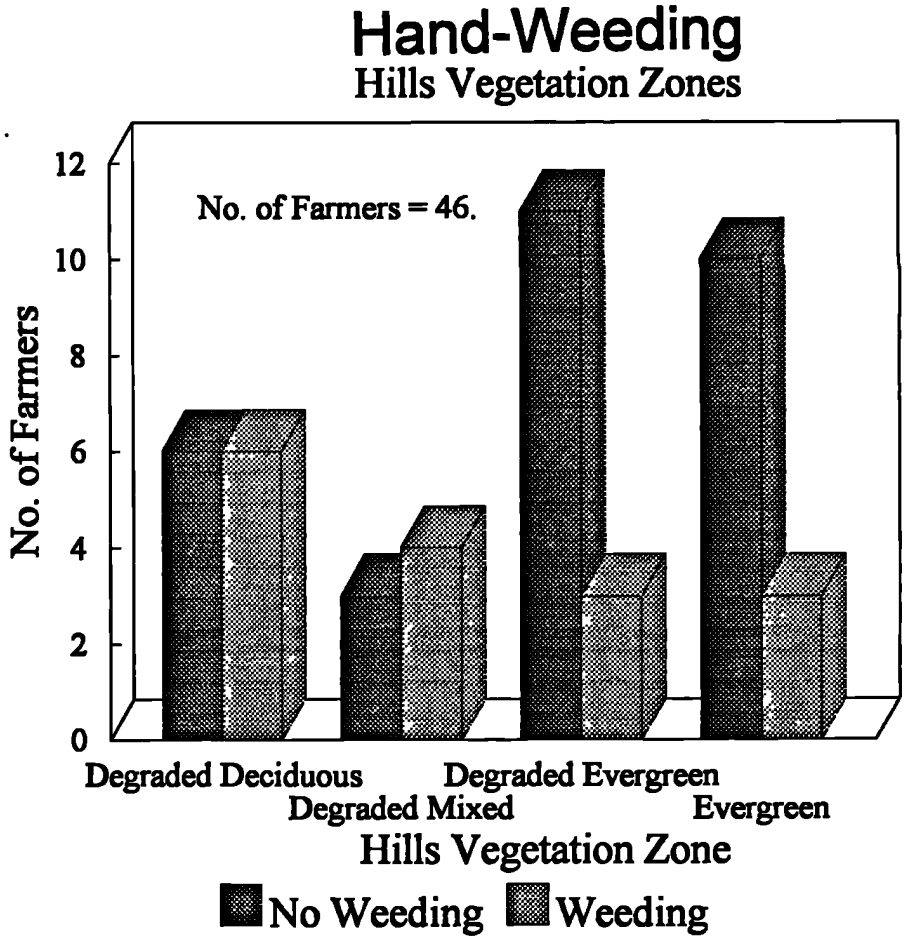


Figure 6.6 Hand-Weeding in the Hills Vegetation Zones (source: Table 6.16).

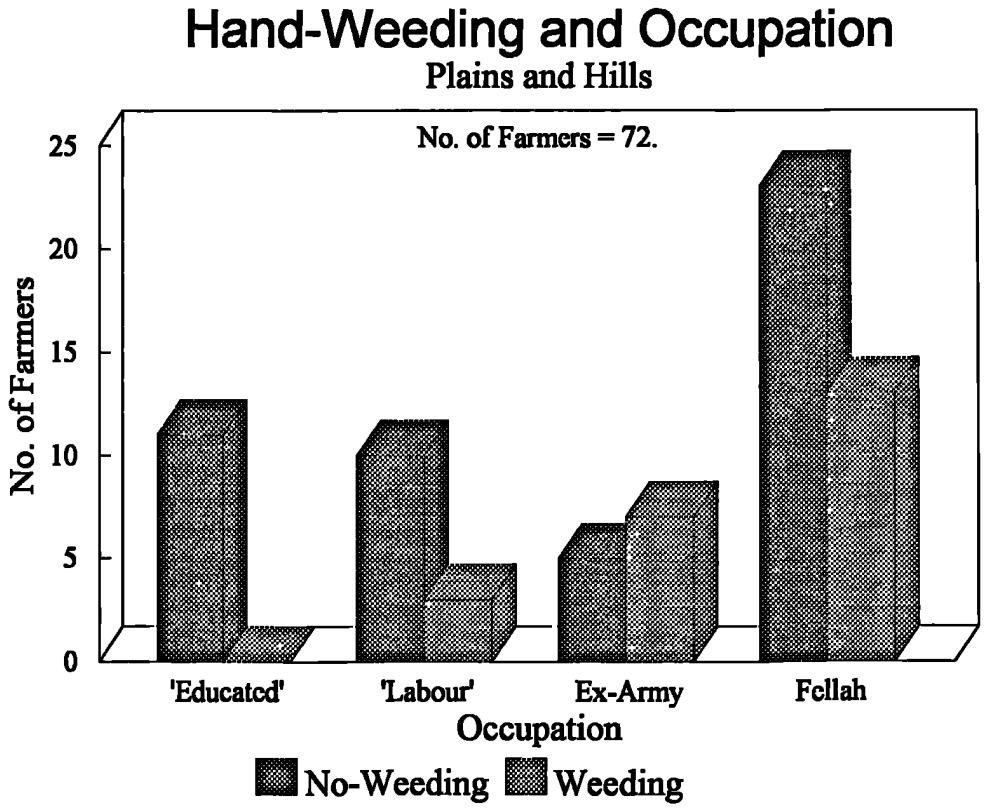


Figure 6.7a Hand-Weeding and Farmers' Occupation (source: Table 6.17a).

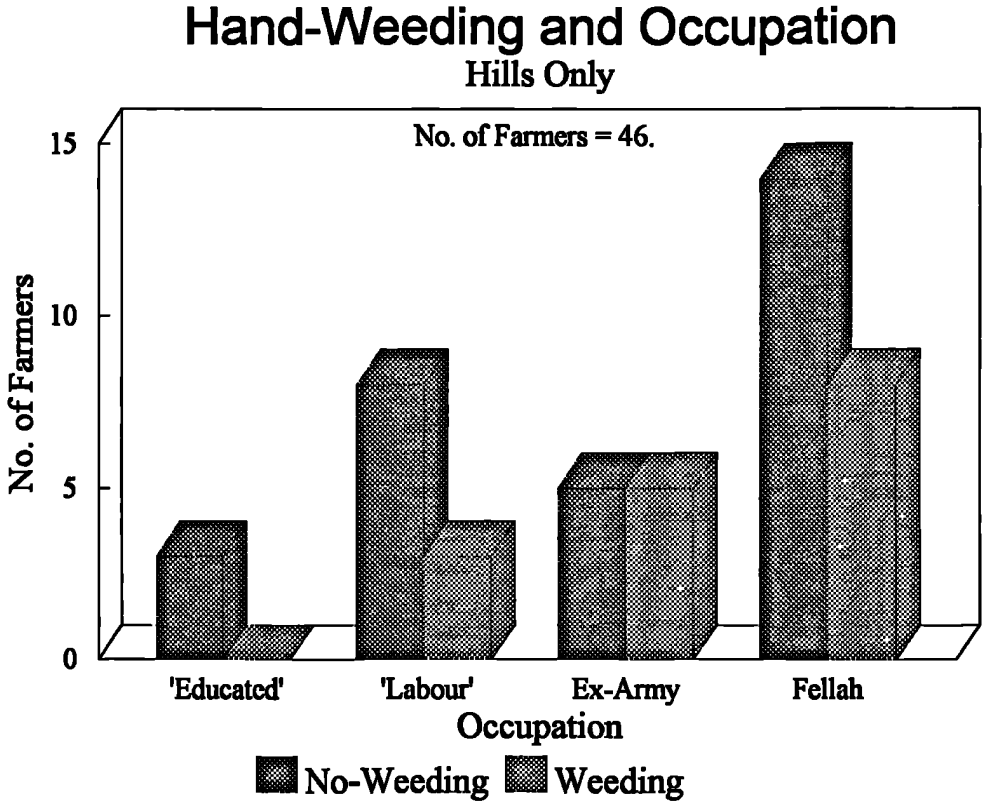


Figure 6.7b Hand-Weeding and Farmers' Occupation in the Hills Alone (source: Table 6.17b).

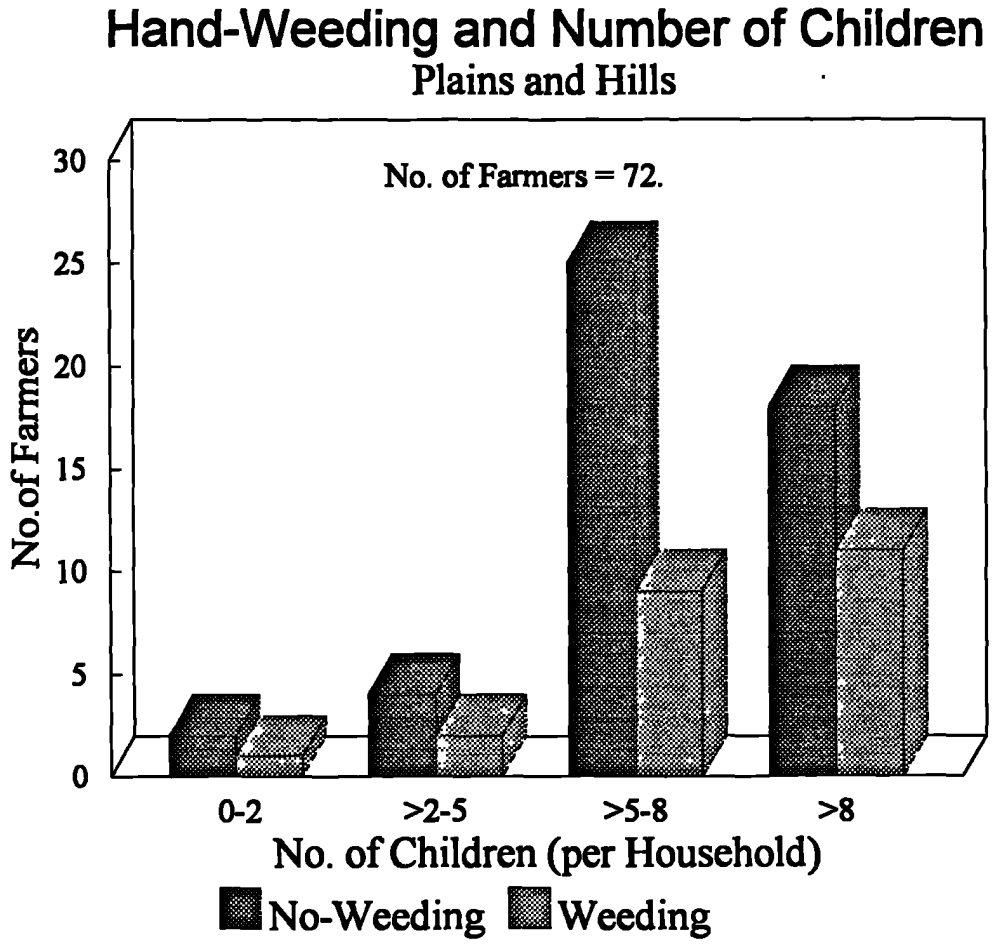


Figure 6.8 Hand-Weeding and Number of Children (per household) (source: Table 6.19).

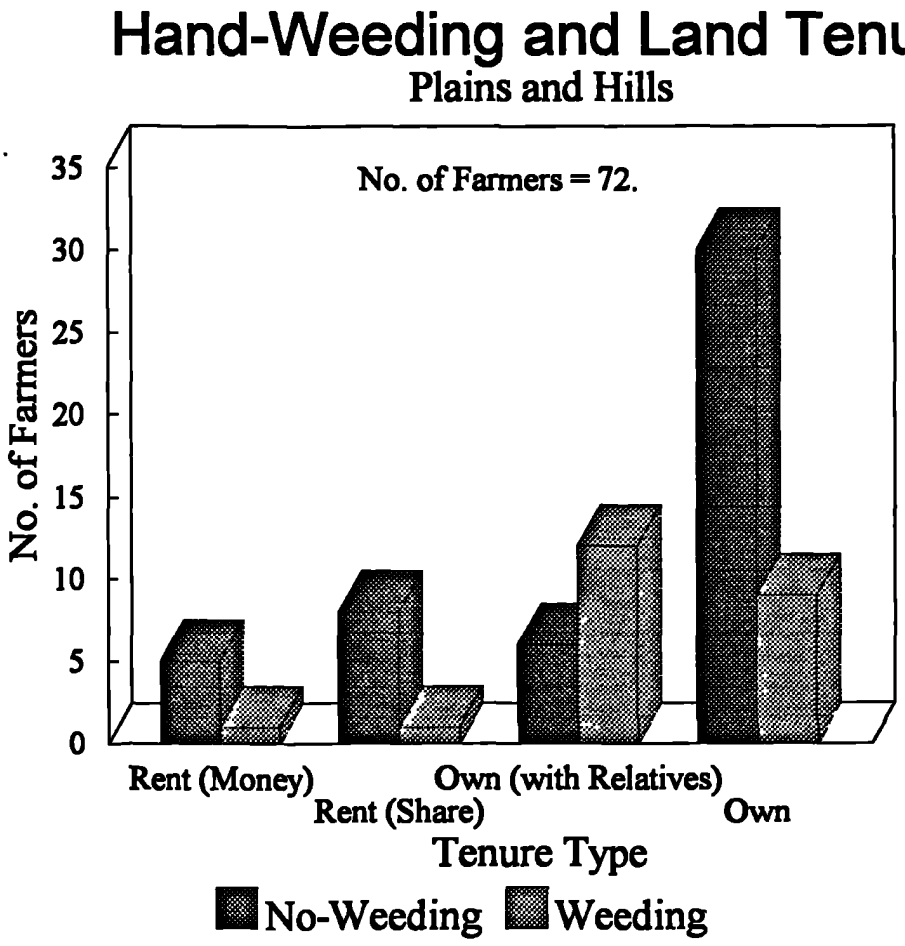


Figure 6.9 Hand-Weeding and Type of Land Tenure (source: Table 6.20).

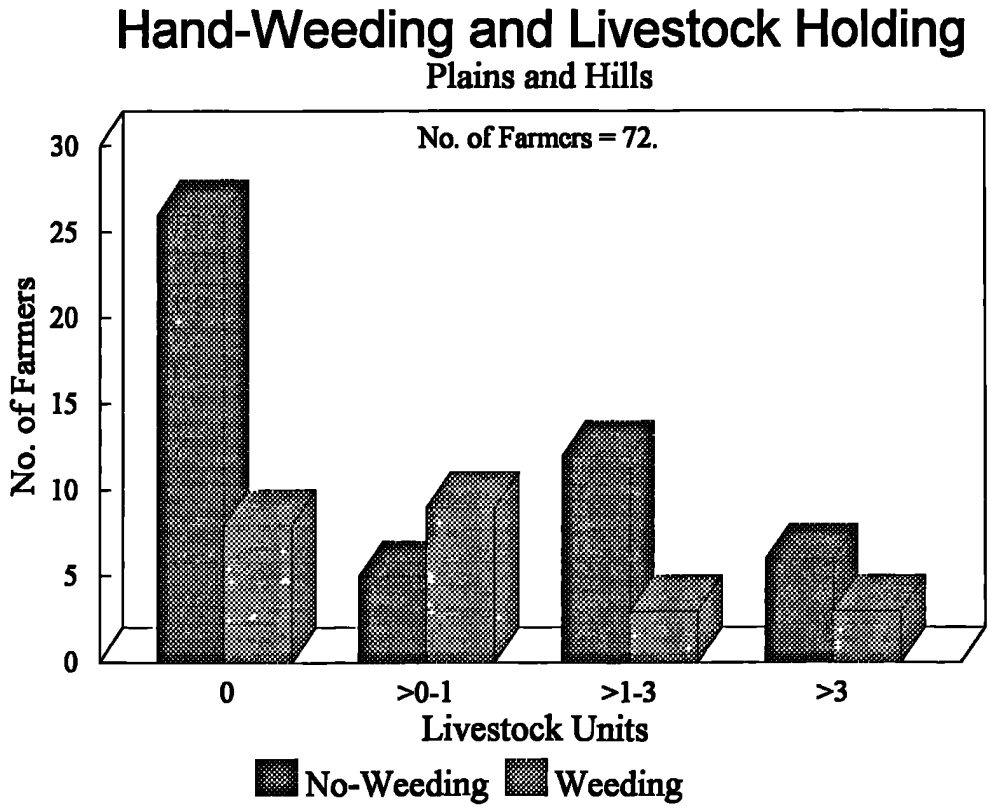


Figure 6.10a Hand-Weeding and Livestock Held by Farmers (source: Table 6.21a). See Fig. 6.3 For FAO livestock unit equivalents.

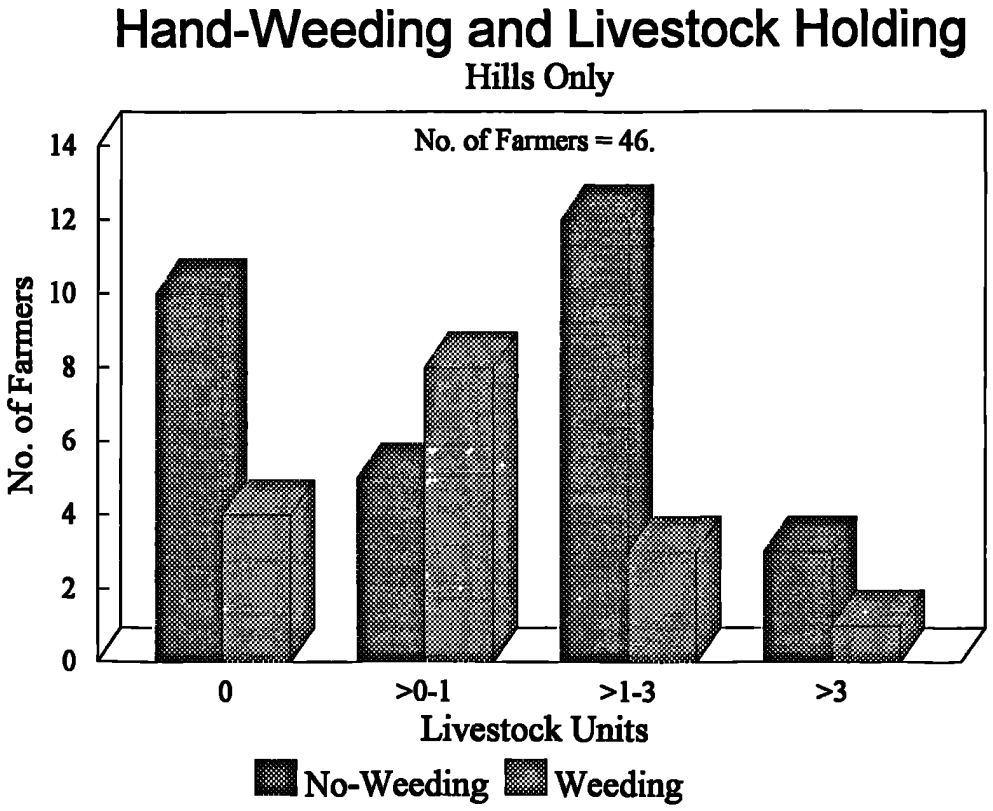


Figure 6.10b Hand-Weeding and Livestock Held by Farmers in the Hills Alone (source: Table 6.21b). See Fig. 6.3 For FAO livestock unit equivalents.

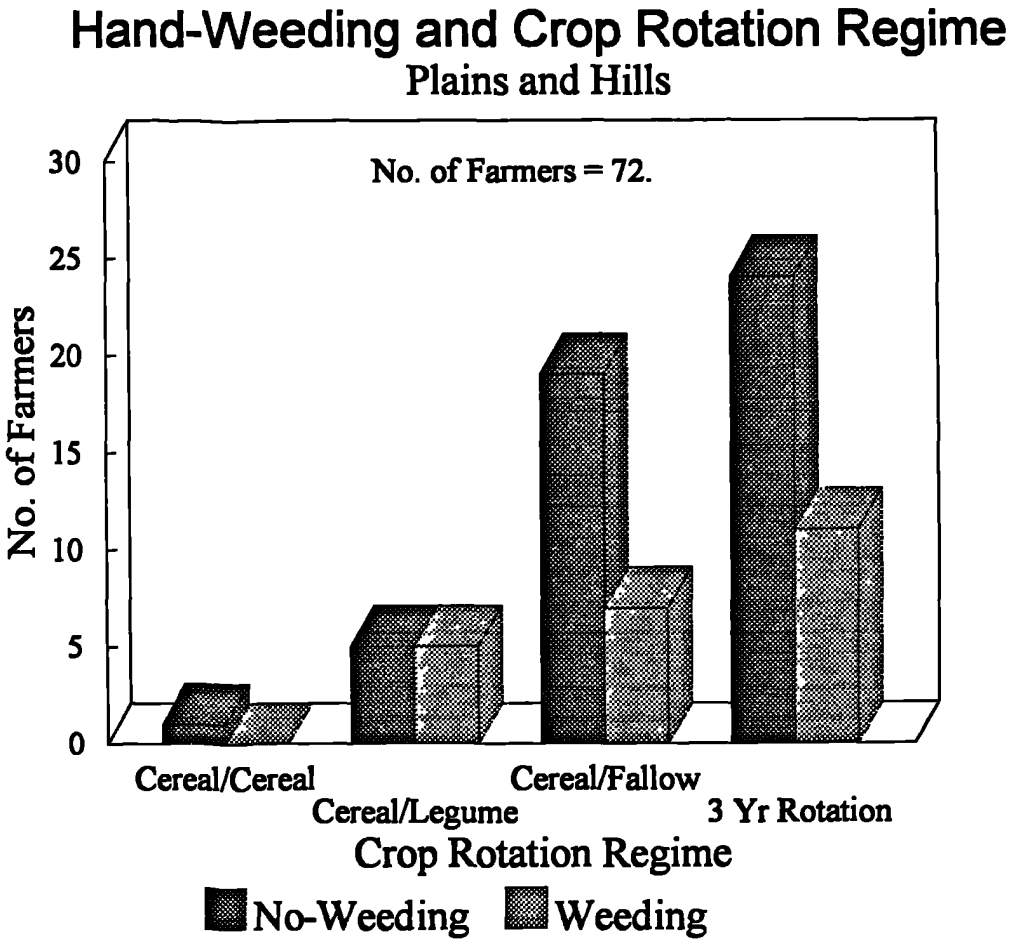


Figure 6.11 Hand-Weeding and Crop Rotation Regime (source: Table 6.23).

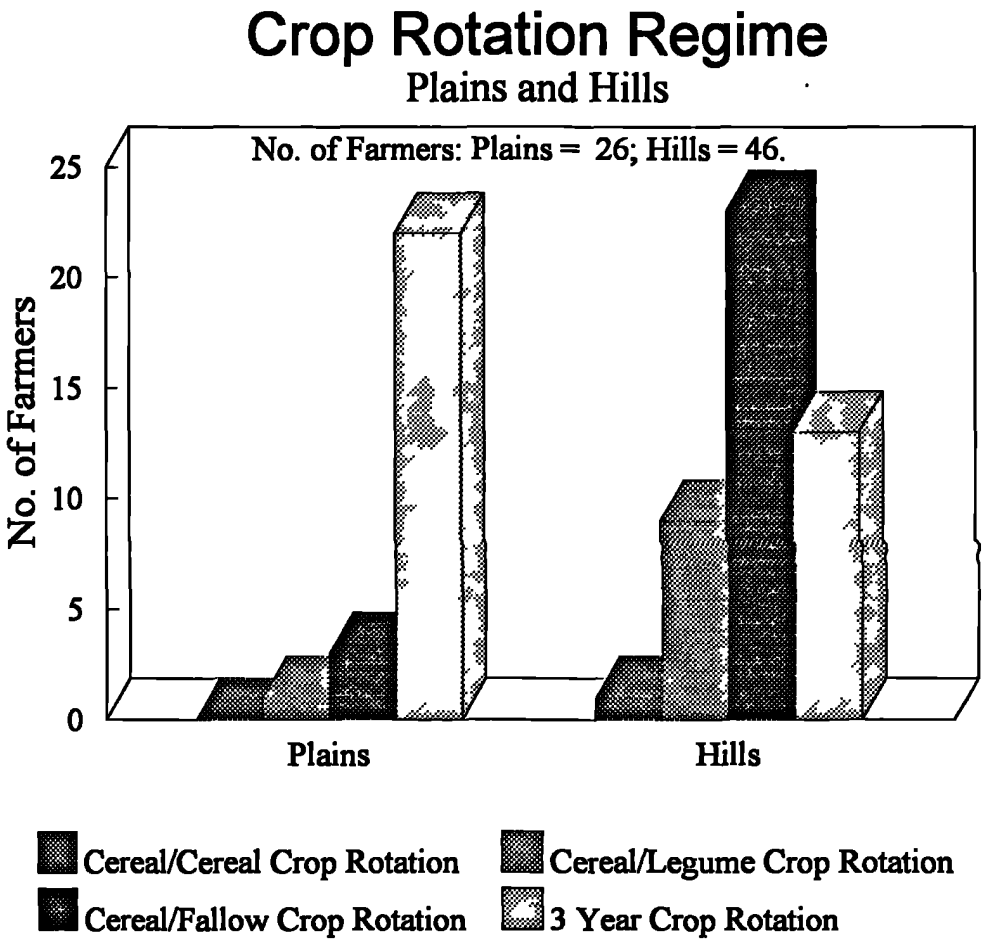


Figure 6.12 Crop Rotation Regimes Used by Plains and Hills Farmers (source: Table 6.32).

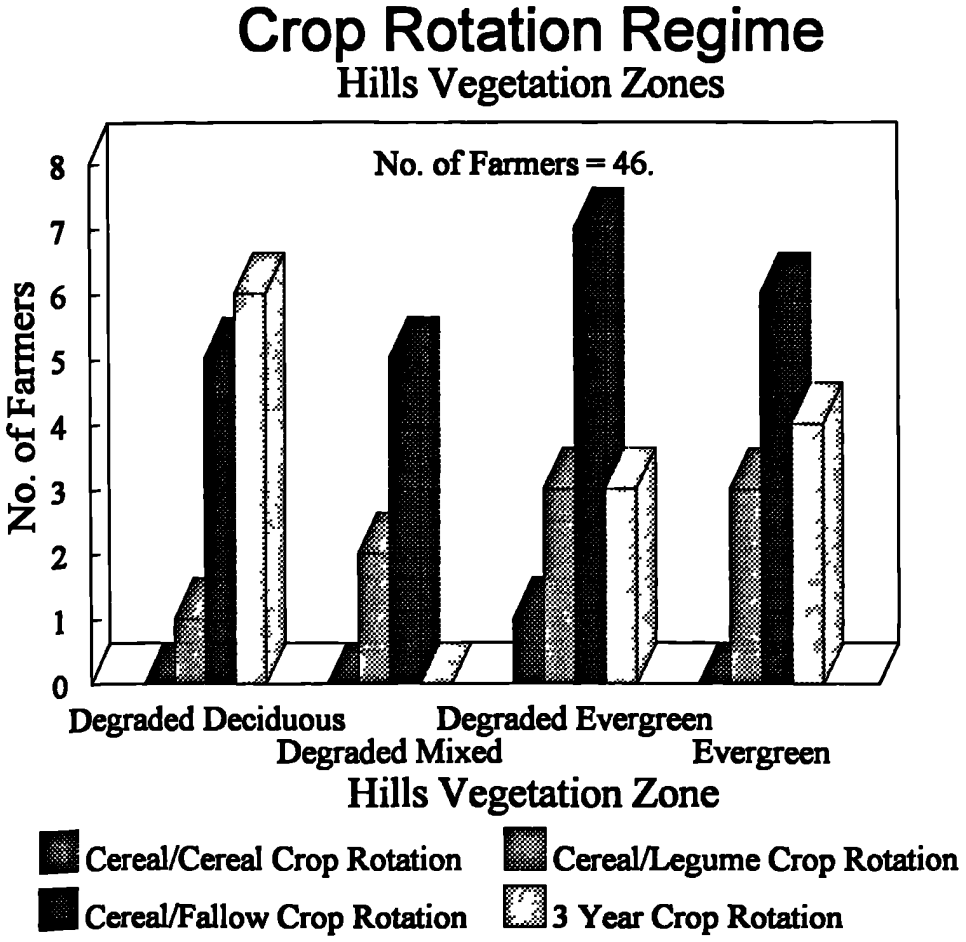


Figure 6.13 Crop Rotation Regimes Used by Farmers in the Hills Vegetation Zones (source: Table 6.32).

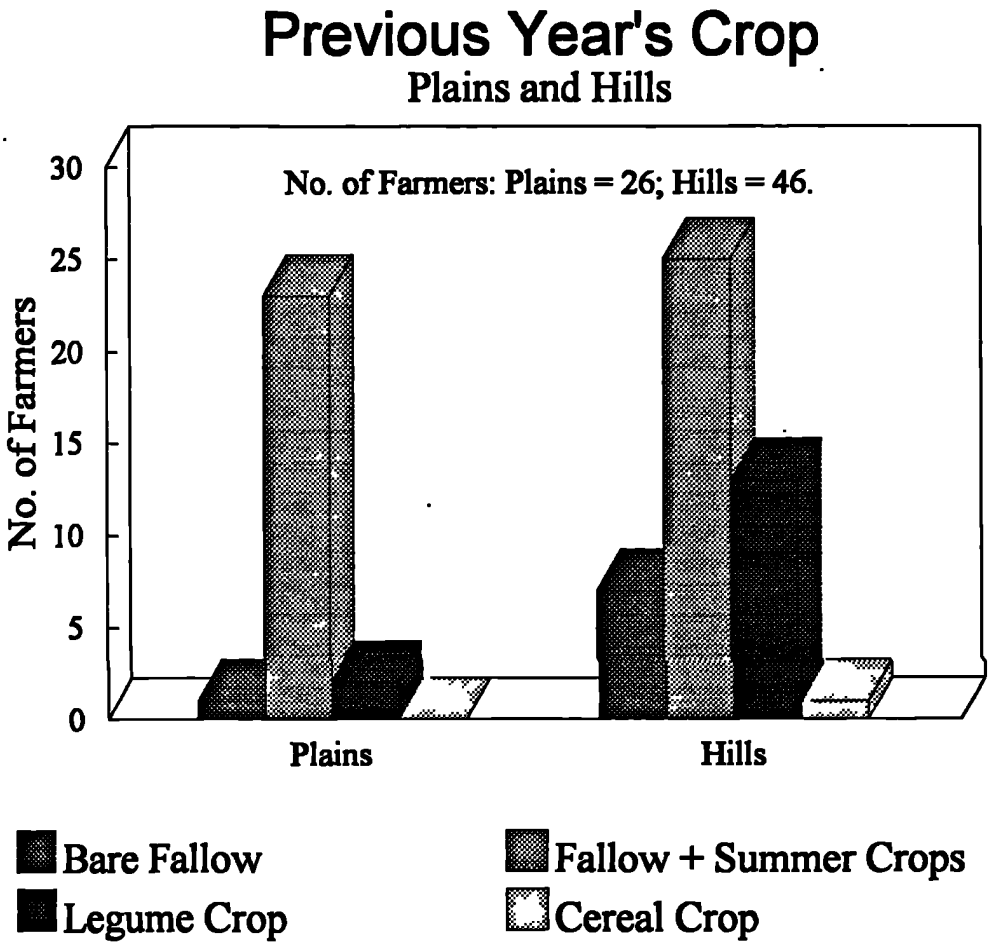


Figure 6.14 Previous Year's Crop Cultivated by Plains and Hills Farmers (source: Table 6.33).

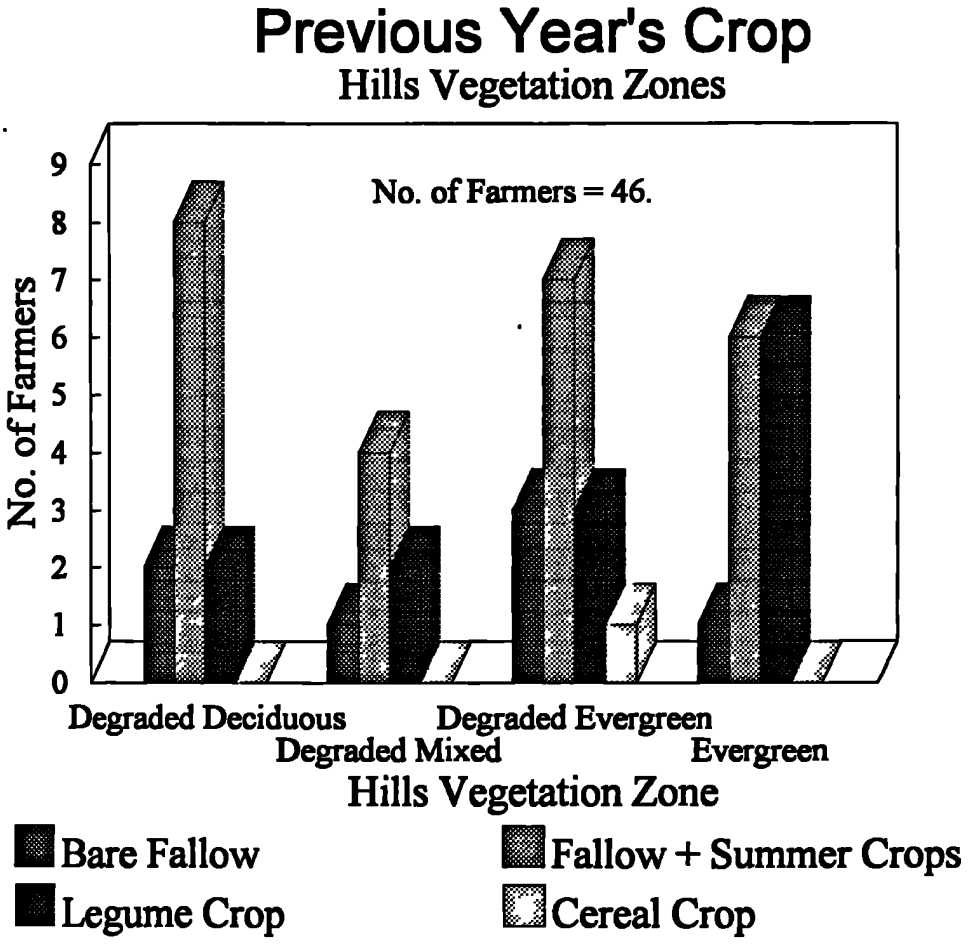


Figure 6.15 Previous Year's Crop Cultivated by Farmers in the Hills Vegetation Zones (source: Table 6.33).

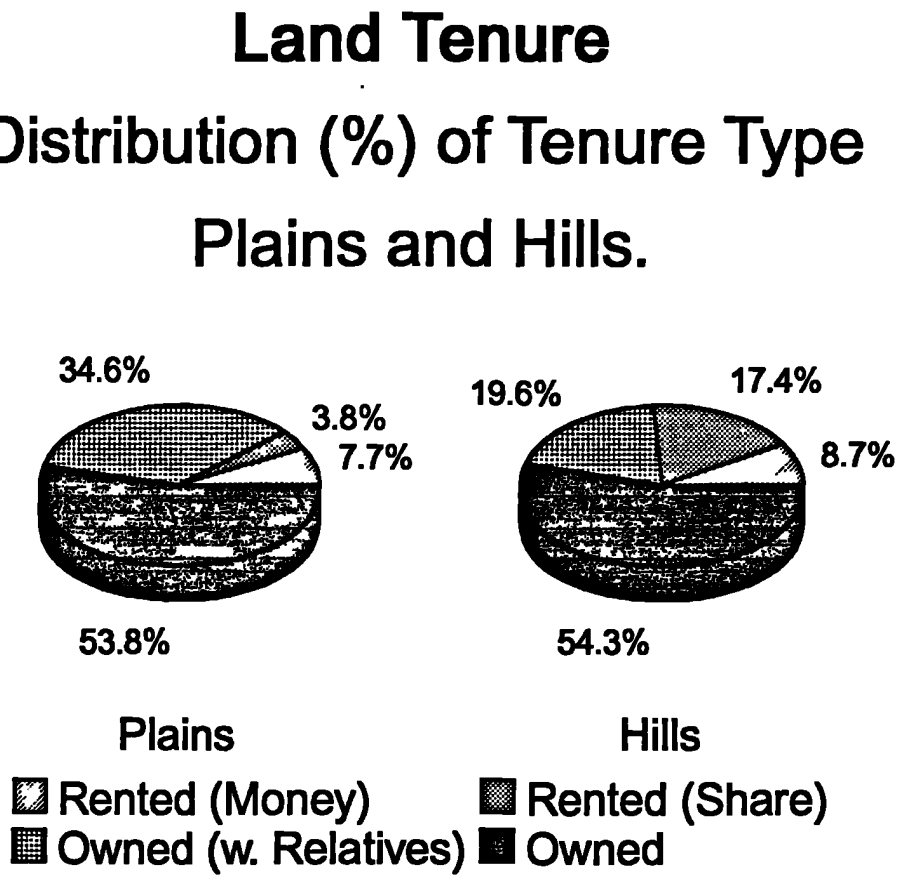


Figure 6.16 Distribution of Type of Land Tenure for Plains and Hills Farmers (source: Table 6.38).

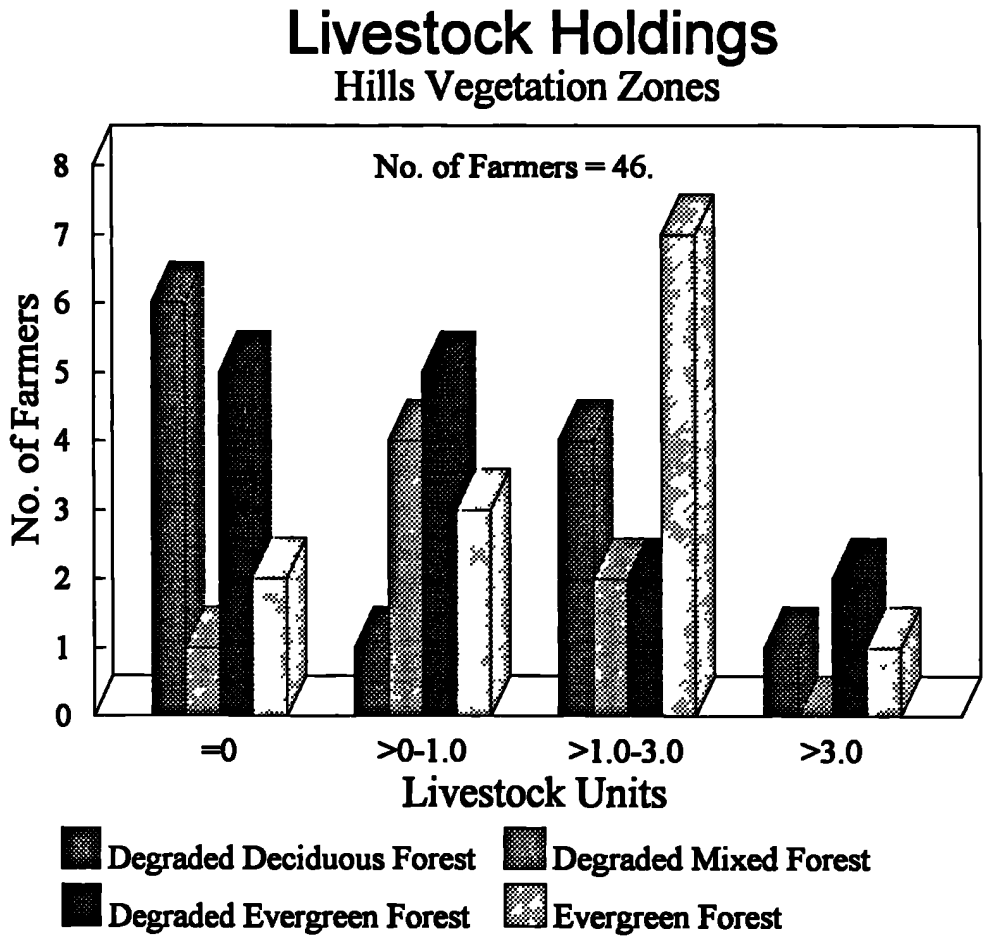


Figure 6.17 Livestock Held by Farmers in the Hills Alone (source: Table 6.10). See Fig. 6.3 for FAO livestock unit equivalents.

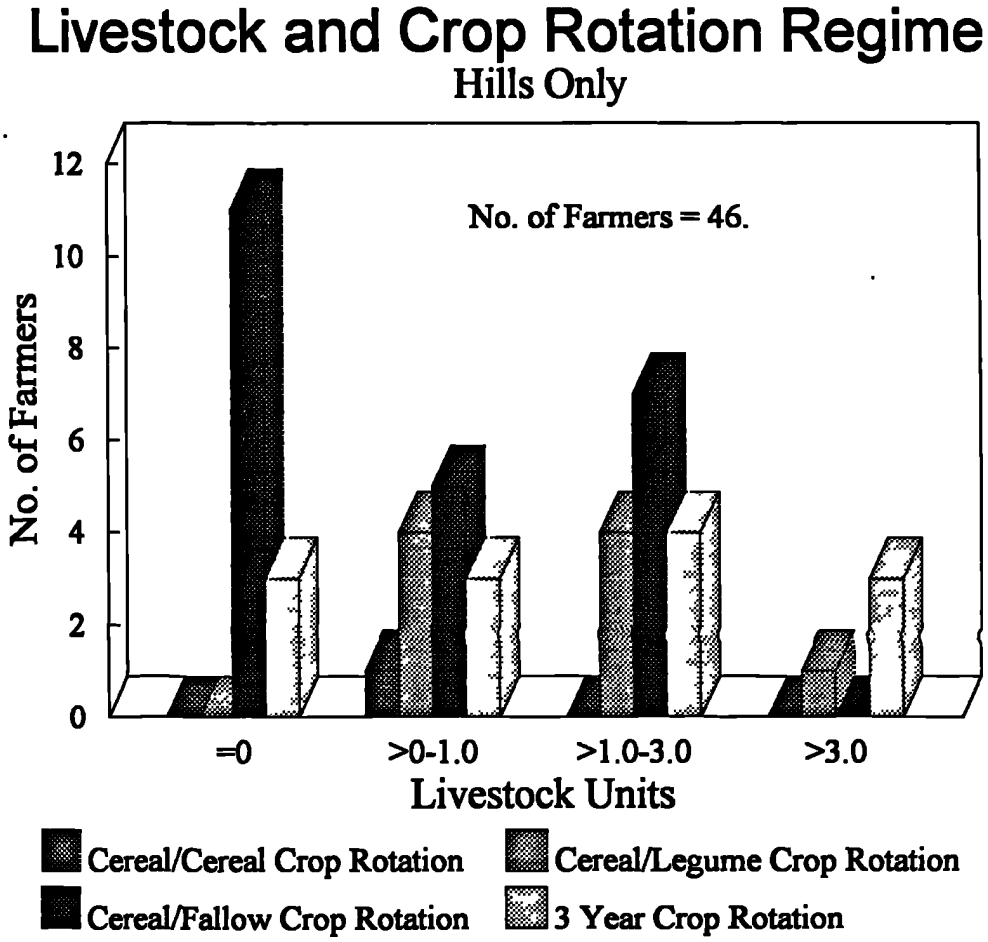


Figure 6.18 Livestock Holding and Crop Rotation Regime in the Hills Alone (source: Table 6.42b). See Fig. 6.3 for FAO livestock unit equivalents.

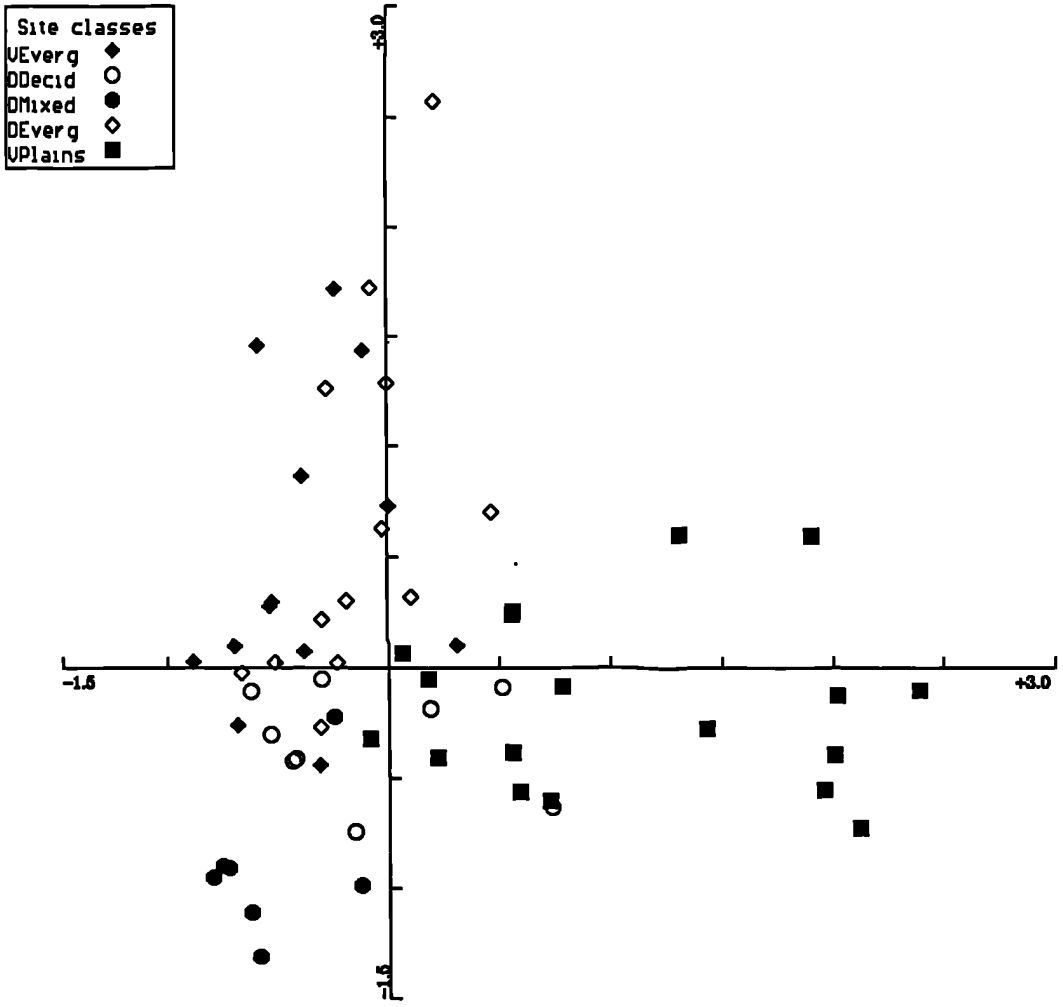


Figure 7.1 CA of All the Fields. *Fields Coded According to Vegetation Zone (Axis I x II).*

Key: VEverg = Evergreen Forest; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VPlains = Plains Vegetation Zone

Note: For Figures 7.1 to 7.65b, the following convention applies:

the **Horizontal Axis is Axis I;**

the **Vertical Axis is either Axis II or III** (as indicated by the figure label)

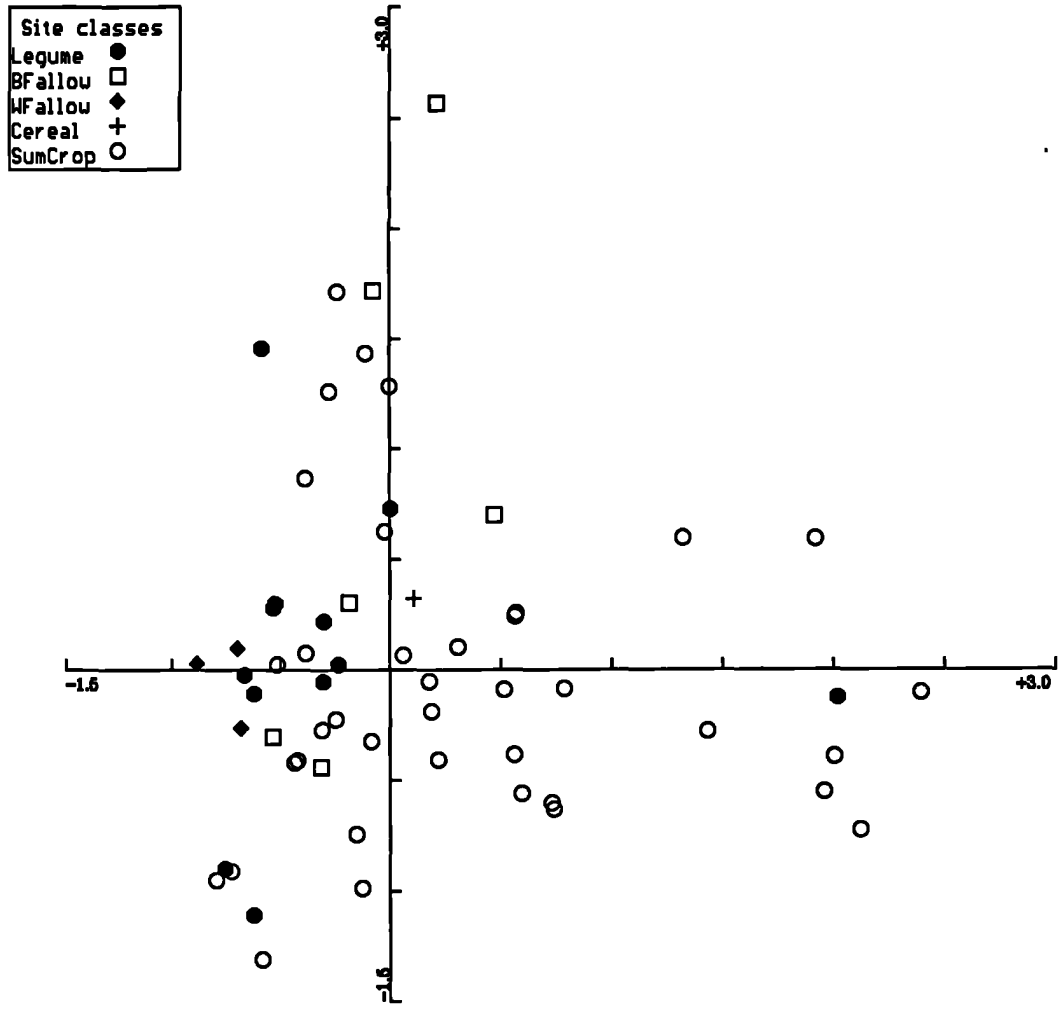


Figure 7.3 CA of All the Fields. *Fields Coded According to Previous Year's Crop (Axis I x II).*

Key: Legume = Legume Crop; BFallow = Bare Fallow; WFallow = Weedy Fallow; Cereal = Cereal Crop; SumCrop = Summer Crop

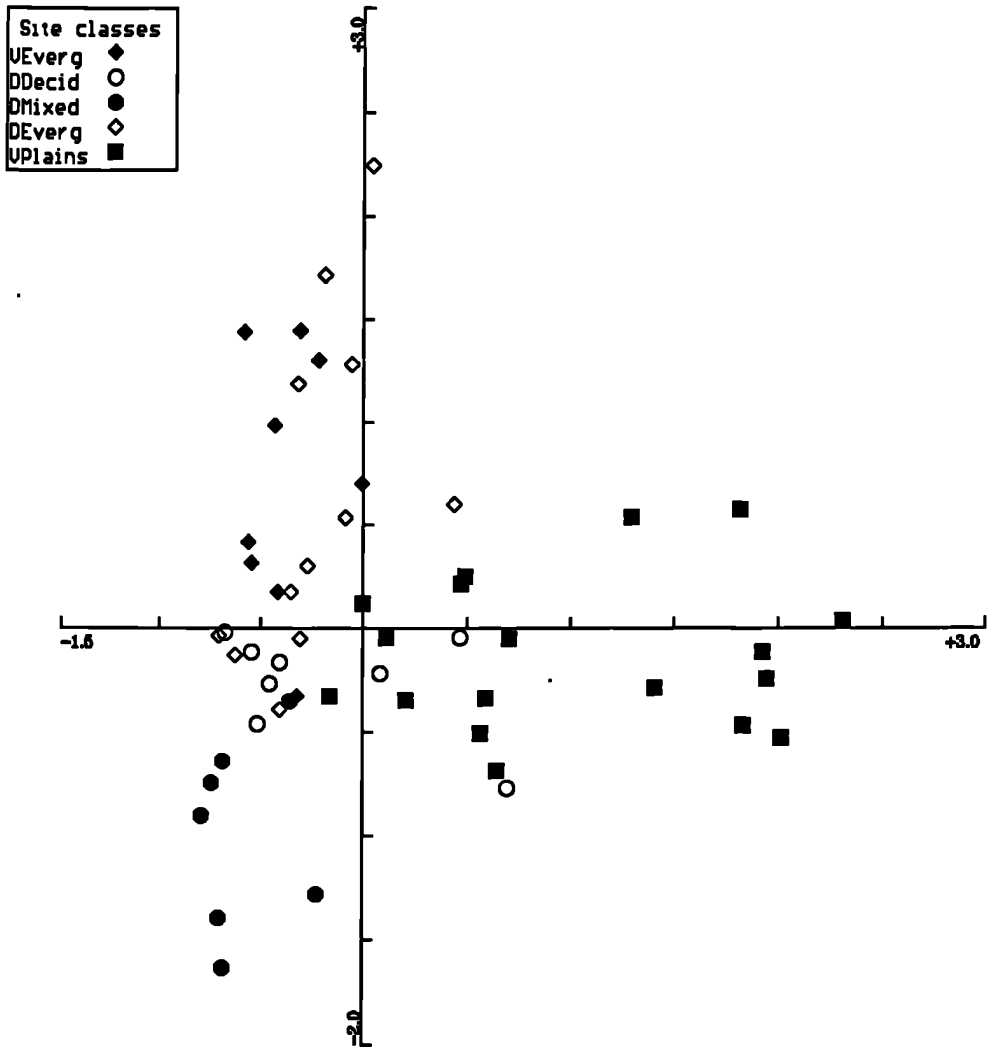


Figure 7.4 CA of Fields Cultivated under Two and Three Year Crop Rotation Regimes. *Fields Coded According to Vegetation Zone (Axis I x II).*

Key: VEverg = Evergreen Forest; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VPlains = Plains Vegetation Zone

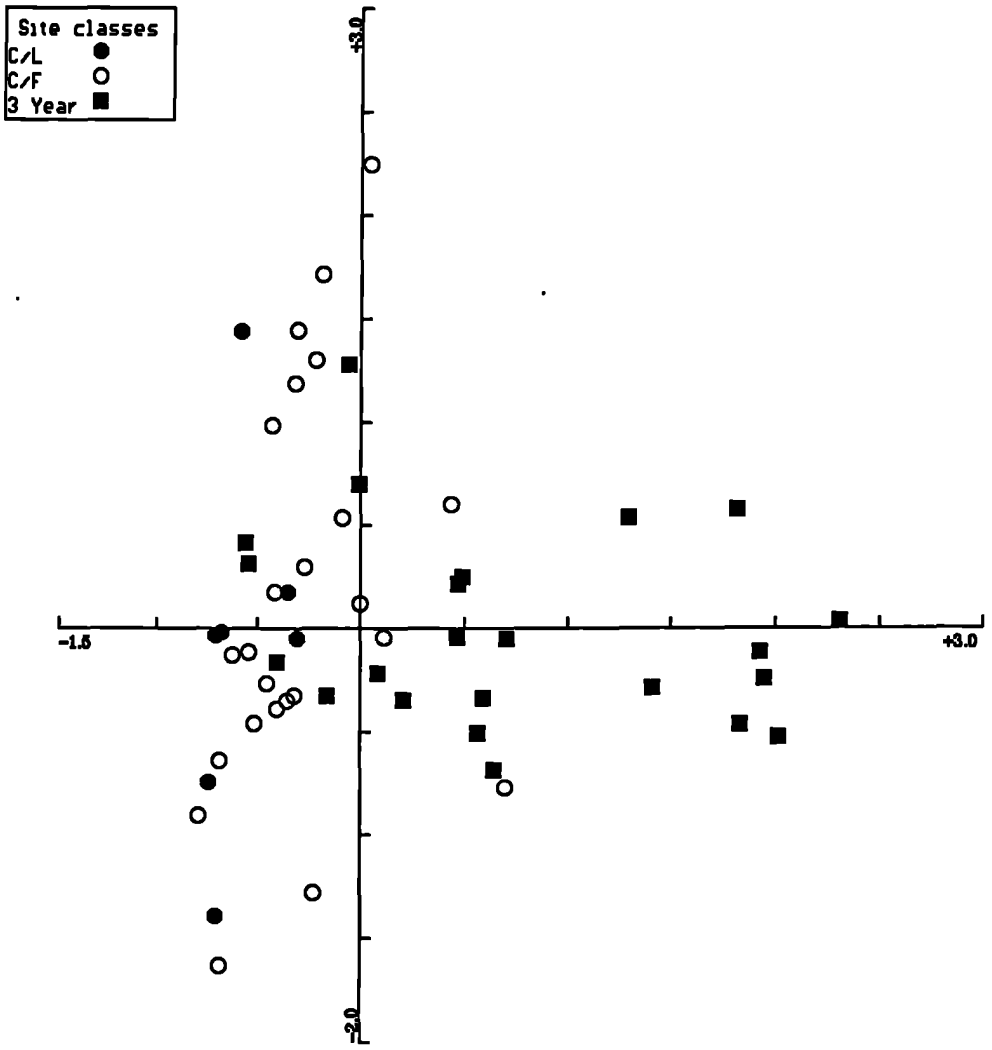


Figure 7.5 CA of Fields Cultivated under Two and Three Year Crop Rotation Regimes. *Fields Coded According to Crop Rotation Regime (Axis I x II).*

Key: C/L = Cereal-Legume; C/F = Cereal-Fallow;
3 Yr = 3 Year Crop Rotation Regime

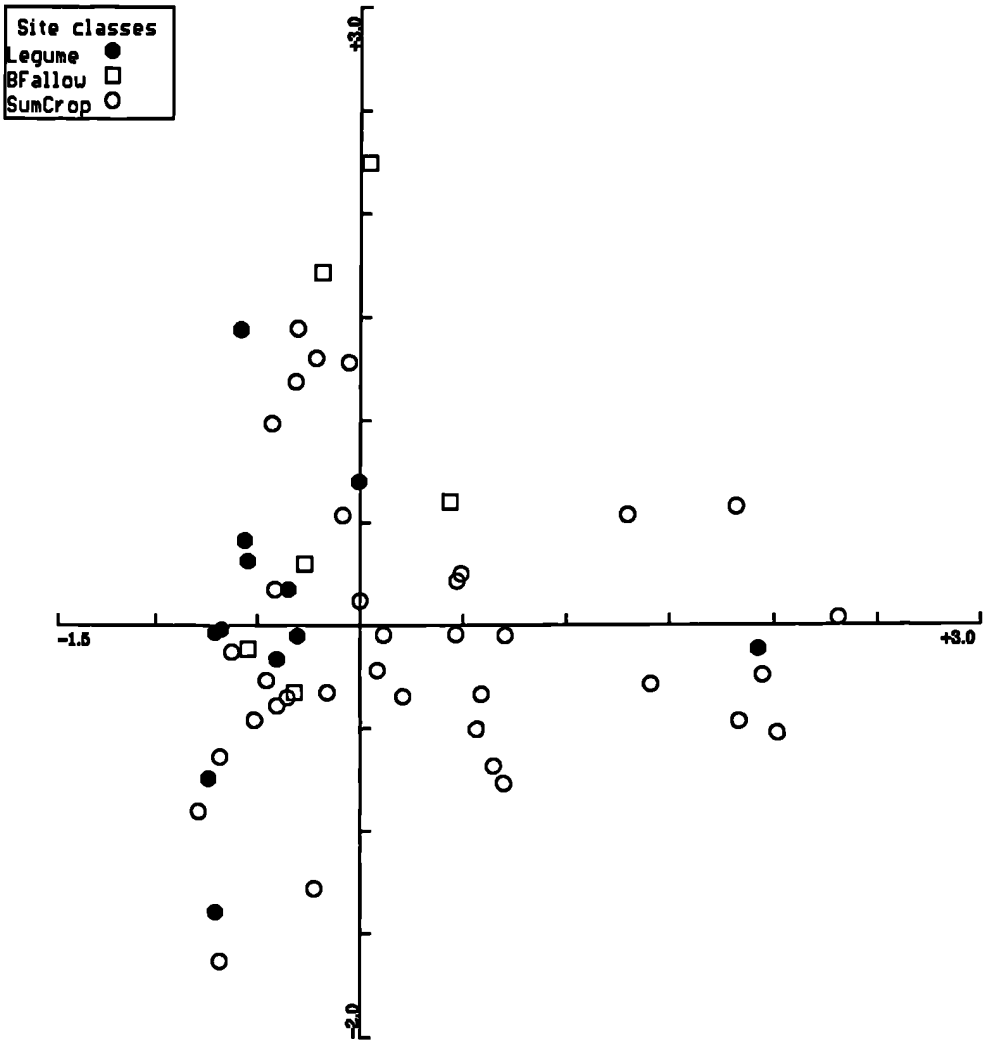


Figure 7.6 CA of Fields Cultivated under Two and Three Year Crop Rotation Regimes. *Fields Coded According to Previous Year's Crop (Axis I x II).*

Key: Legume = Legume Crop; BFallow = Bare Fallow; SumCrop = Summer Crop

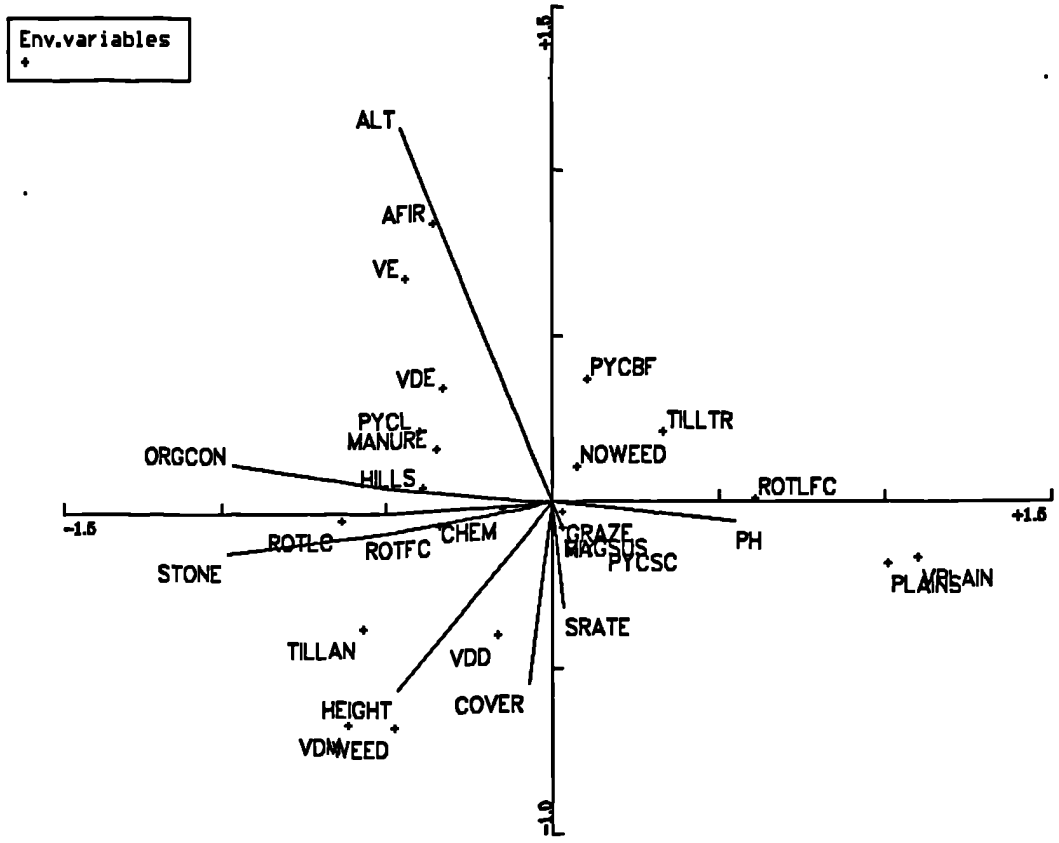


Figure 7.7 CCA of All the Fields using All the External Variables as the Constraining Variables. *External Variables Only Plotted (Axis I x II).*

Key: ROTLC = Rotation - *Cereal-Legume*; ROTFC = Rotation - *Cereal-Fallow*; ROTLFC = Rotation - *3 Year Rotation Regime*
PYCBF = Previous Year's Crop - *Bare Fallow*; PYCSC = Previous Year's Crop - *Summer Crop*; PYCL = Previous Year's Crop - *Legume Crop*
AFIR = *Sowing Date - Before Rain*; RIY = *Sowing Date - After Rain*
TILLAN = Animal Tillage; TILLTR = Tractor Tillage; SRATE = Sowing Rate
NOWEED = *No Weeding*; WEED = *Weeding*
GRAZE = Manuring - *Grazing*; MANURE = Manuring - *Dung*; CHEM = Manuring - *Chemical*

HILLS = *Hills*; PLAINS = *Plains*
VPLAIN = Vegetation - *Plains*; VDD = Vegetation - *Degraded Deciduous Forest*; VDM = Vegetation - *Mixed Degraded Forest*; VDE; Vegetation - *Degraded Evergreen Forest*;VE = Vegetation - *Evergreen Forest*
ALT = *Altitude*; STONE = *Stoniness*; ORGCON = *Organic Content*; pH = *pH*; MAGSUS = *Magnetic Susceptibility*; HEIGHT = *Height of Wheat*; COVER = *Cover of Wheat*

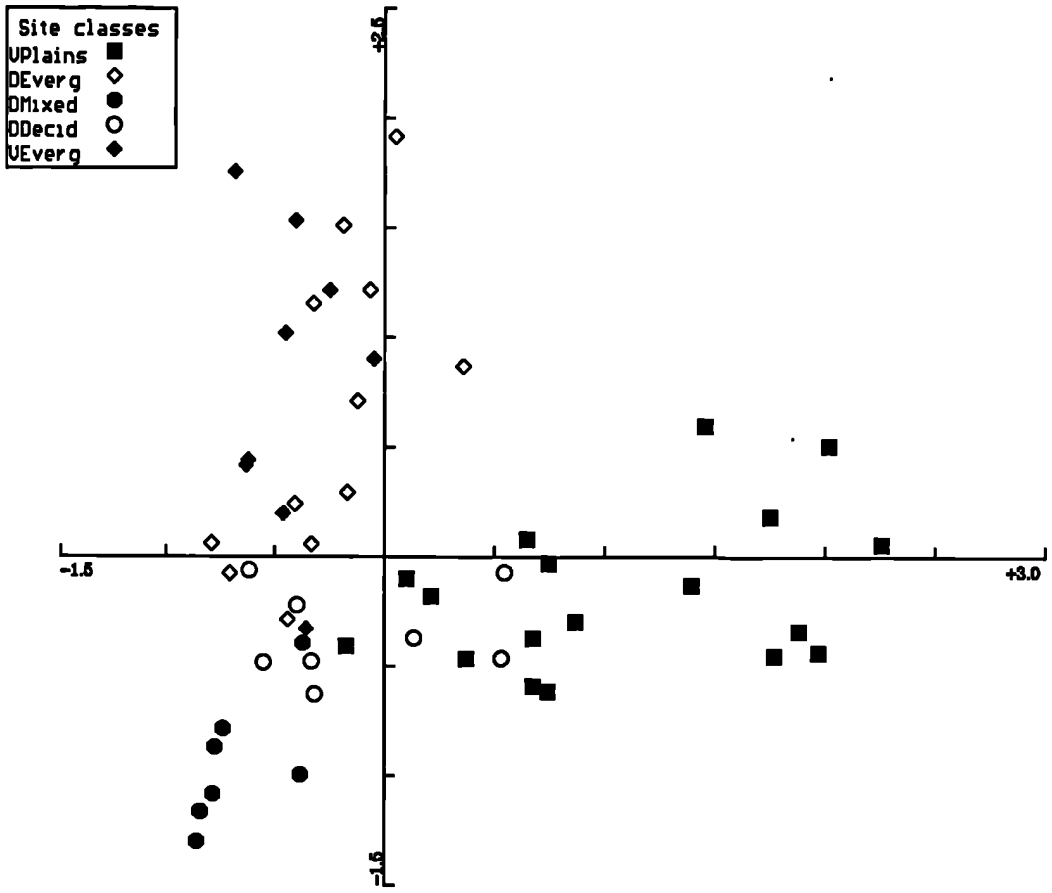


Figure 7.8 CCA of All the Fields using All the External Variables as the Constraining Variables. *Fields Coded According to Vegetation Zone (Axis I x II).*

Key: VPlains = Plains Vegetation Zone; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

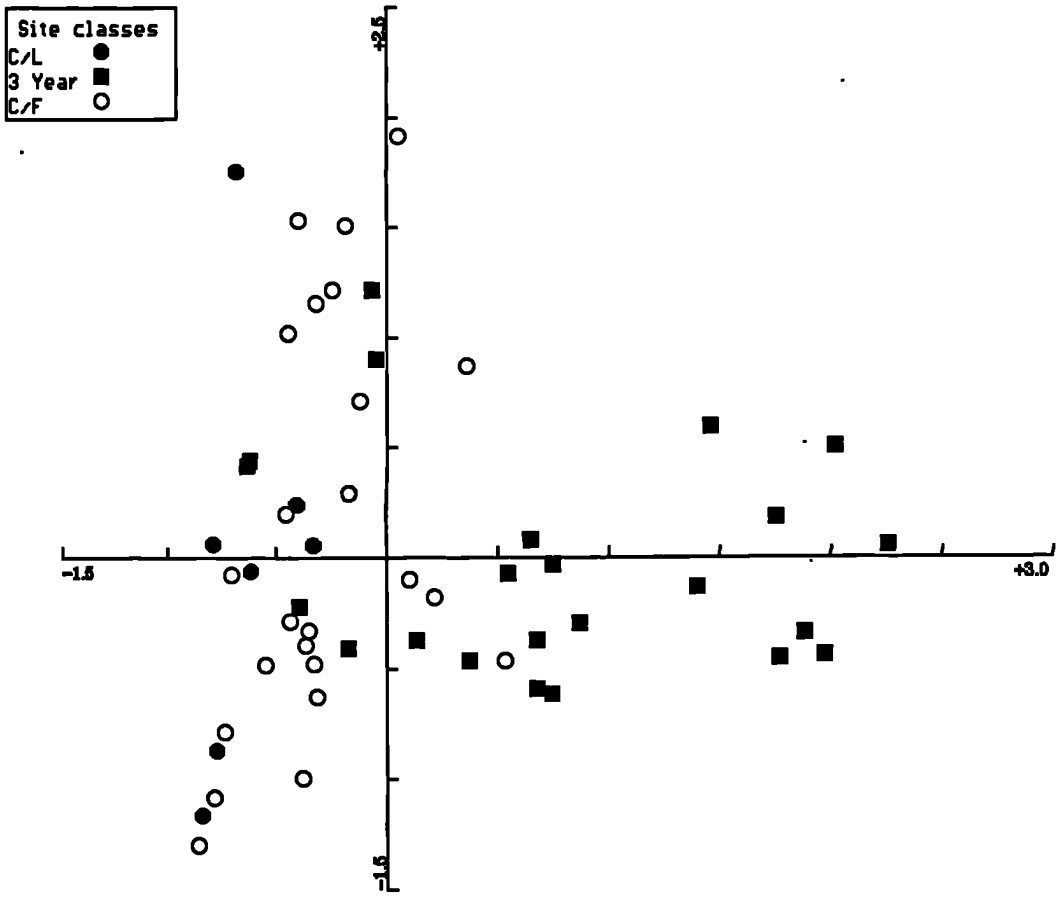


Figure 7.9 CCA of All the Fields using All the External Variables as the Constraining Variables. *Fields Coded According to Crop Rotation Regime (Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime
C/F = Cereal-Fallow;

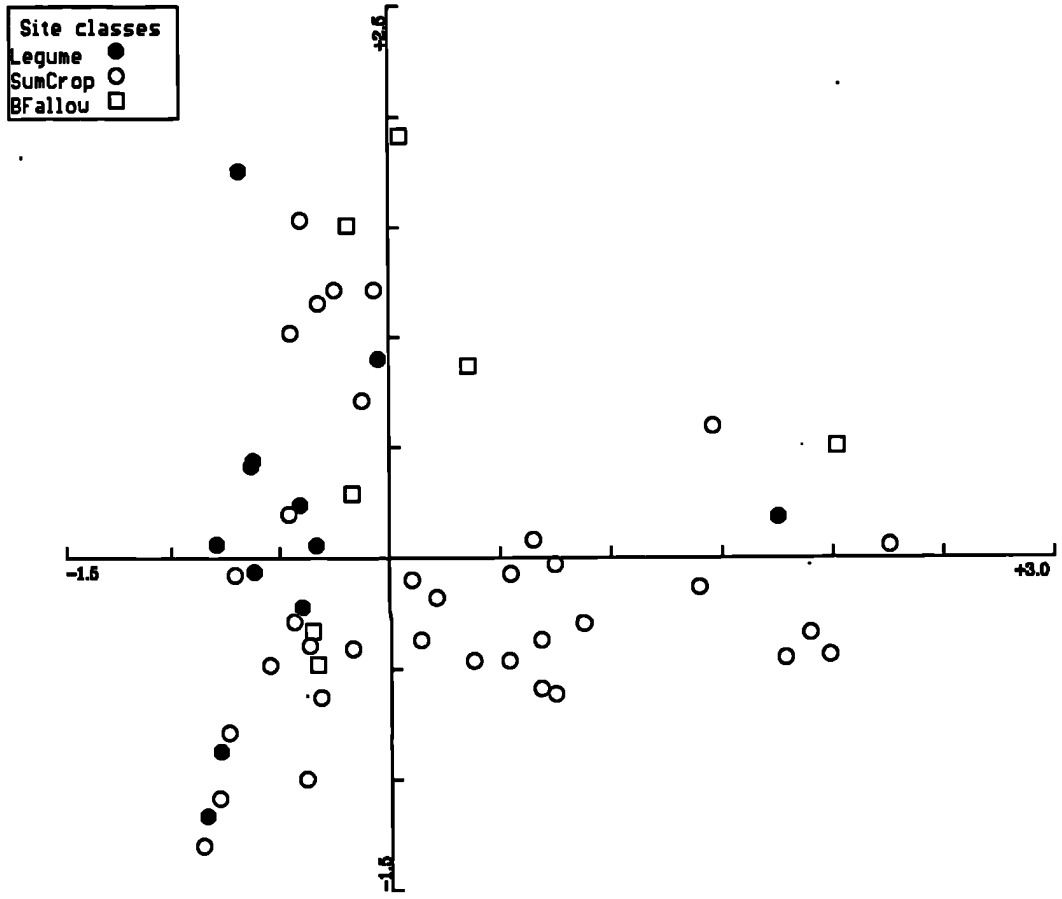


Figure 7.10 CCA of All the Fields using All the External Variables as the Constraining Variables. *Fields Coded According to Previous Year's Crop (Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Summer Crop;
BFallow = Bare Fallow

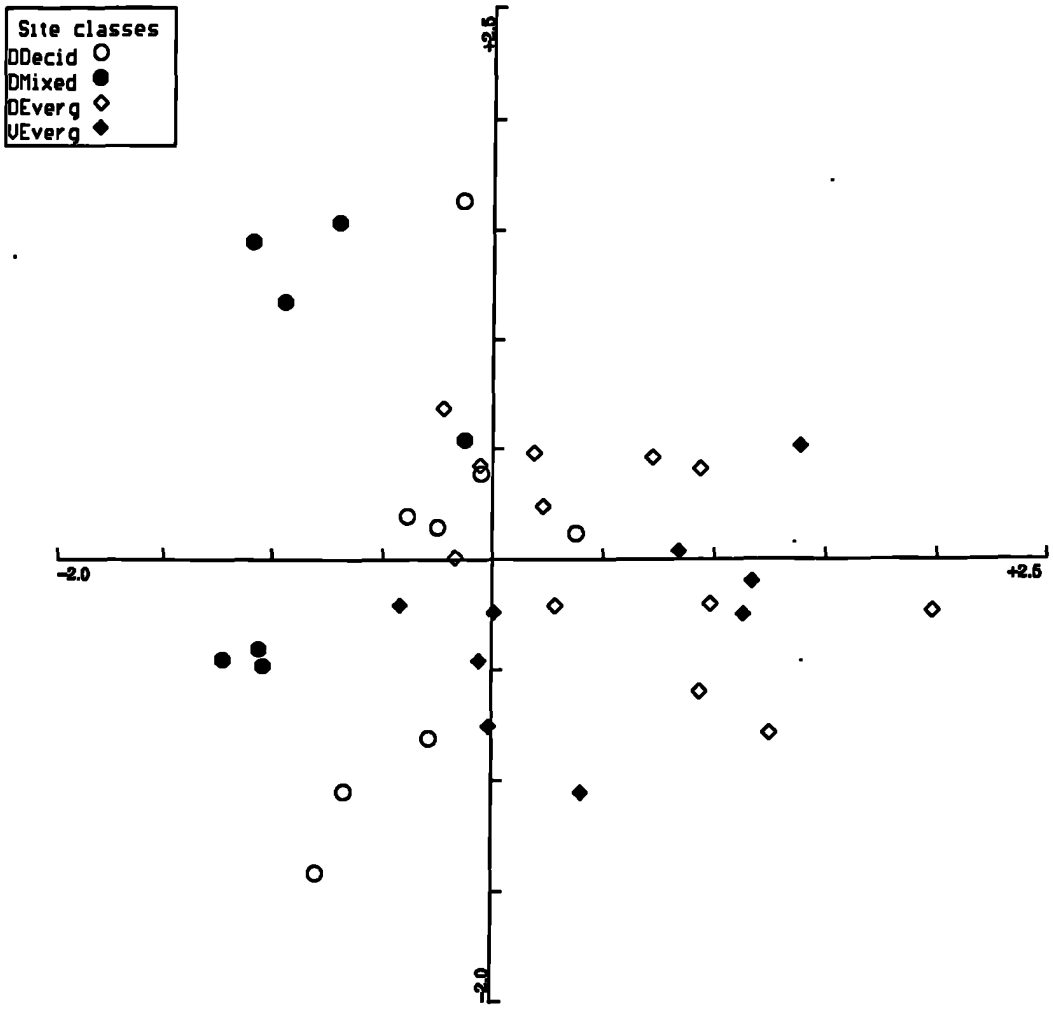


Figure 7.11 CA of Fields in the Hills Alone. *Fields Coded According to Vegetation Zone (Axis I x II).*

Key: DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

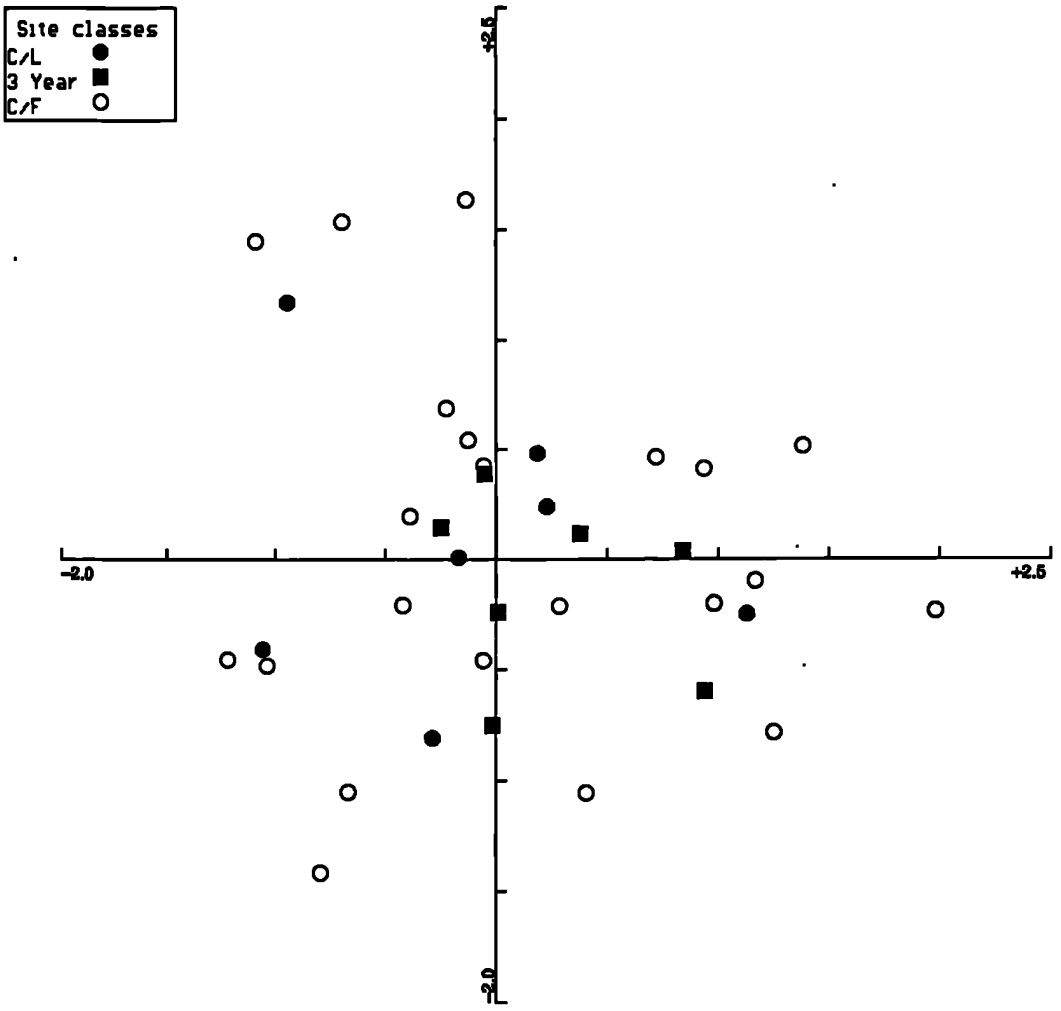


Figure 7.12 CA of Fields in the Hills Alone. *Fields Coded According to Crop Rotation Regime (Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow

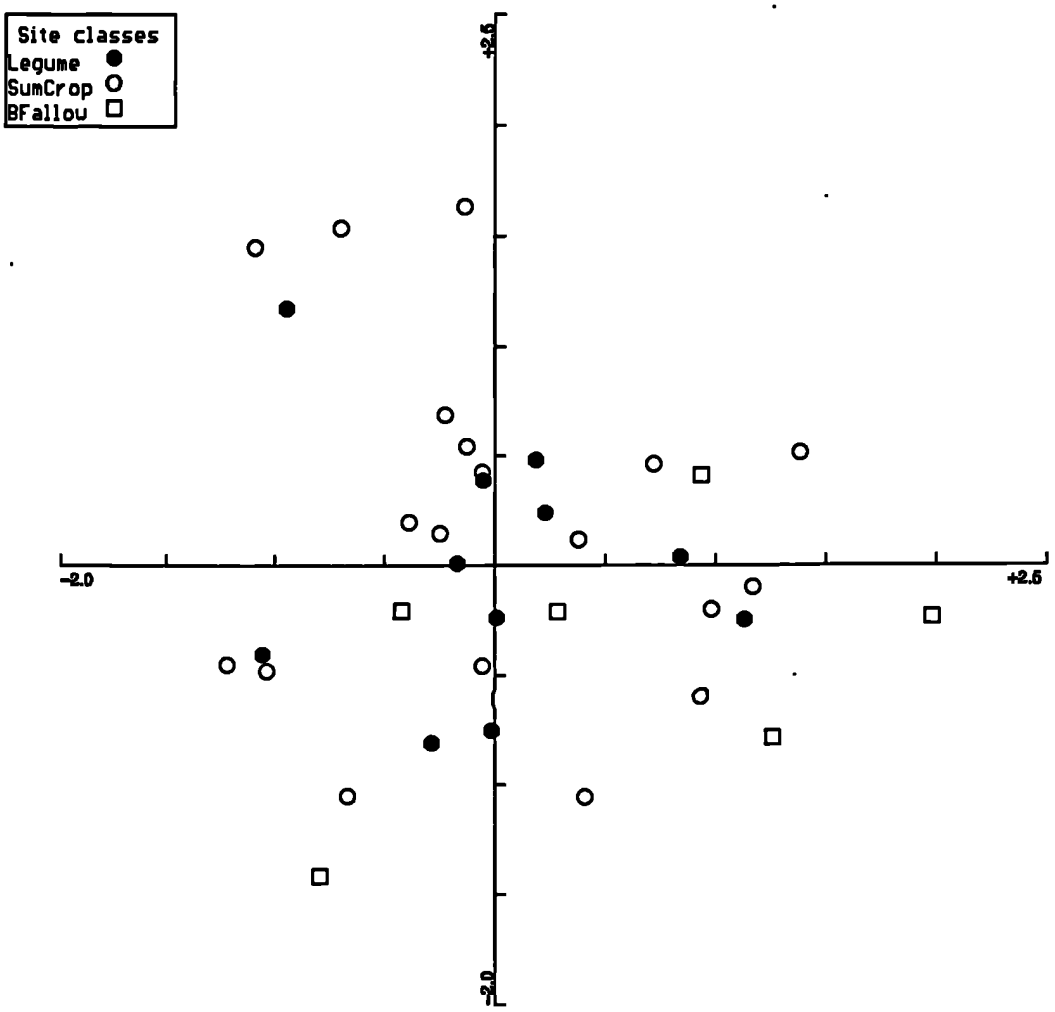


Figure 7.13 CA of Fields in the Hills Alone. *Fields Coded According to Previous Year's Crop (Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Summer Crop; BFallow = Bare Fallow

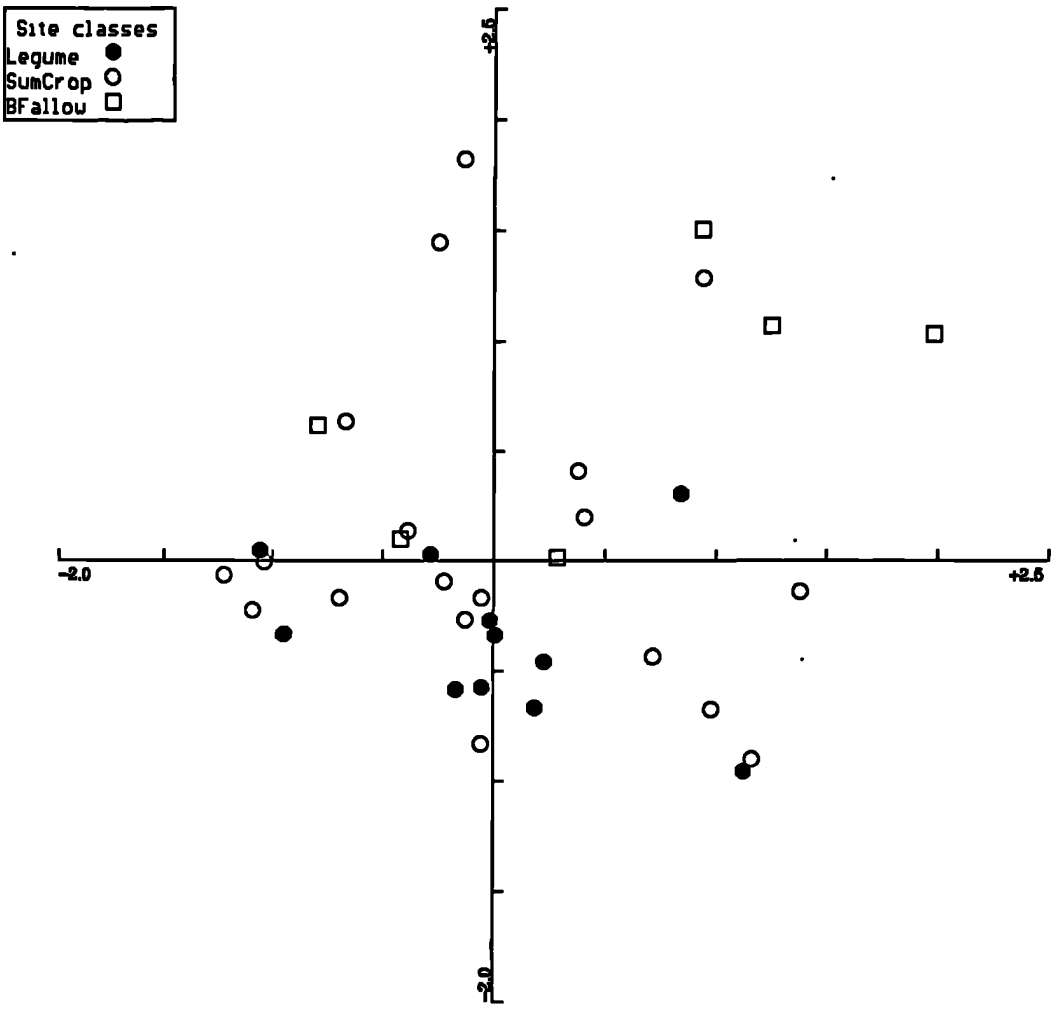


Figure 7.14 CA of Fields in the Hills Alone. *Fields Coded According to Previous Year's Crop (Axis I x III).*

Key: Legume = Legume Crop; SumCrop = Summer Crop; BFallow = Bare Fallow

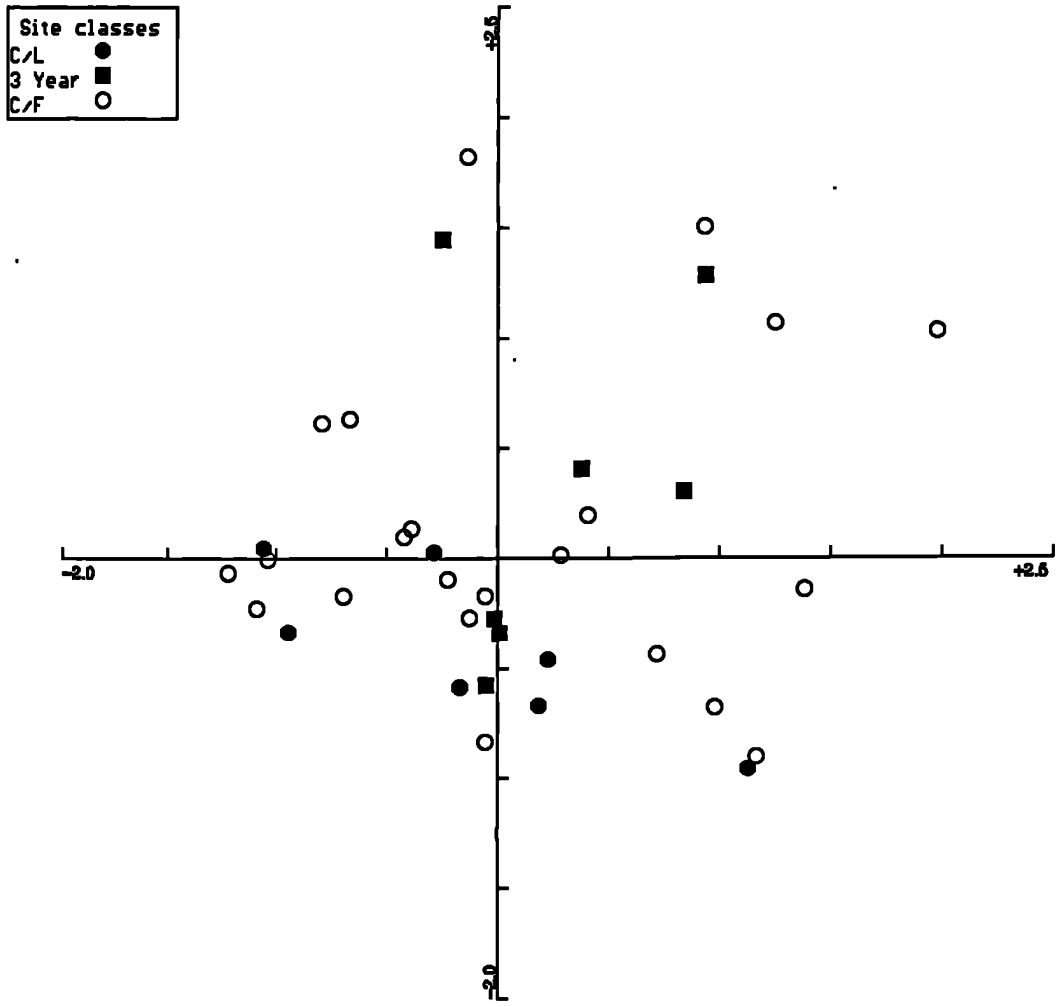


Figure 7.15 CA of Fields in the Hills Alone. *Fields Coded According to Crop Rotation Regime (Axis I x III).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow

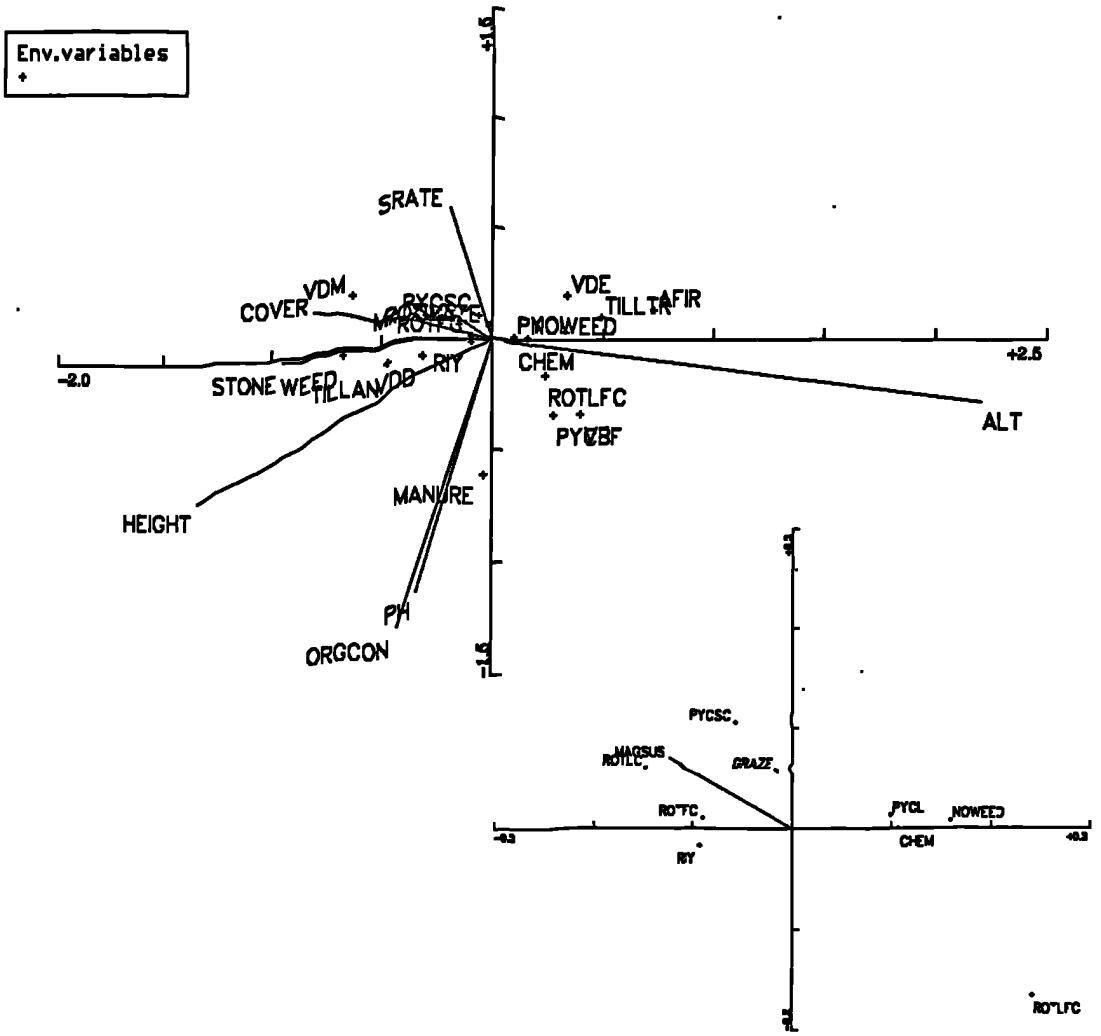


Figure 7.16 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *External Variables Only Plotted - with enlargement of central section (Axis I x II).*

Key: ROTLC = Rotation - *Cereal-Legume*; ROTFC = Rotation - *Cereal-Fallow*; ROTLFC = Rotation - *3 Year Rotation Regime*
PYCBF = Previous Year's Crop - *Bare Fallow*; PYCSC = Previous Year's Crop - *Summer Crop*; PYCL = Previous Year's Crop - *Legume Crop*
AFIR = *Sowing Date - Before Rain*; RIY = *Sowing Date - After Rain*
TILLAN = Animal Tillage; TILLTR = Tractor Tillage; SRATE = Sowing Rate
NOWEED = *No Weeding*; WEED = *Weeding*
GRAZE = Manuring - *Grazing*; MANURE = Manuring - *Dung*; CHEM = Manuring - *Chemical*

HILLS = *Hills*; PLAINS = *Plains*
VPLAIN = Vegetation - *Plains*; VDD = Vegetation - *Degraded Deciduous Forest*; VDM = Vegetation - *Mixed Degraded Forest*; VDE = Vegetation - *Degraded Evergreen Forest*; VE = Vegetation - *Evergreen Forest*
ALT = *Altitude*; STONE = *Stoniness*; ORGCON = *Organic Content*; pH = *pH*; MAGSUS = *Magnetic Susceptibility*; HEIGHT = *Height of Wheat*; COVER = *Cover of Wheat*

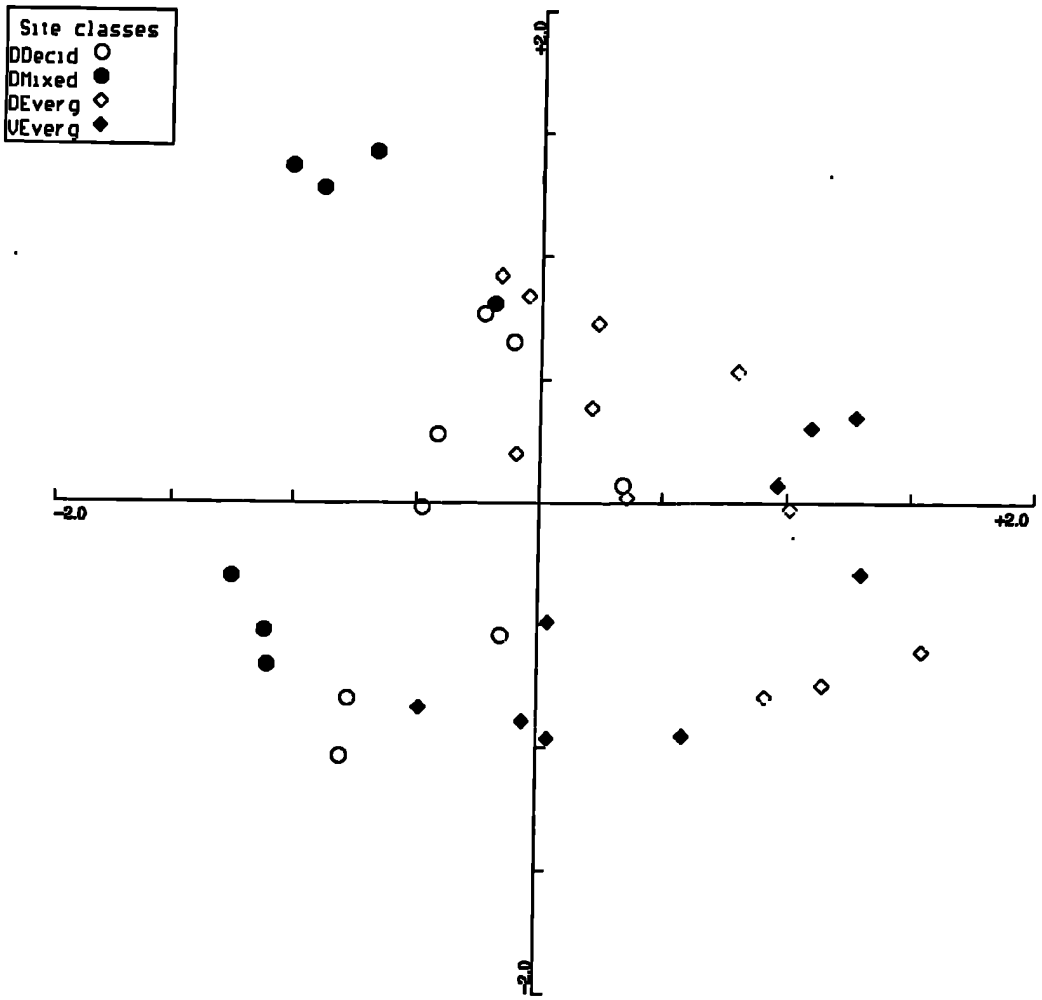


Figure 7.17 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *Fields Coded According to Vegetation Zone (Axis I x II).*

Key: DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

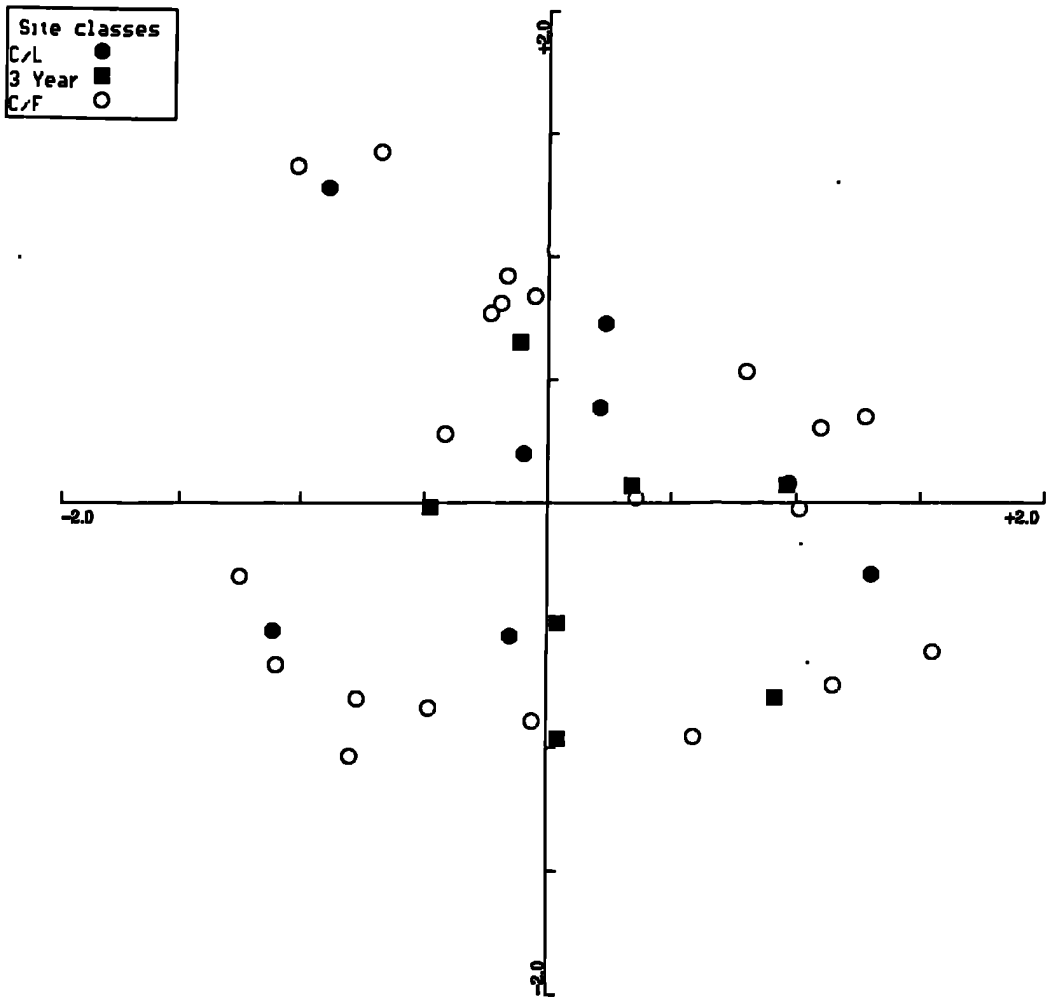


Figure 7.18 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *Fields Coded According to Crop Rotation Regime (Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime;
C/F = Cereal-Fallow

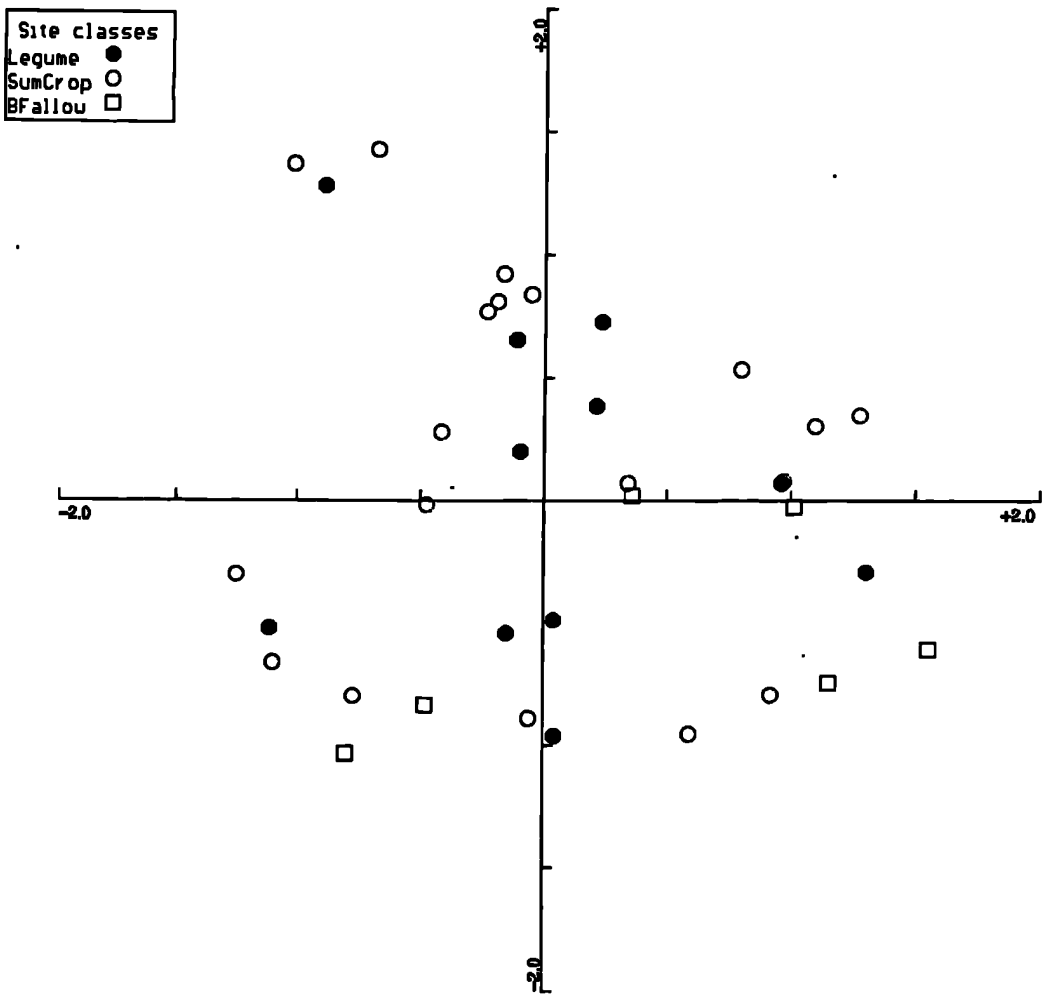


Figure 7.19 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *Fields Coded According to Previous Year's Crop (Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Summer Crop; BFallow = Bare Fallow

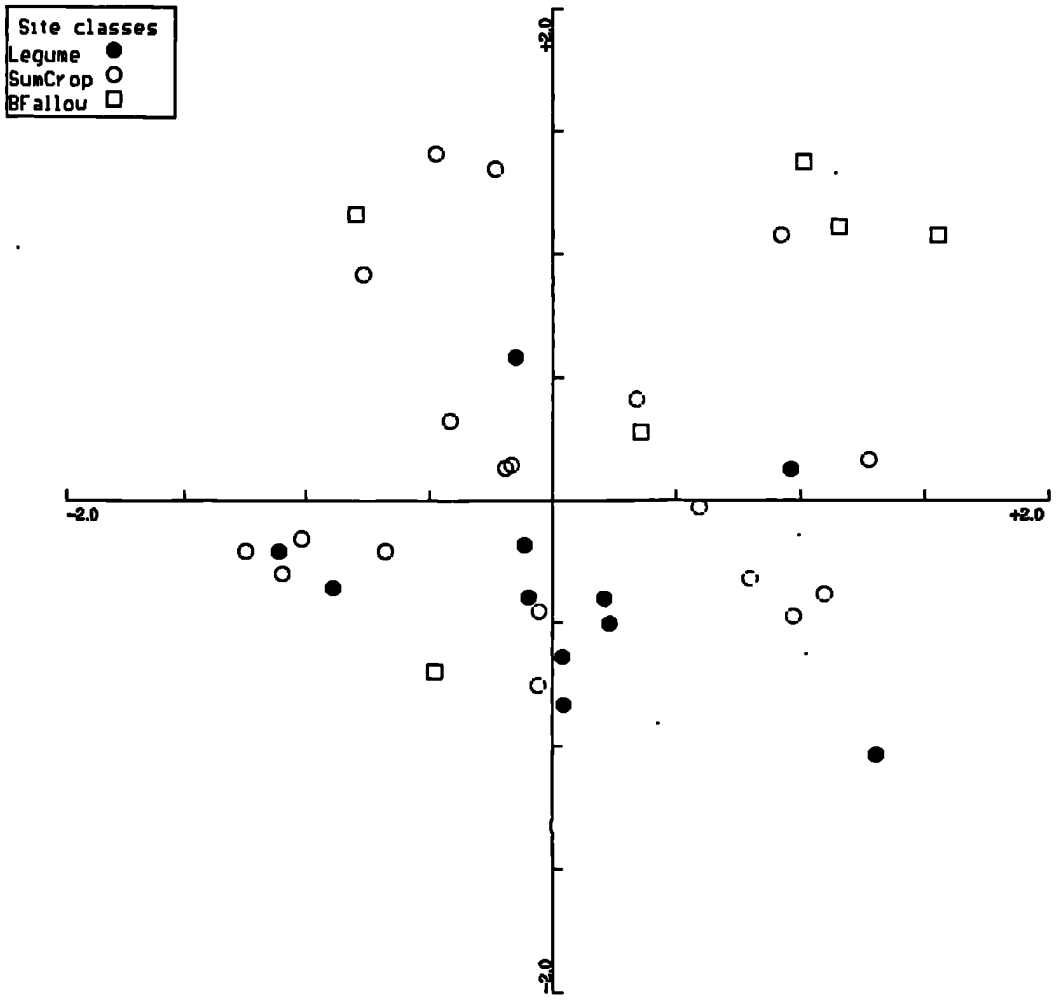


Figure 7.20 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *Fields Coded According to Previous Year's Crop (Axis I x III).*

Key: Legume = Legume Crop; SumCrop = Summer Crop; BFallow = Bare Fallow

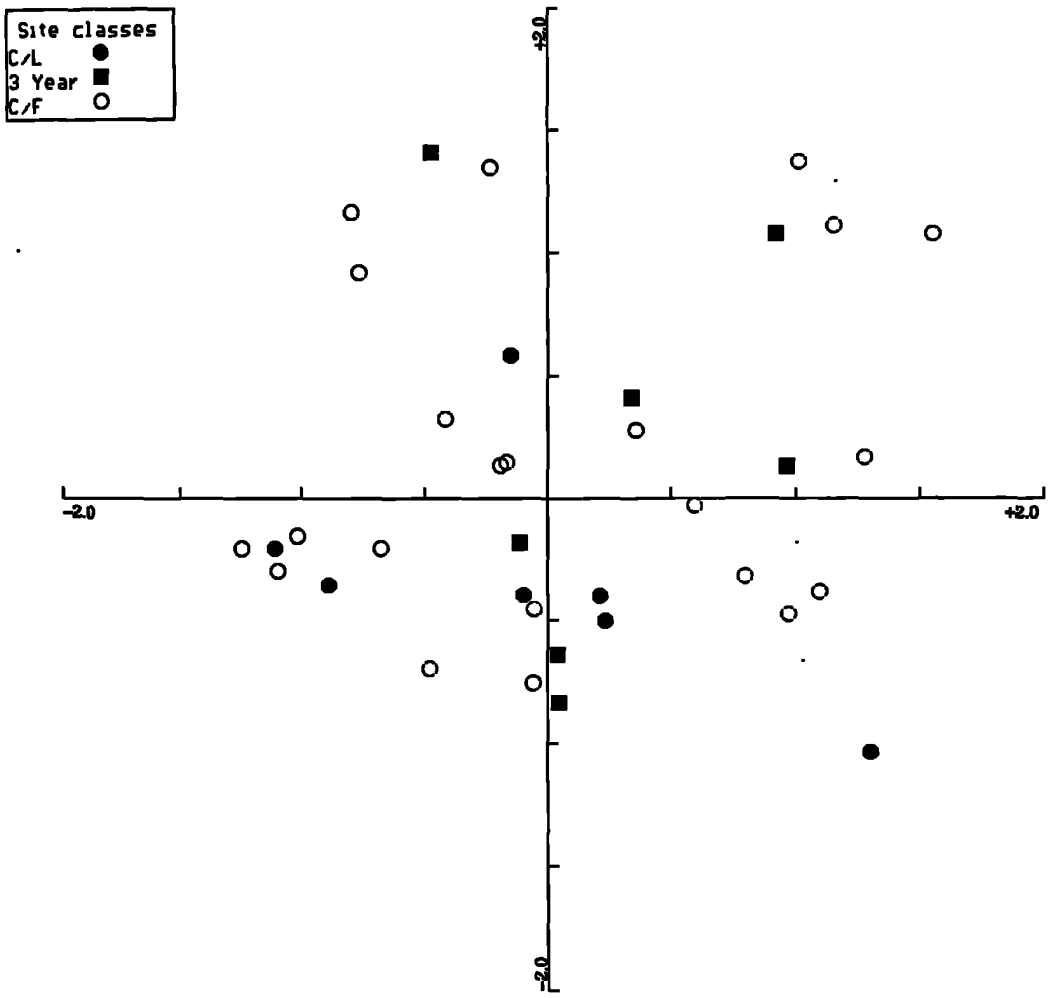


Figure 7.21 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *Fields Coded According to Crop Rotation Regime (Axis I x III).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow

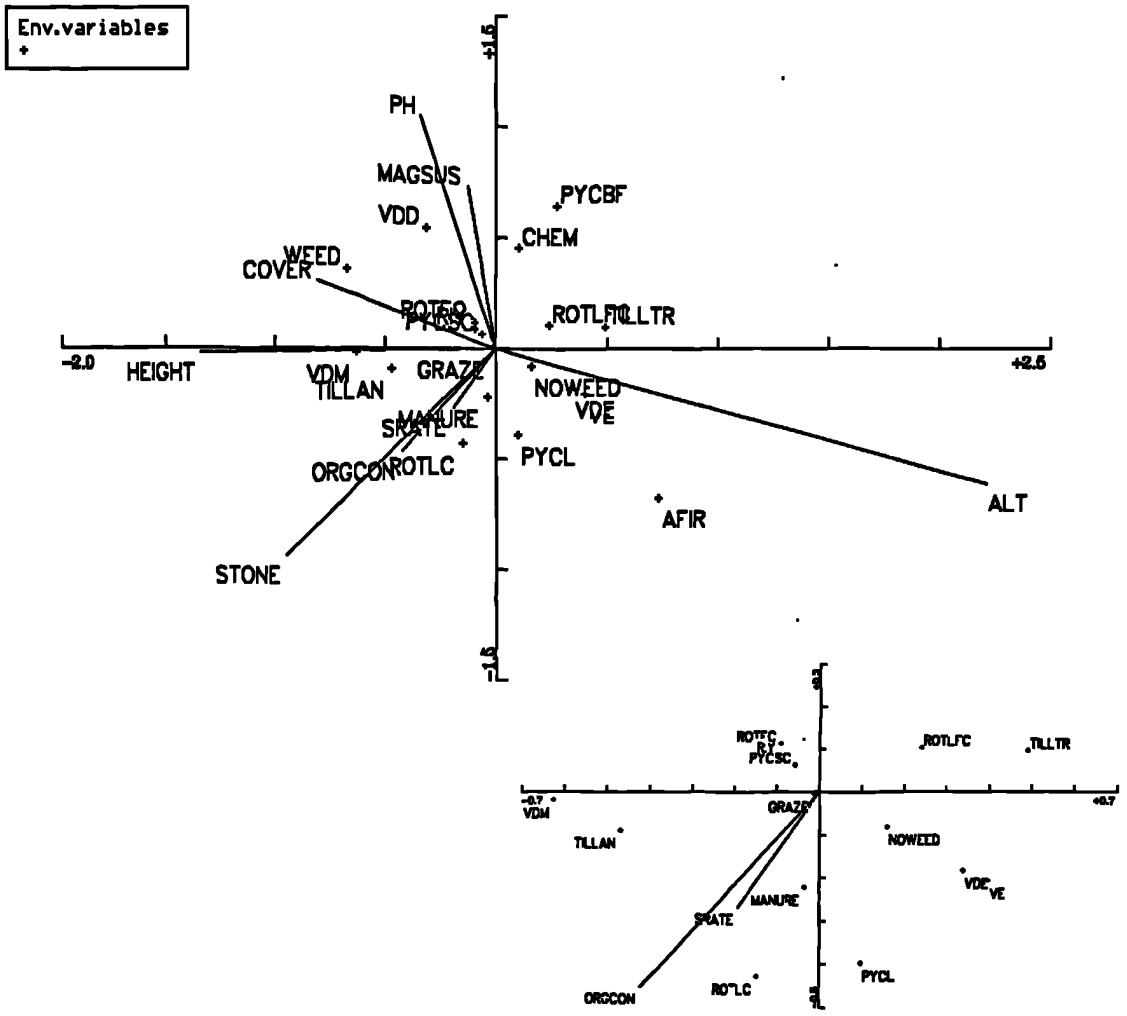


Figure 7.22 CCA of Fields in the Hills Alone using All the External Variables as the Constraining Variables. *External Variables Only Plotted - with enlargement of central section (Axis I x III).*

Key: ROTLC = Rotation - *Cereal-Legume*; ROTFC = Rotation - *Cereal-Fallow*; ROTLFC = Rotation - *3 Year Rotation Regime*
PYCBI = Previous Year's Crop - *Bare Fallow*; PYCSC = Previous Year's Crop - *Summer Crop*; PYCL = Previous Year's Crop - *Legume Crop*
AFIR = *Sowing Date - Before Rain*; RIY = *Sowing Date - After Rain*
TILLAN = Animal Tillage; TILLTR = Tractor Tillage; SRATE = Sowing Rate
NOWEED = *No Weeding*; WEED = *Weeding*
GRAZE = Manuring - *Grazing*; MANURE = Manuring - *Dung*; CHEM = Manuring - *Chemical*

HILLS = *Hills*; PLAINS = *Plains*
VPLAIN = Vegetation - *Plains*; VDD = Vegetation - *Degraded Deciduous Forest*; VDM = Vegetation - *Mixed Degraded Forest*; VDE = Vegetation - *Degraded Evergreen Forest*; VE = Vegetation - *Evergreen Forest*
ALT = *Altitude*; STONE = *Stoniness*; ORGCON = *Organic Content*; pH = *pH*; MAGSUS = *Magnetic Susceptibility*; HEIGHT = *Height of Wheat*; COVER = *Cover of Wheat*

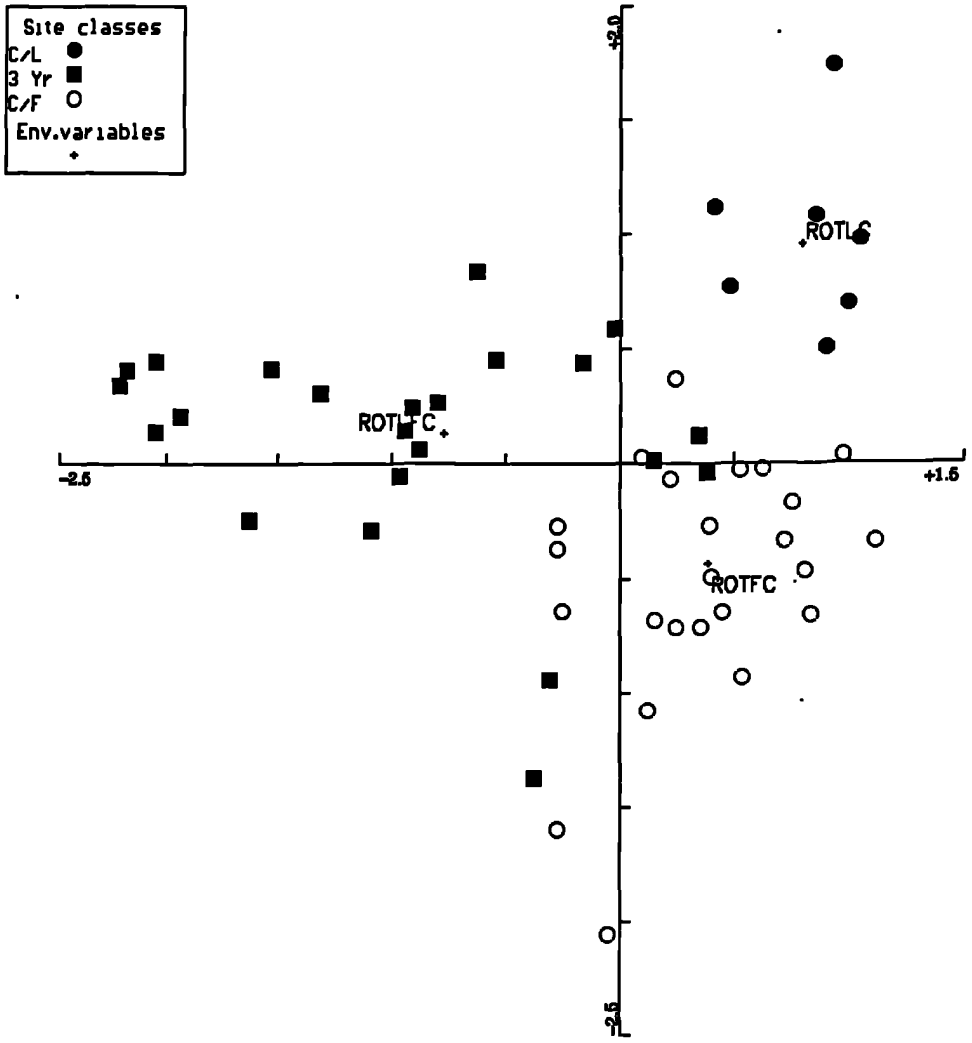


Figure 7.23 CCA of All Fields using Crop Rotation Regime (cereal-legume, cereal-fallow and three year rotation regimes) as the Constraining Variable *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime;
C/F = Cereal-Fallow
ROTLFC = 3 Year Rotation; ROTFC = Cereal-Fallow;
ROTLC = Cereal-Legume

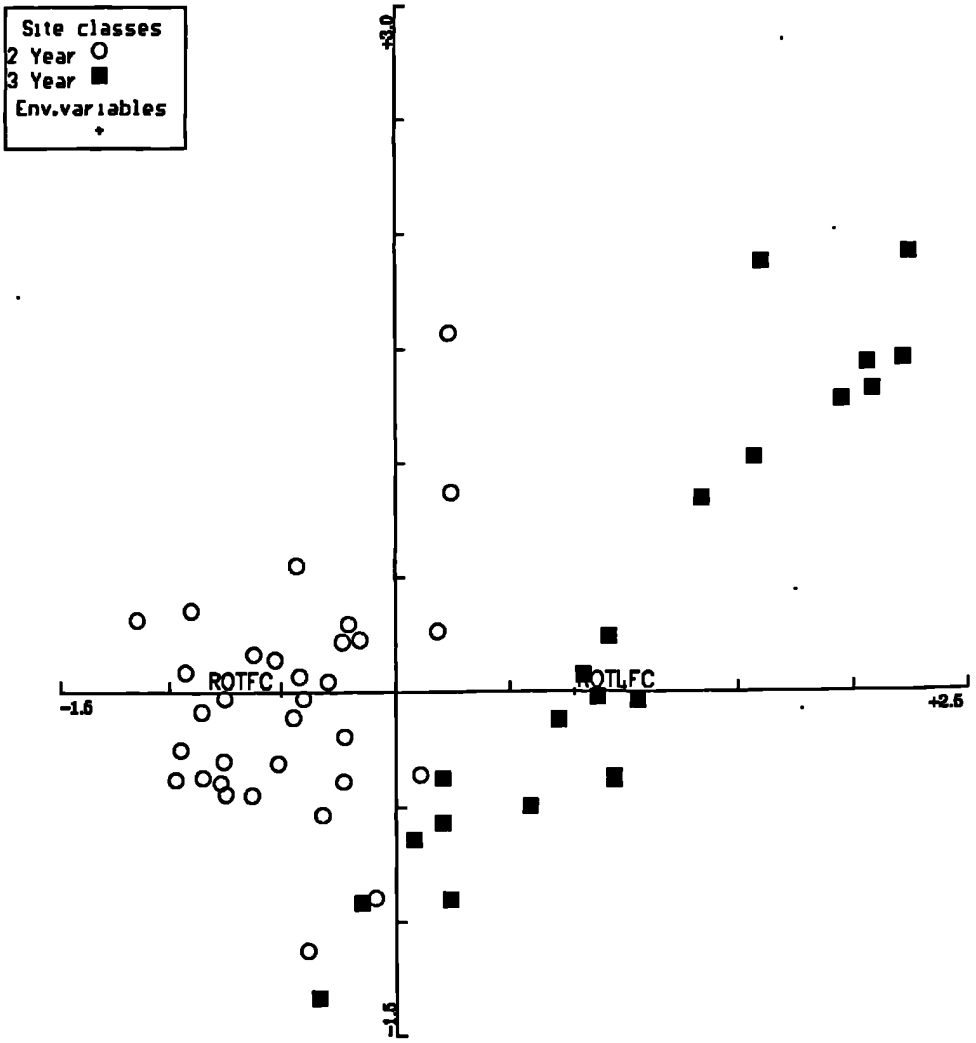


Figure 7.24 CCA of All Fields using Crop Rotation Regime (2 and 3 year rotation regimes) as the Constraining Variable *(Axis I x II).*

Key: 2 Year = 2 Year Regimes (cereal-fallow & cereal-legume);

3 Year = 3 Year Regime

ROTFC = 2 Year Regimes; ROTLFC = 3 Year Regime

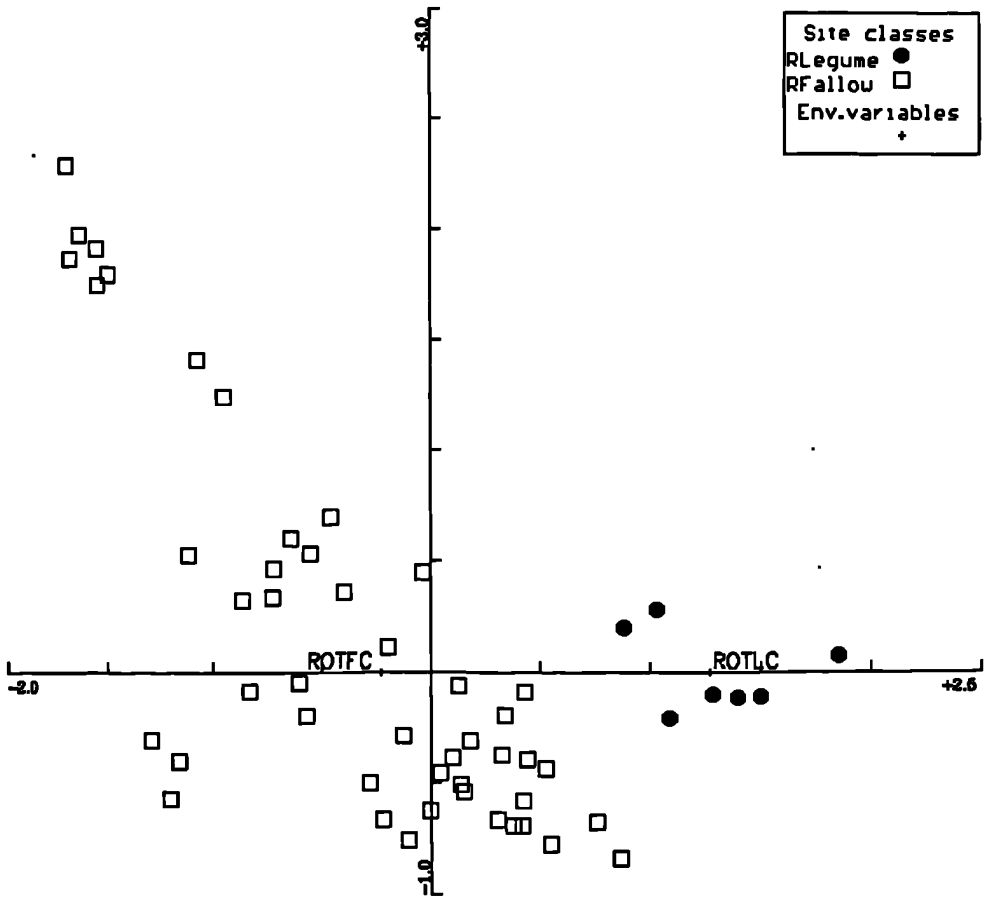


Figure 7.25 CCA of All Fields using Crop Rotation Regime (cereal-legume and regimes including a fallow year) as the Constraining Variable *(Axis I x II).*

Key: RLegume = Cereal-Legume;

RFallow = Rotation Regimes including a Fallow Year

ROTFC = Regimes including a Fallow Year;

ROTLC = Cereal-Legume

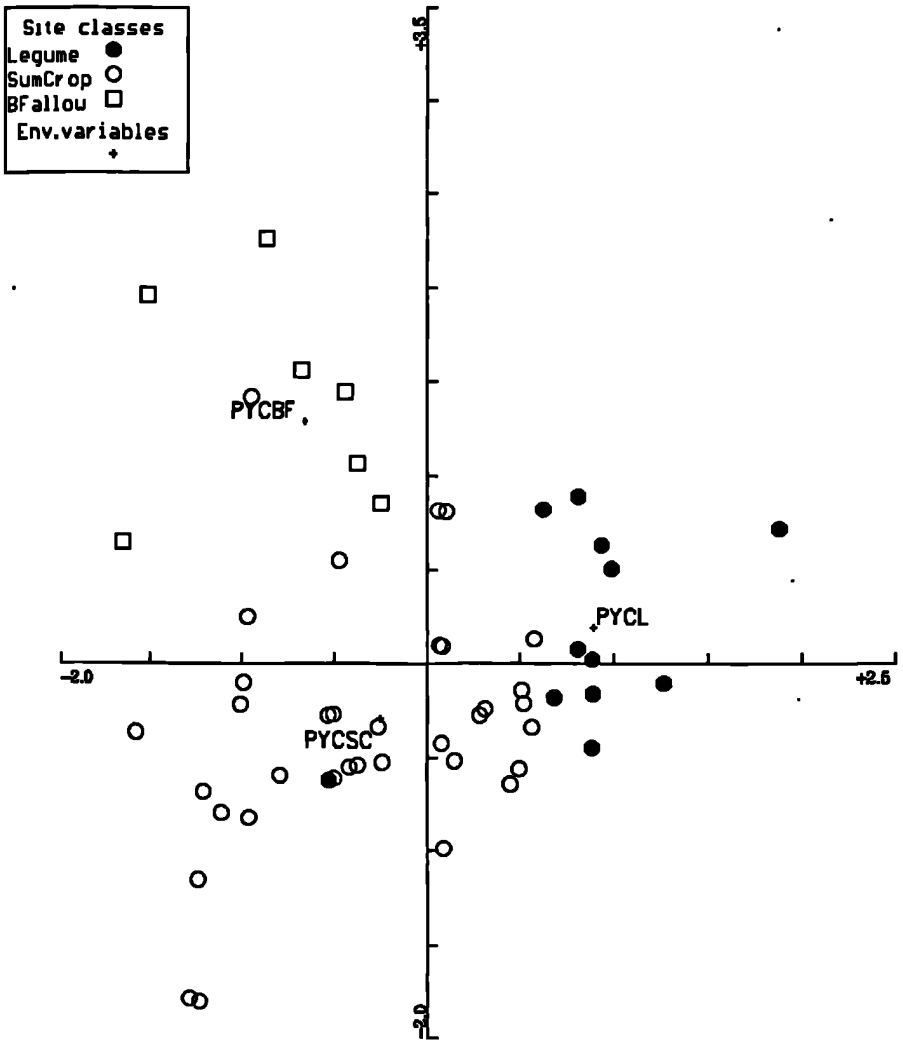


Figure 7.26 CCA of All Fields using Previous Year's Crop (legume crop, bare fallow and fallow with summer crops) as the Constraining Variable *(Axis I x II)*.

Key: Legume = Legume Crop; SumCrop = Summer Crop;

BFallow = Bare Fallow

PYCBF = Bare Fallow; PYCL = Legume Crop;

PYCSC = Summer Crop

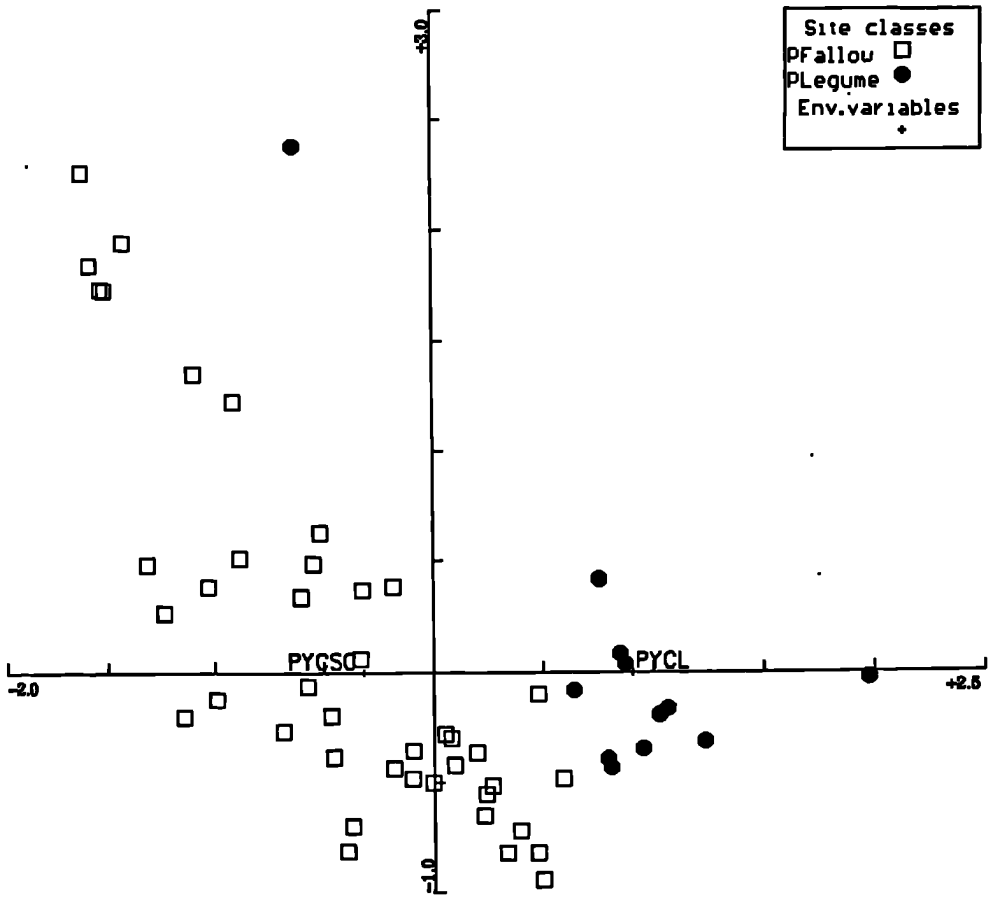


Figure 7.27 CCA of All the Fields using Previous Year's Crop as the Constraining Variable (legume crops and fallow)*(Axis I x II).*

Key: PLegume = Legume Crop; PFallow = Fallow

PYCSC = Fallow; PYCL = Legume Crop

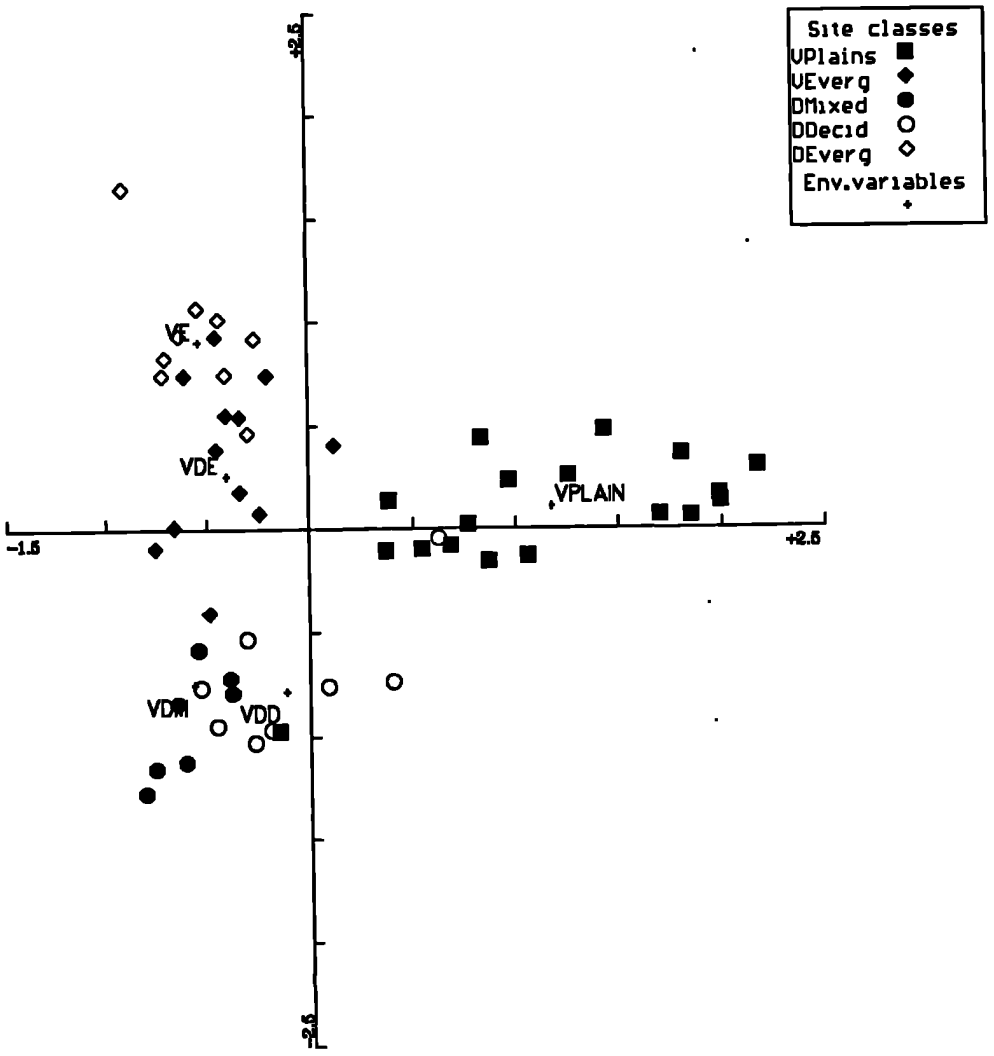


Figure 7.28 CCA of All the Fields using Vegetation Zone as the Constraining Variable *(Axis I x II).*

Key: VPlains = Plains Vegetation Zone; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

VPLAIN = Plains Vegetation Zone; VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VE = Evergreen Forest

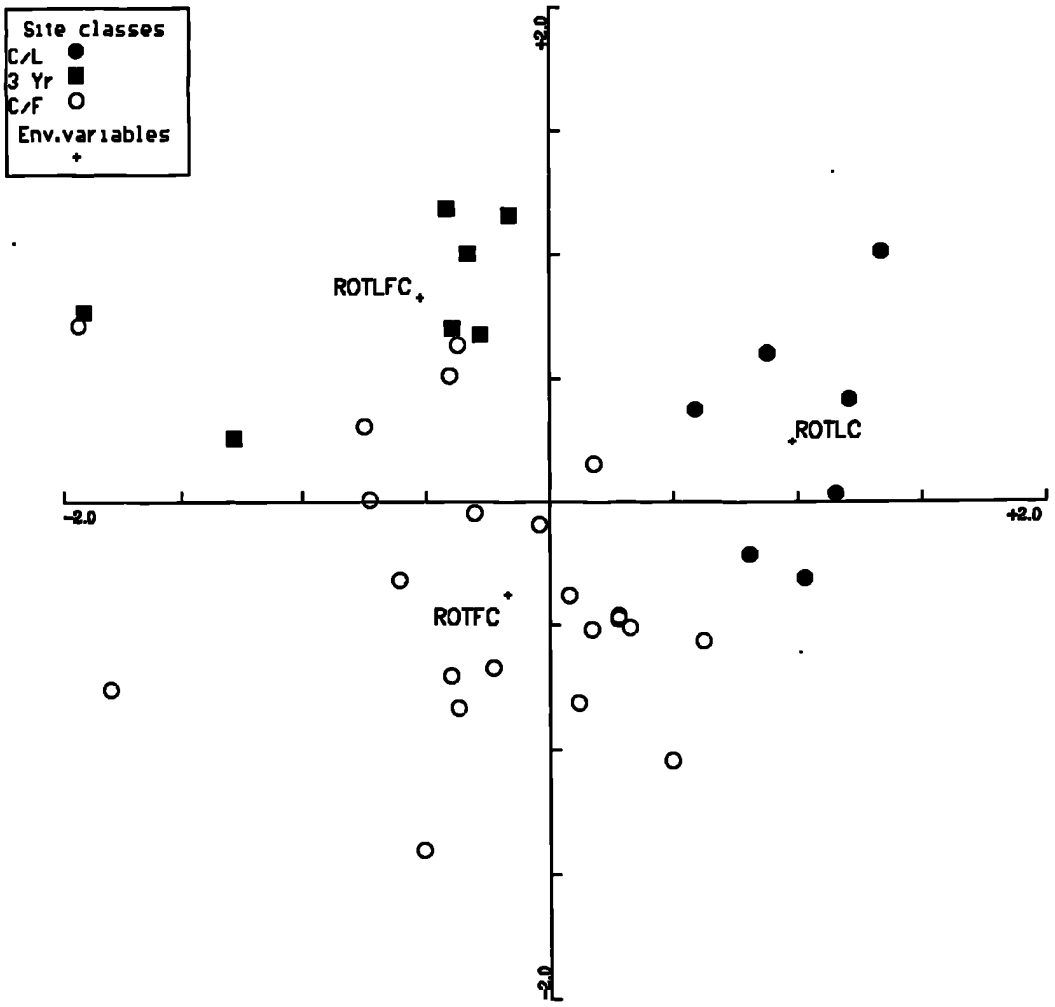


Figure 7.29 CCA of Fields in the Hills Alone using Crop Rotation Regime (cereal-fallow, cereal-fallow and three year rotation regimes) as the Constraining Variable *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime;
C/F = Cereal-Fallow
ROTLFC = 3 Year Rotation; ROTFC = Cereal-Fallow;
ROTLC = Cereal-Legume

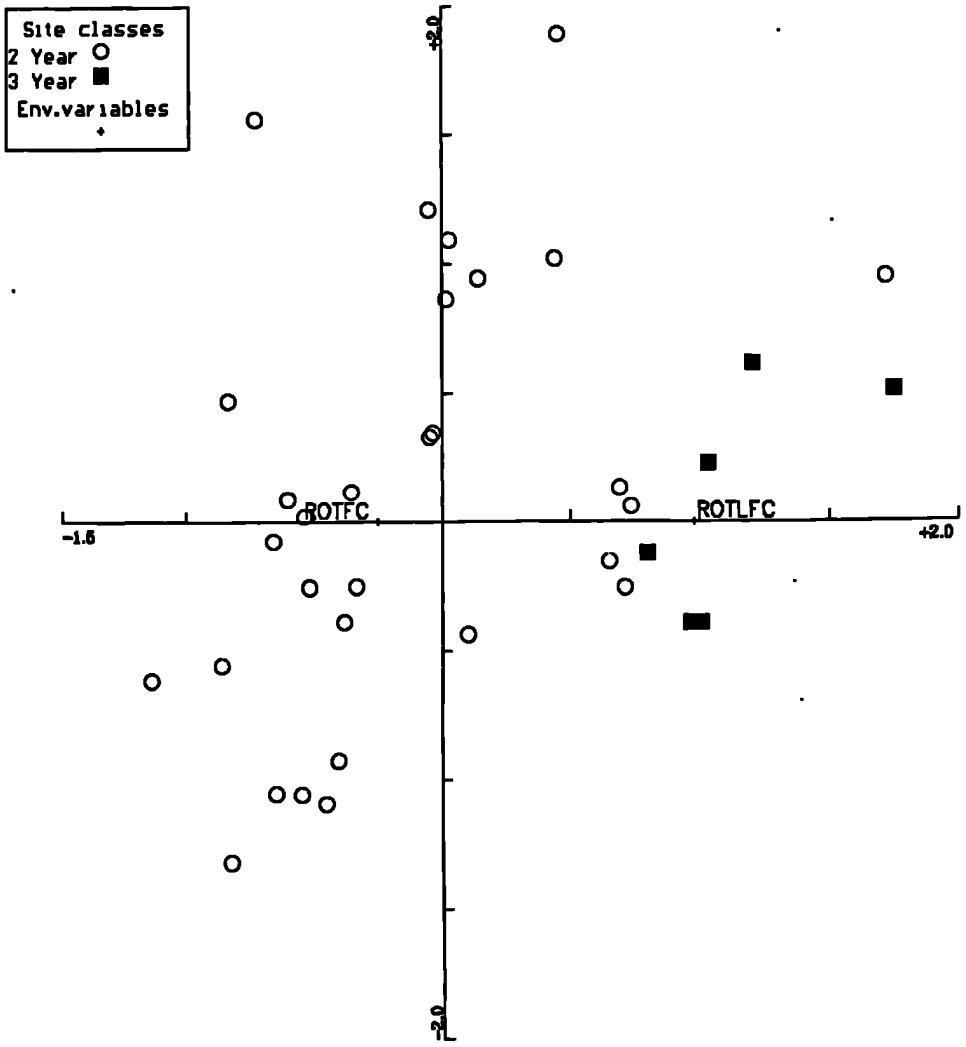


Figure 7.30 CCA of Fields in the Hills Alone using Crop Rotation Regime (2 and 3 year rotation regimes) as the Constraining Variable *(Axis I x II).*

Key: 2 Year = 2 Year Regimes (cereal-fallow & cereal-legume);

3 Year = 3 Year Regime

ROTFC = 2 Year Regimes; ROTLFC = 3 Year Regime

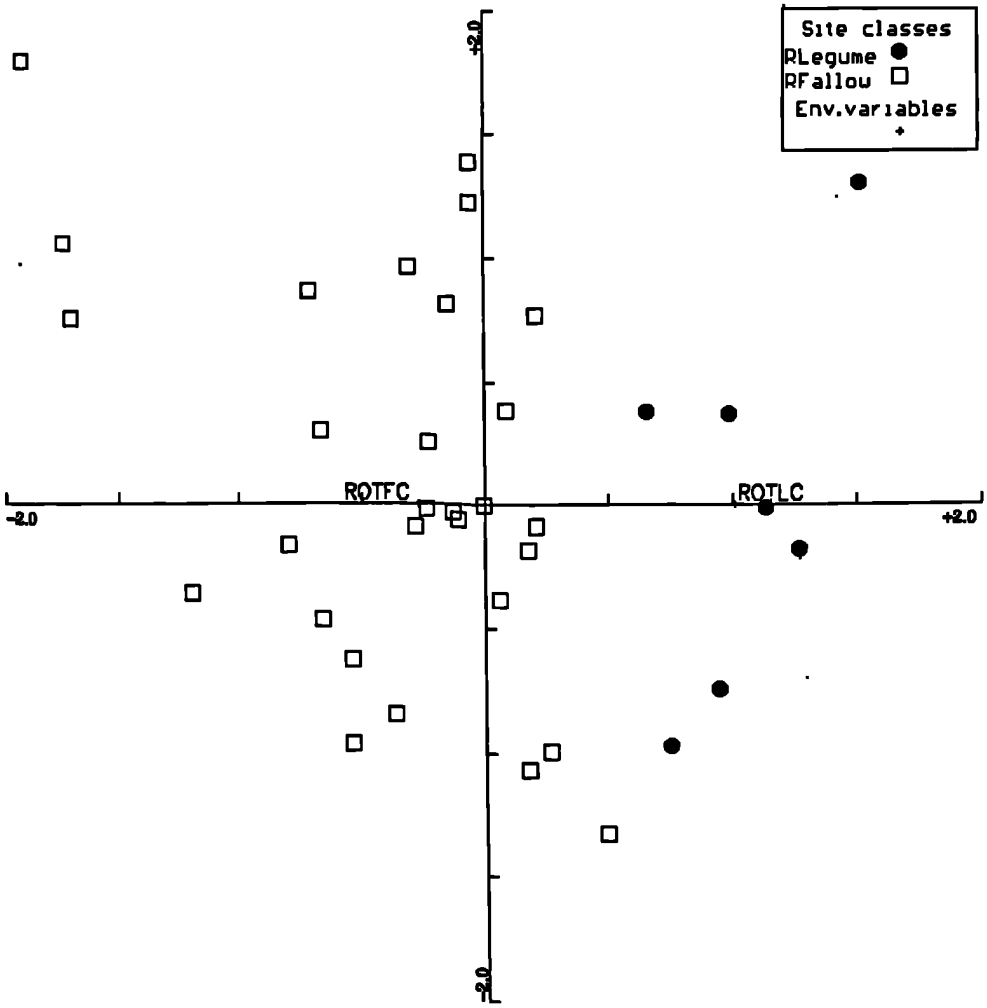


Figure 7.31 CCA of Fields in the Hills Alone using Crop Rotation Regime (cereal-legume and regimes including fallow) as the Constraining Variable *(Axis I x II).*

Key: RLegume = Cereal-Legume;

RFallow = Rotation Regimes including a Fallow Year

ROTFC = Regimes including a Fallow Year;

ROTLC = Cereal-Legume

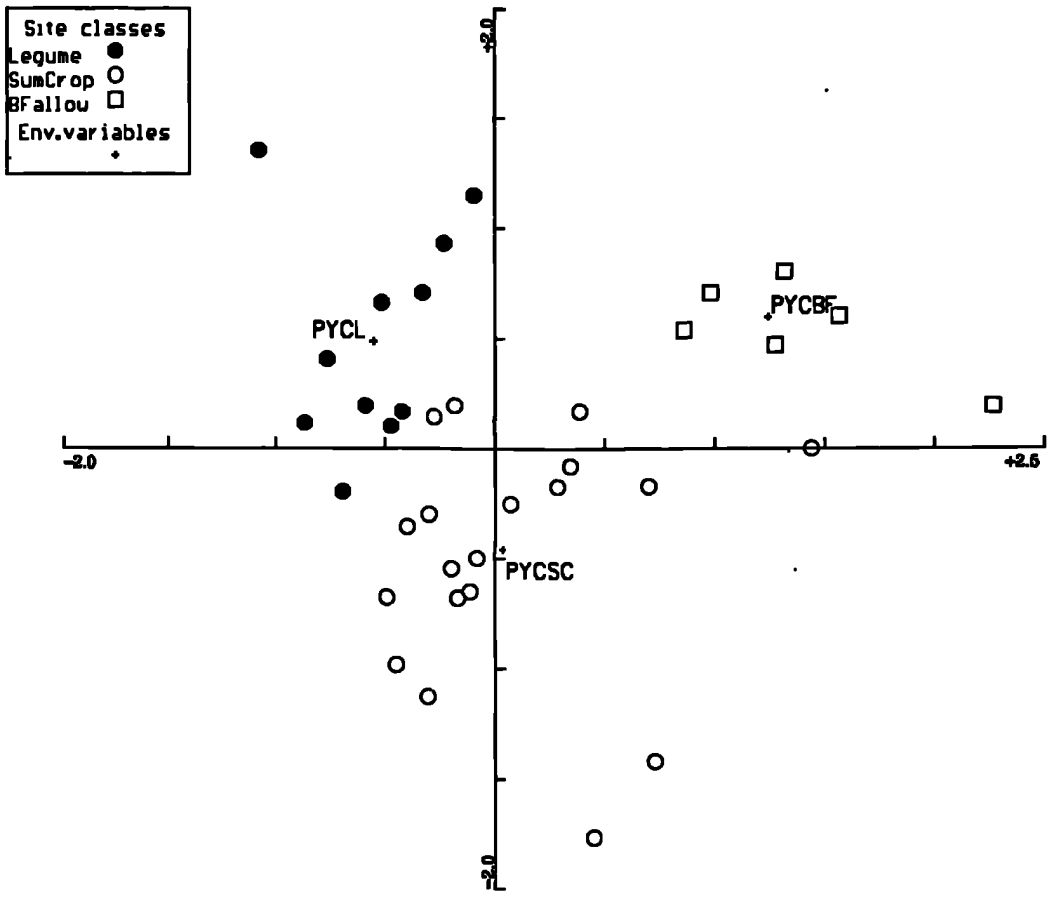


Figure 7.32 CCA of Fields in the Hills Alone using Previous Year's Crop (legume crop, bare fallow, fallow with summer crops) as the Constraining Variable *(Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Summer Crop;

BFallow = Bare Fallow

PYCBF = Bare Fallow; PYCL = Legume Crop;

PYCSC = Summer Crop

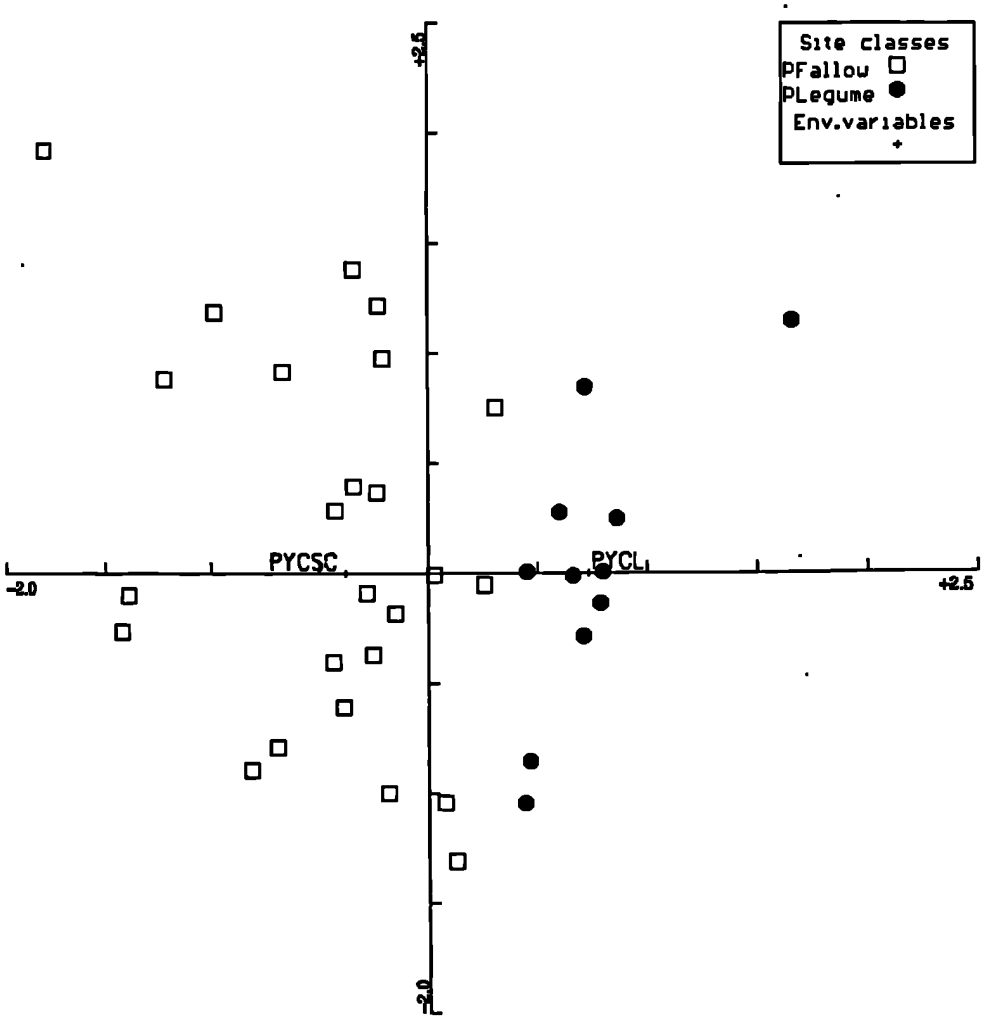


Figure 7.33 CCA of Fields in the Hills Alone using Previous Year's Crop (legume crop and fallow) as the Constraining Variable *(Axis I x II).*

Key: PLegume = Legume Crop; PFallow = Fallow

PYCSC = Fallow; PYCL = Legume Crop

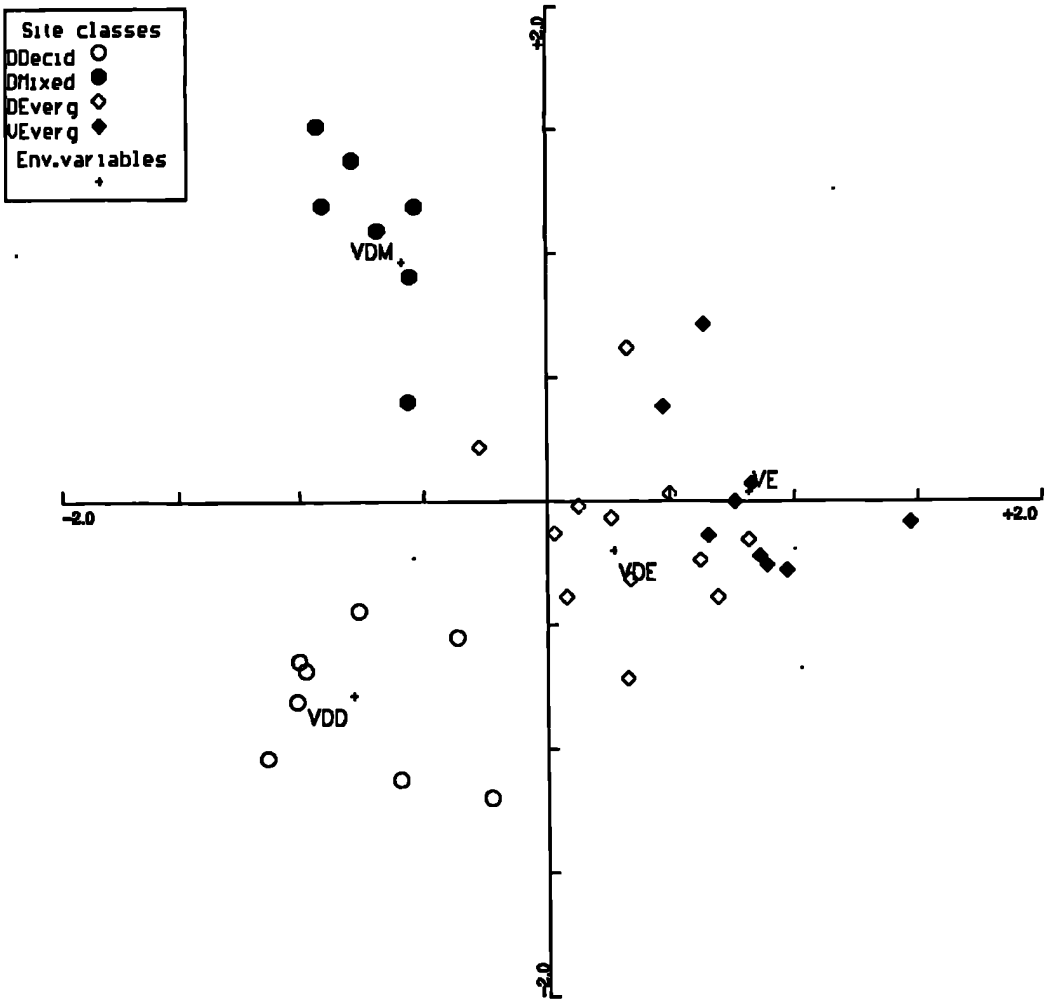


Figure 7.34 CCA of Fields in the Hills Alone using Vegetation Zone as the Constraining Variable *(Axis I x II).*

Key: DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

Key: VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VE = Evergreen Forest

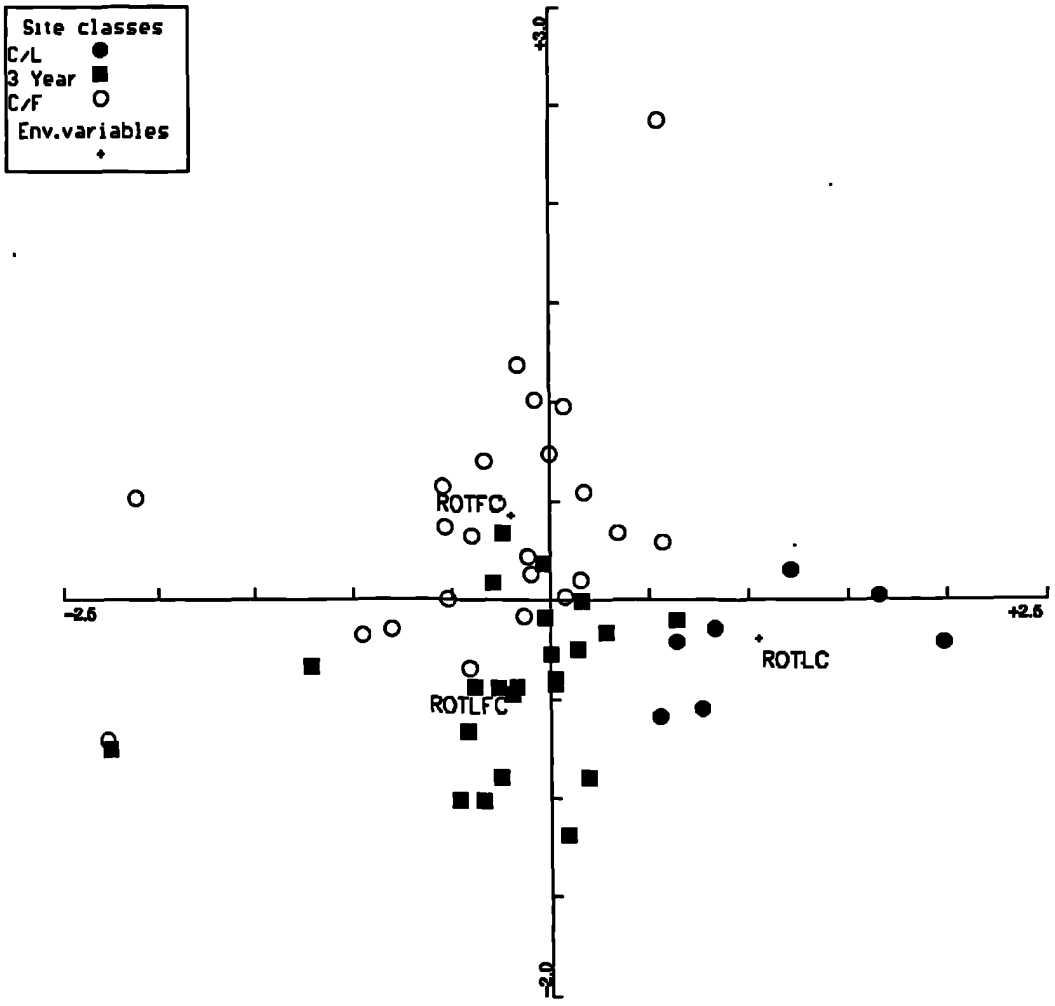


Figure 7.35 PCCA of All Fields using Crop Rotation Regime (cereal-legume, cereal-fallow and three year rotation regimes) as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime;
C/F = Cereal-Fallow
ROTLFC = 3 Year Rotation; ROTFC = Cereal-Fallow;
ROTLC = Cereal-Legume

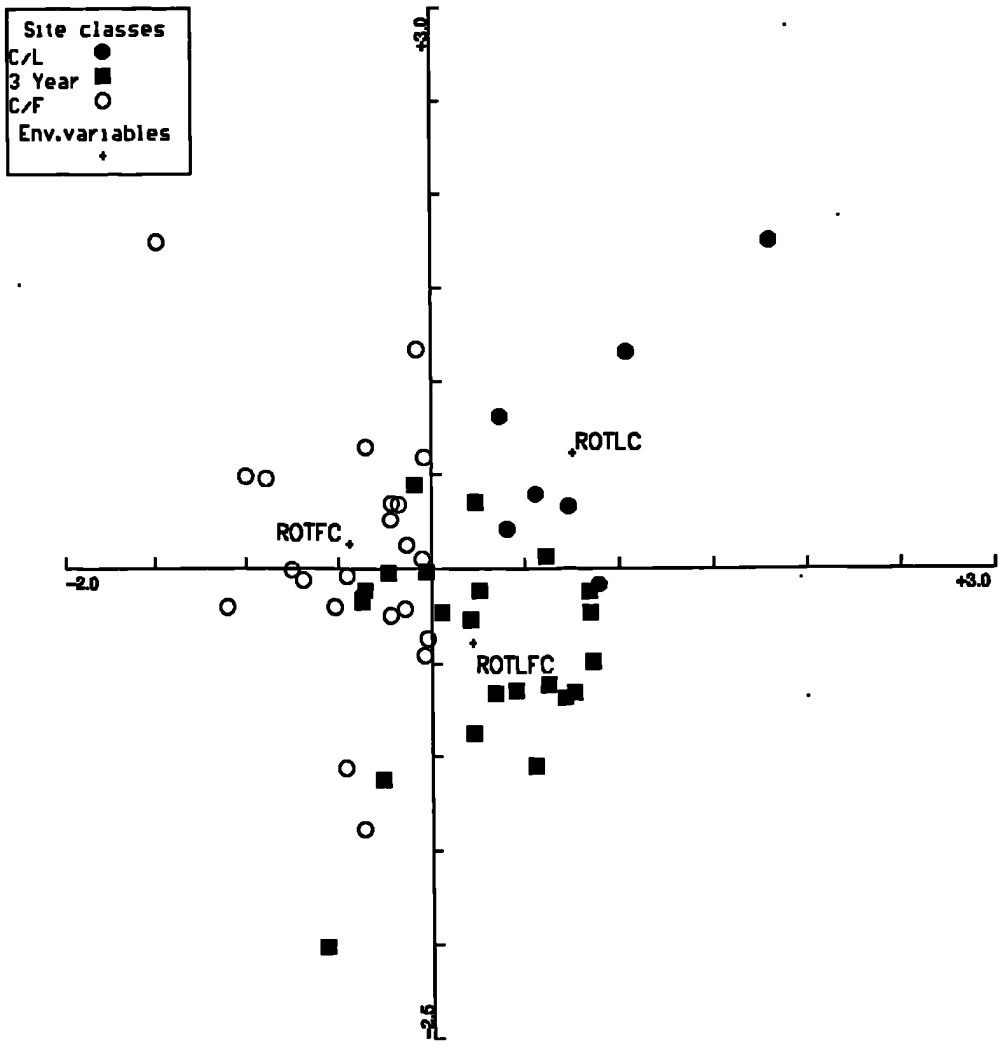


Figure 7.36 PCCA of All Fields using Crop Rotation Regime (cereal-legume, cereal-fallow and three year rotation regimes) as the Constraining Variable and Vegetation Zone, Altitude, Soil Stoniness, pH, and Organic Content as Co-variables *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime;
C/F = Cereal-Fallow
ROTLFC = 3 Year Rotation; ROTFC = Cereal-Fallow;
ROTLC = Cereal-Legume

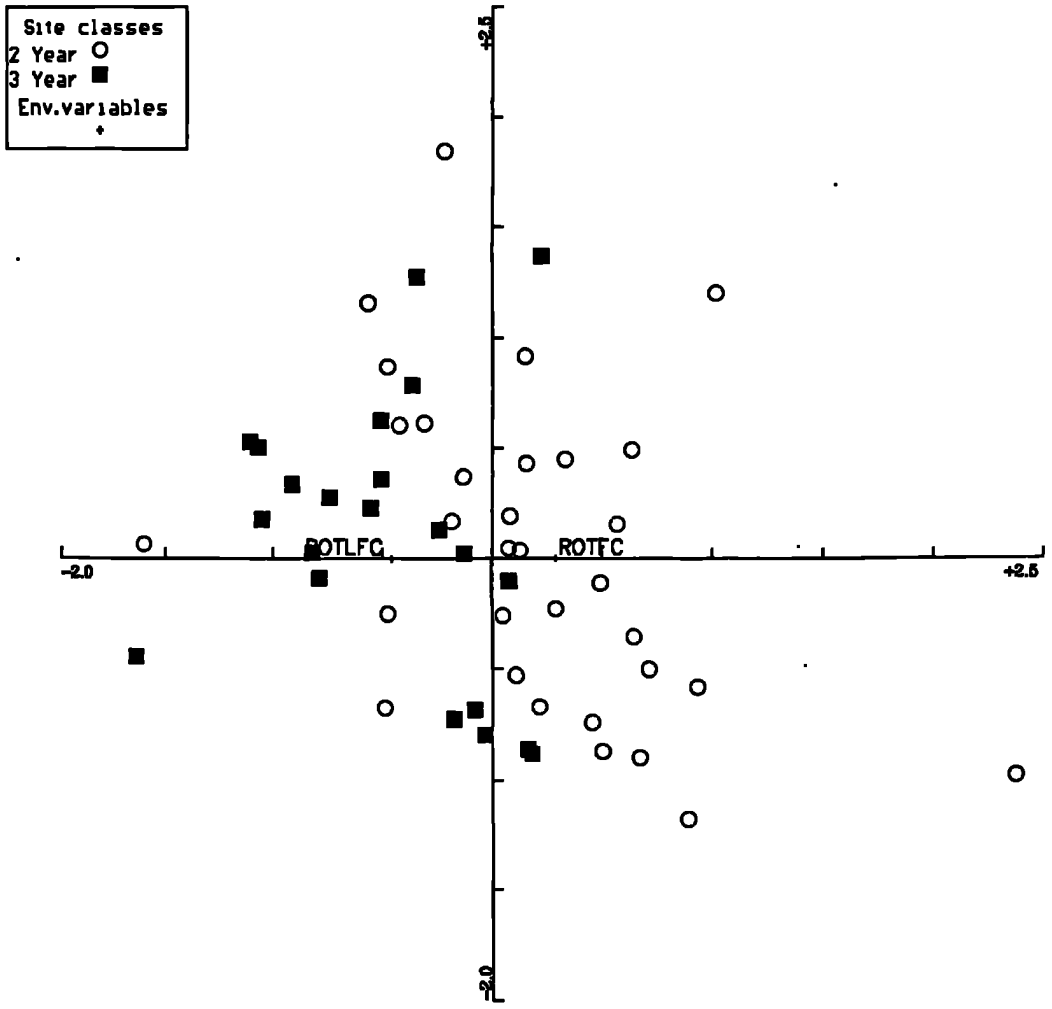


Figure 7.37 PCCA of All Fields using Crop Rotation Regime (2 and 3 year rotation regimes) as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: 2 Year = 2 Year Regimes (cereal-fallow & cereal-legume);

3 Year = 3 Year Regime

ROTFC = 2 Year Regimes; ROTLFC = 3 Year Regime

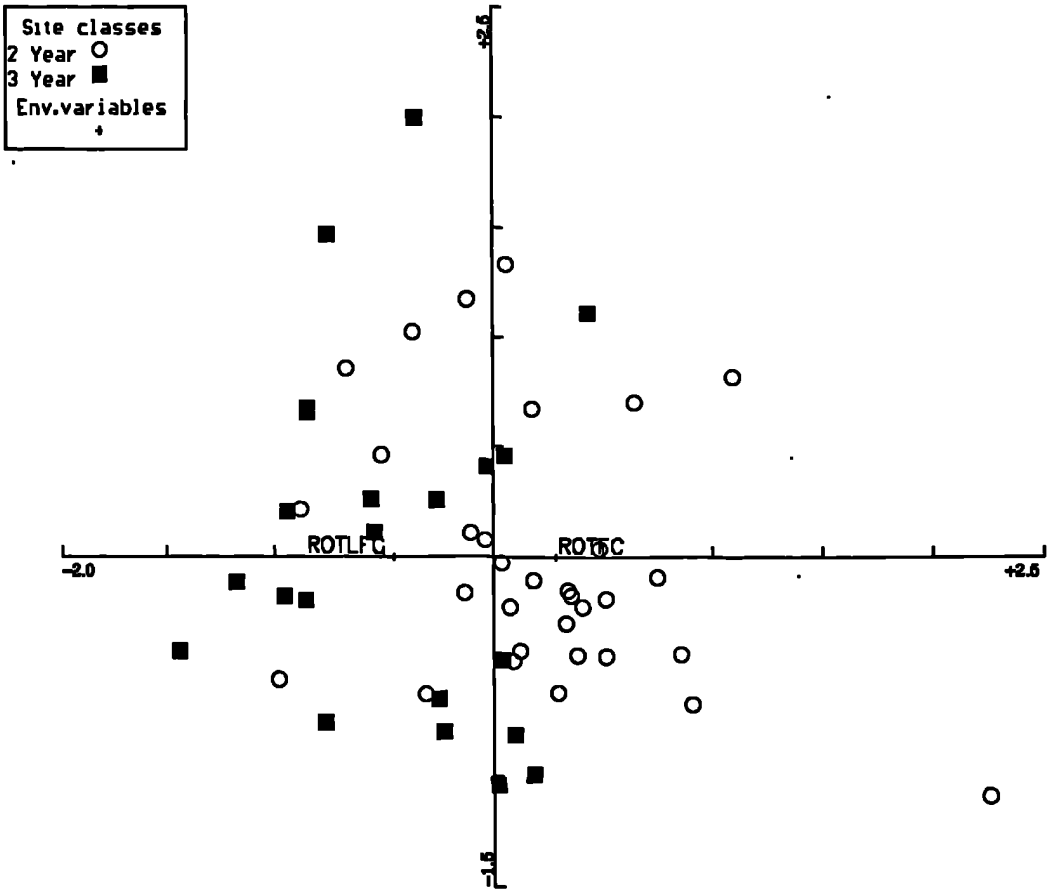


Figure 7.38 PCCA of All Fields using Crop Rotation Regime (2 and 3 year rotation regimes) as the Constraining Variable and Vegetation Zone, Altitude, Soil stoniness, pH, and Organic Content as Co-variables *(Axis I x II)*.

Key: 2 Year = 2 Year Regimes (cereal-fallow & cereal-legume);

3 Year = 3 Year Regime

ROTFC = 2 Year Regimes; ROTLFC = 3 Year Regime

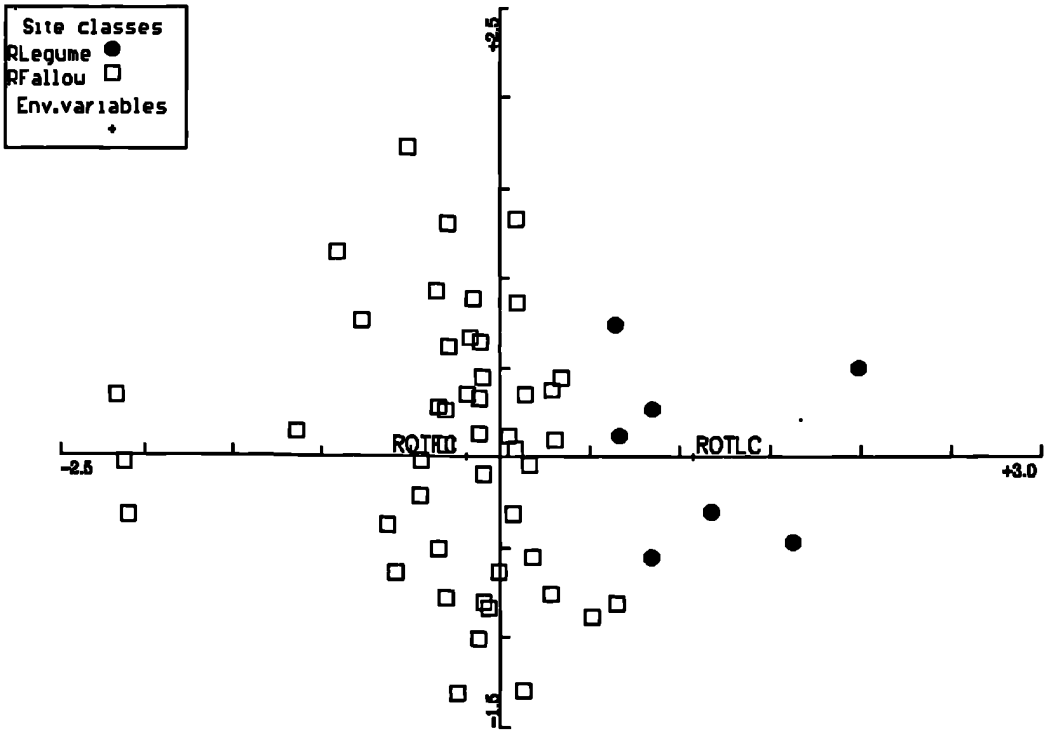


Figure 7.39 PCCA of All Fields using Crop Rotation Regime (cereal-legume and regimes including fallow) as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: RLegume = Cereal-Legume;

RFallow = Rotation Regimes including a Fallow Year

ROTFC = Regimes including a Fallow Year;

ROTLC = Cereal-Legume

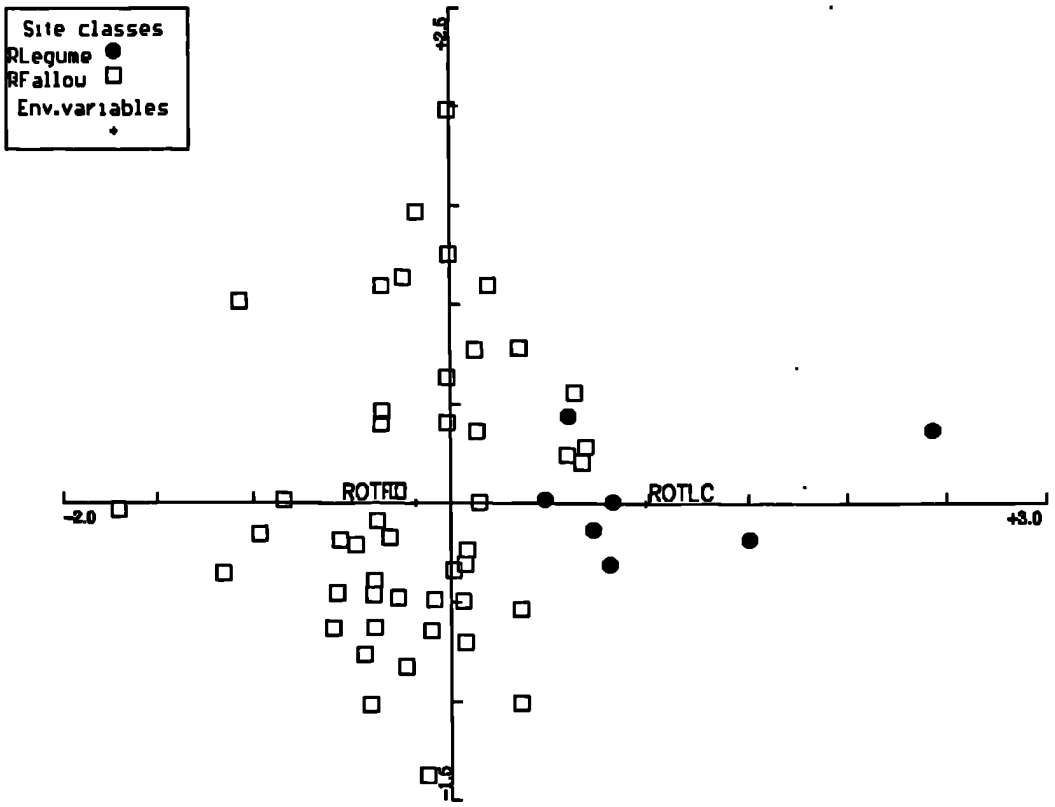


Figure 7.40 PCCA of All Fields using Crop Rotation Regime (cereal-legume and regimes including fallow) as the Constraining Variable and Vegetation Zone, Altitude, Soil Stoniness, pH, and Organic Content as Co-variables *(Axis I x II).*

Key: RLegume = Cereal-Legume;

RFallow = Rotation Regimes including a Fallow Year

ROTFC = Regimes including a Fallow Year;

ROTLC = Cereal-Legume

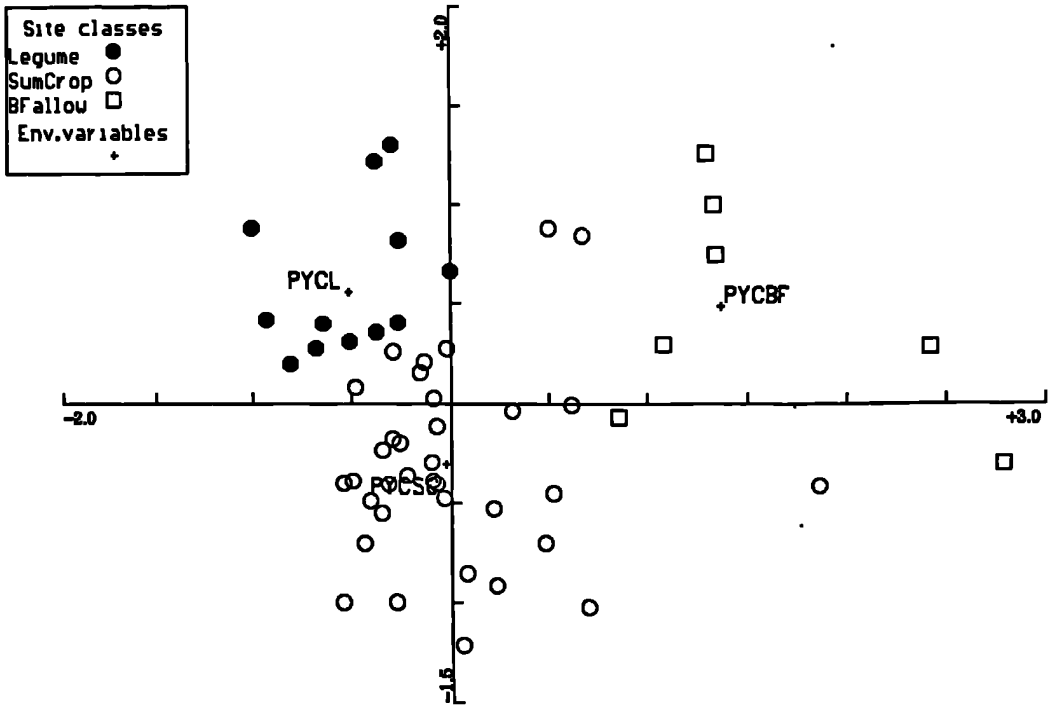


Figure 7.41 PCCA of All Fields using Previous Year's Crop (legume crop, bare fallow and fallow with summer crops) as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II)*.

Key: Legume = Legume Crop; SumCrop = Summer Crop;

BFallow = Bare Fallow

PYCBF = Bare Fallow; PYCL = Legume Crop;

PYCSC = Summer Crop

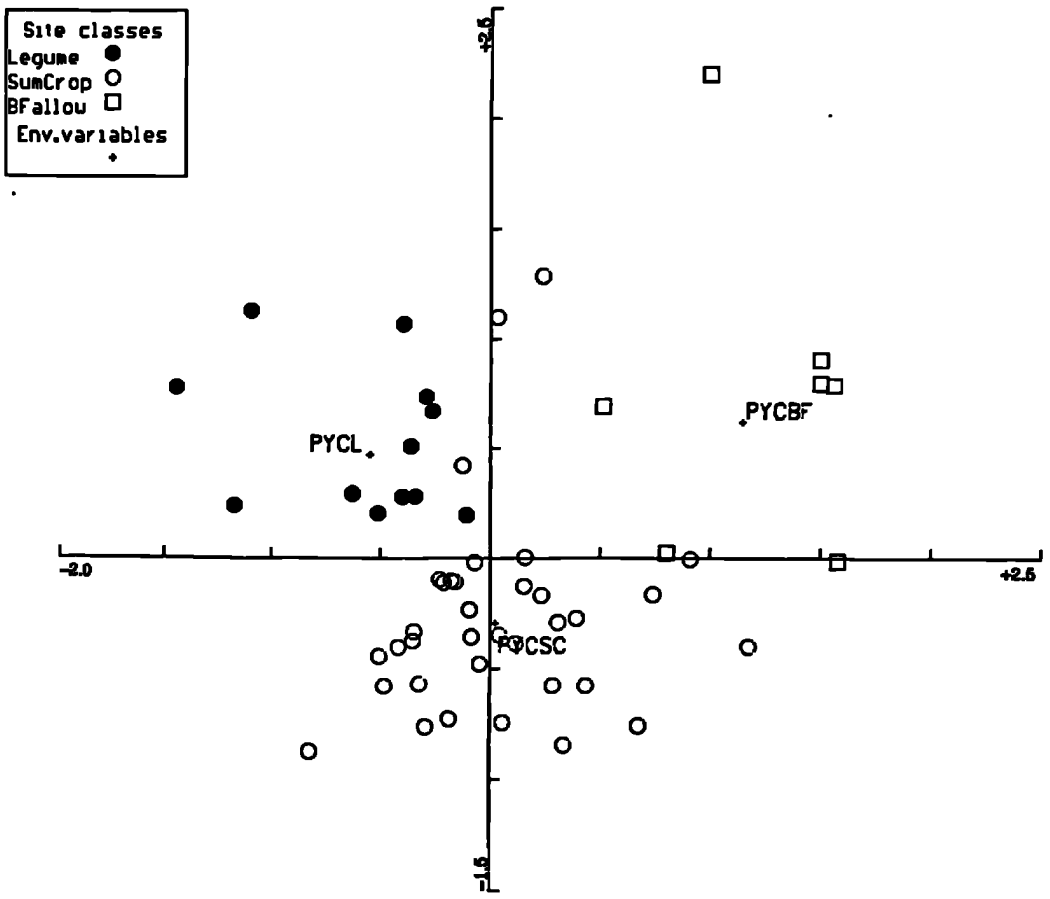


Figure 7.42 PCCA of All Fields using Previous Year's Crop (legume crop, bare fallow and fallow with summer crops) as the Constraining Variable and Vegetation Zone, Altitude, Soil Stoniness, pH, and Organic Content *(Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Summer Crop;

BFallow = Bare Fallow

PYCBF = Bare Fallow; PYCL = Legume Crop;

PYCSC = Summer Crop

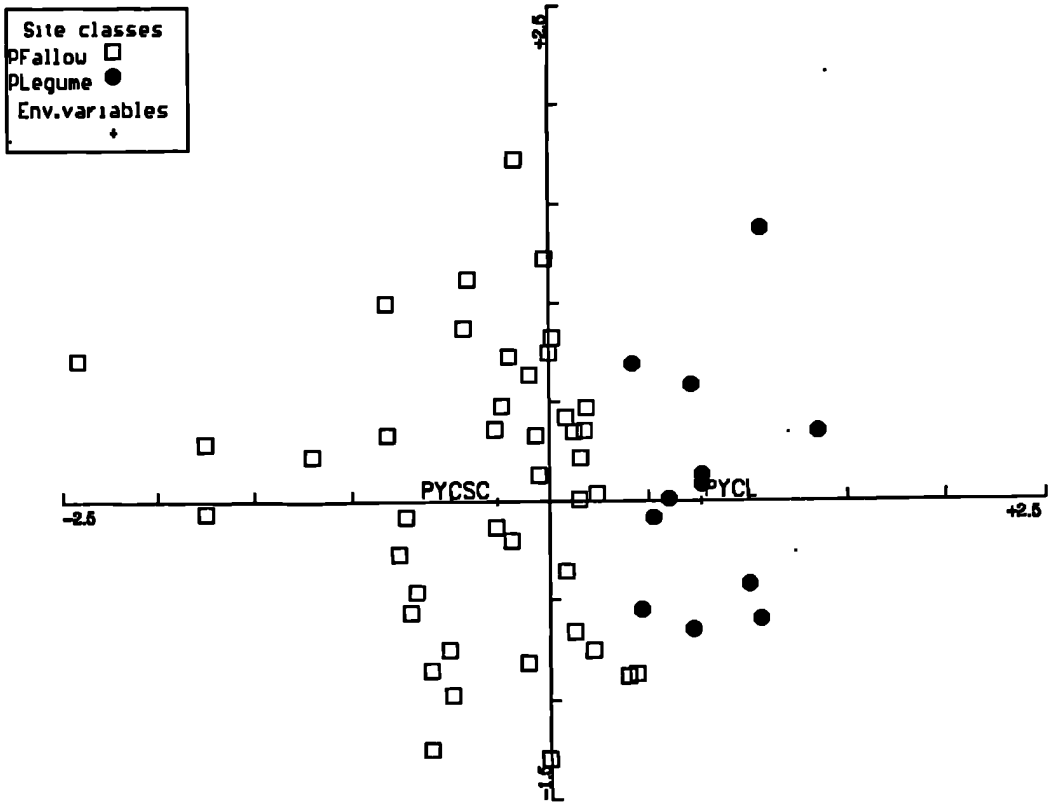


Figure 7.43 PCCA of All Fields using Previous Year's Crop (legume crop and fallow) as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: PLegume = Legume Crop; PFallow = Fallow

PYCSC = Fallow; PYCL = Legume Crop

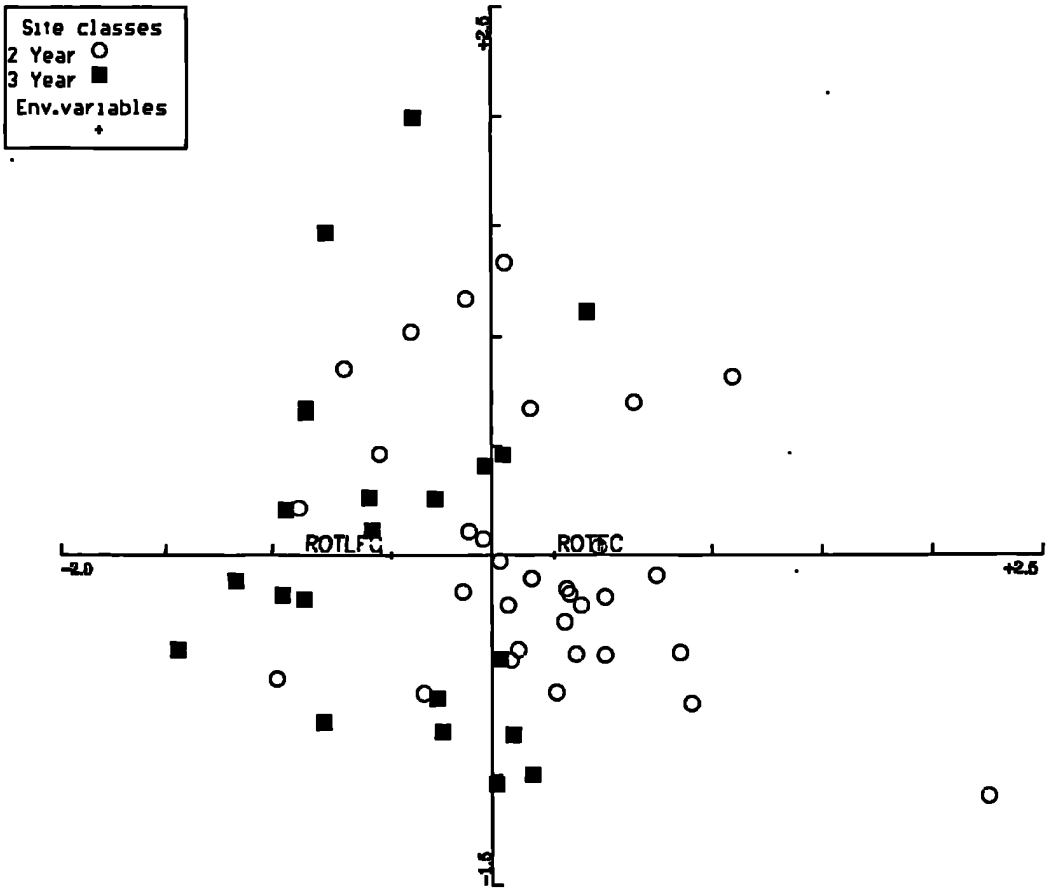


Figure 7.44 PCCA of All Fields using Previous Year's Crop (legume crop and fallow) as the Constraining Variable and Vegetation Zone, Altitude, Soil Stoniness, pH, and Organic Content as Co-variables *(Axis I x II)*.

Key: PLegume = Legume Crop; PFallow = Fallow

PYCSC = Fallow; PYCL = Legume Crop

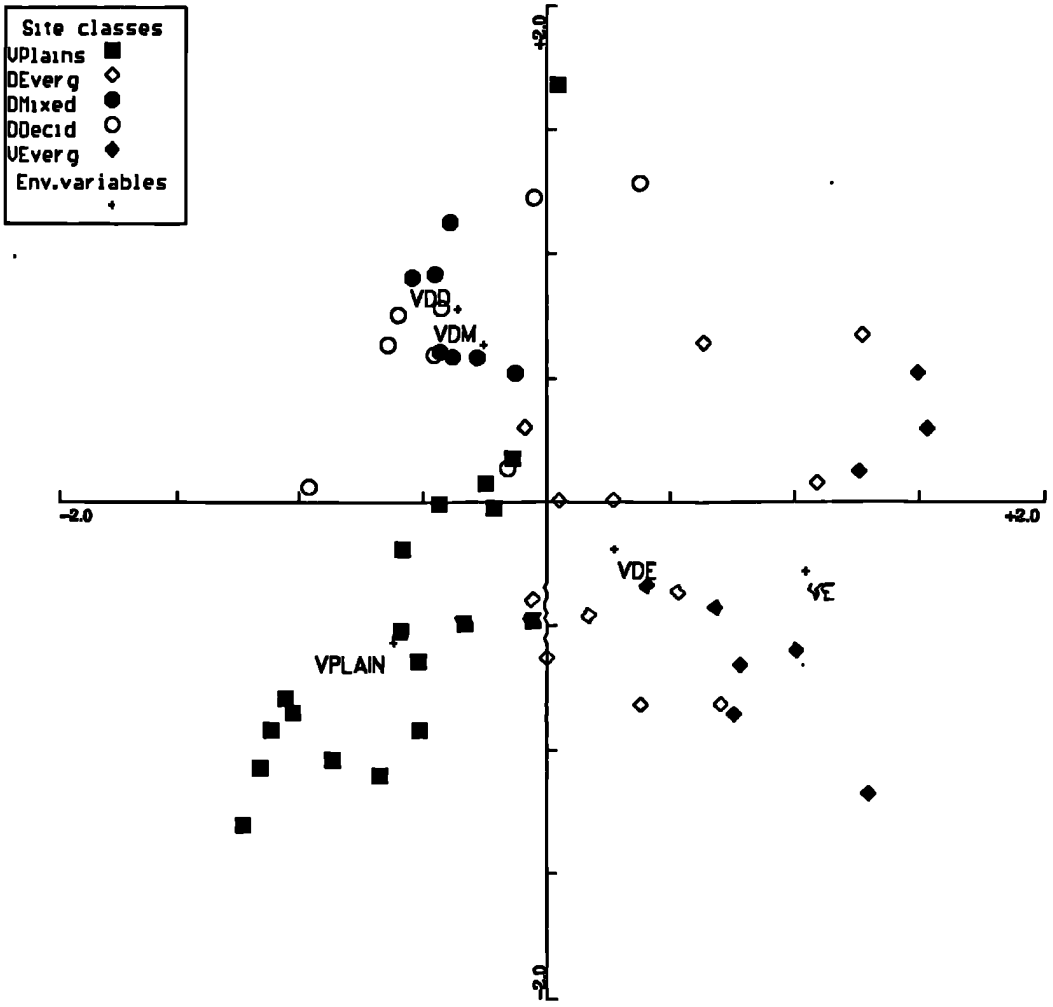


Figure 7.45 PCCA of All Fields using Vegetation Zone as the Constraining Variable and Crop Rotation Regime as the Co-variable *(Axis I x II).*

Key: VPlains = Plains Vegetation Zone; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

VPLAIN = Plains Vegetation Zone; VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VE = Evergreen Forest

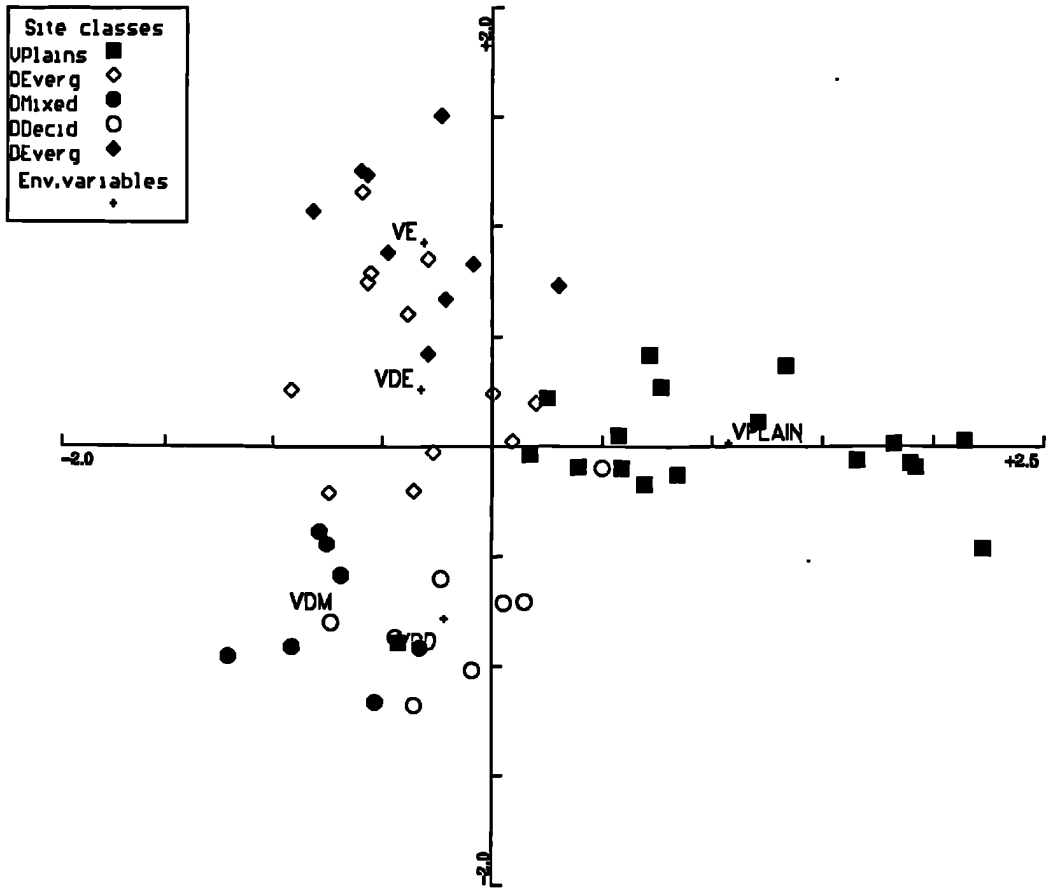


Figure 7.46 PCCA of All Fields using Vegetation Zone as the Constraining Variable and Previous Year's Crop as the Co-variable *(Axis I x II).*

Key: VPlains = Plains Vegetation Zone; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

VPLAIN = Plains Vegetation Zone; VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VE = Evergreen Forest

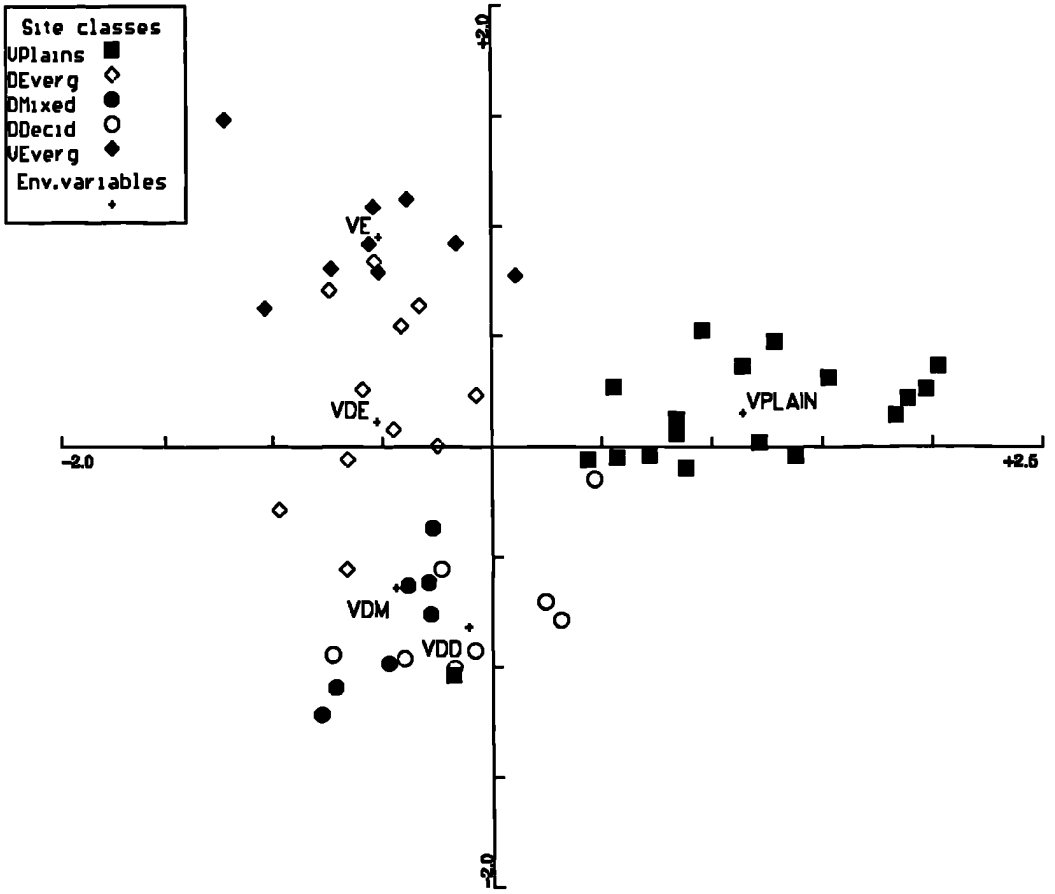


Figure 7.47 PCCA of All Fields using Vegetation Zone as the Constraining Variable and Crop Management Variables (crop rotation regime, previous year's crop, tillage power, sowing date, sowing rate, manuring, and weeding) as the Co-variables *(Axis I x II).*

Key: VPlains = Plains Vegetation Zone; DDecid = Degraded Deciduous Forest; DMixed = Degraded Mixed Forest; DEverg = Degraded Evergreen Forest; VEverg = Evergreen Forest

VPLAIN = Plains Vegetation Zone; VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VE = Evergreen Forest

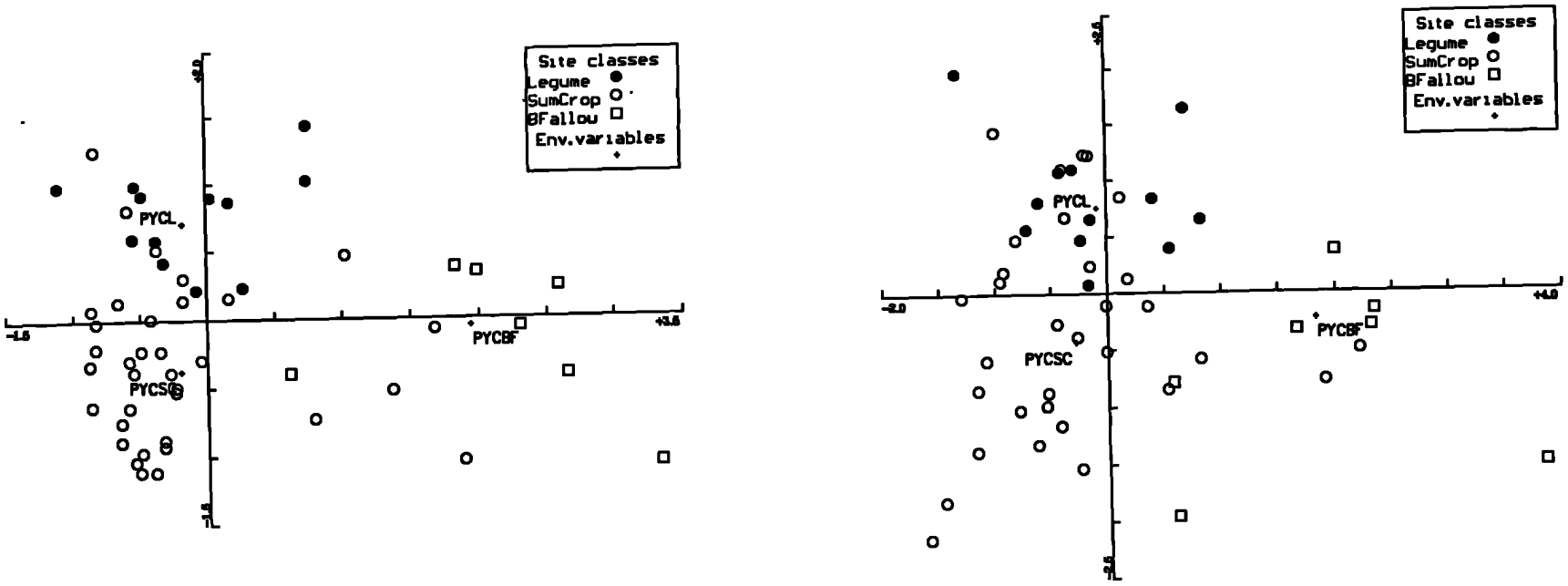
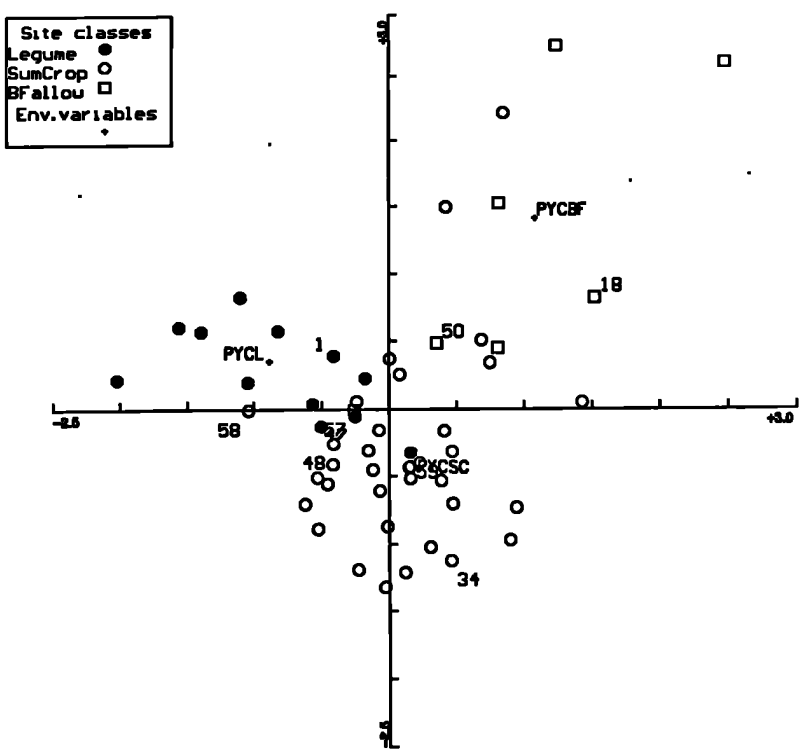


Figure 7.48 **a** PCCA of All Fields and 48 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable (*Axis I x II*).

b PCCA of All Fields and 28 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable (*Axis I x II*).

Key: Legume = Legume Crop; SumCrop = Fallow + Summer Crop; BFallow = Bare Fallow
PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Summer Crop



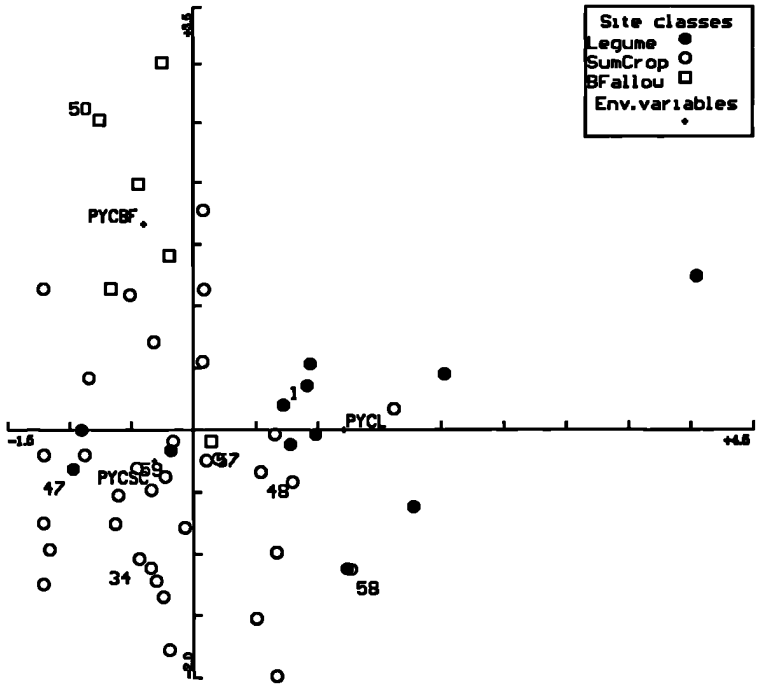


Figure 7.49 **a** PCCA of 45 Fields and 9 Passive Fields (3 from each category) and 44 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II)*.

b PCCA of 45 Fields and 9 Passive Fields (3 from each category) and 24 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II)*.

Passive Fields: Legume Crop = 1, 47, 59; Fallow + Summer Crop = 34, 48, 58; Bare Fallow = 18, 50, 57

Key: Legume = Legume Crop; SumCrop = Fallow + Summer Crop; BFallow = Bare Fallow
PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Summer Crop

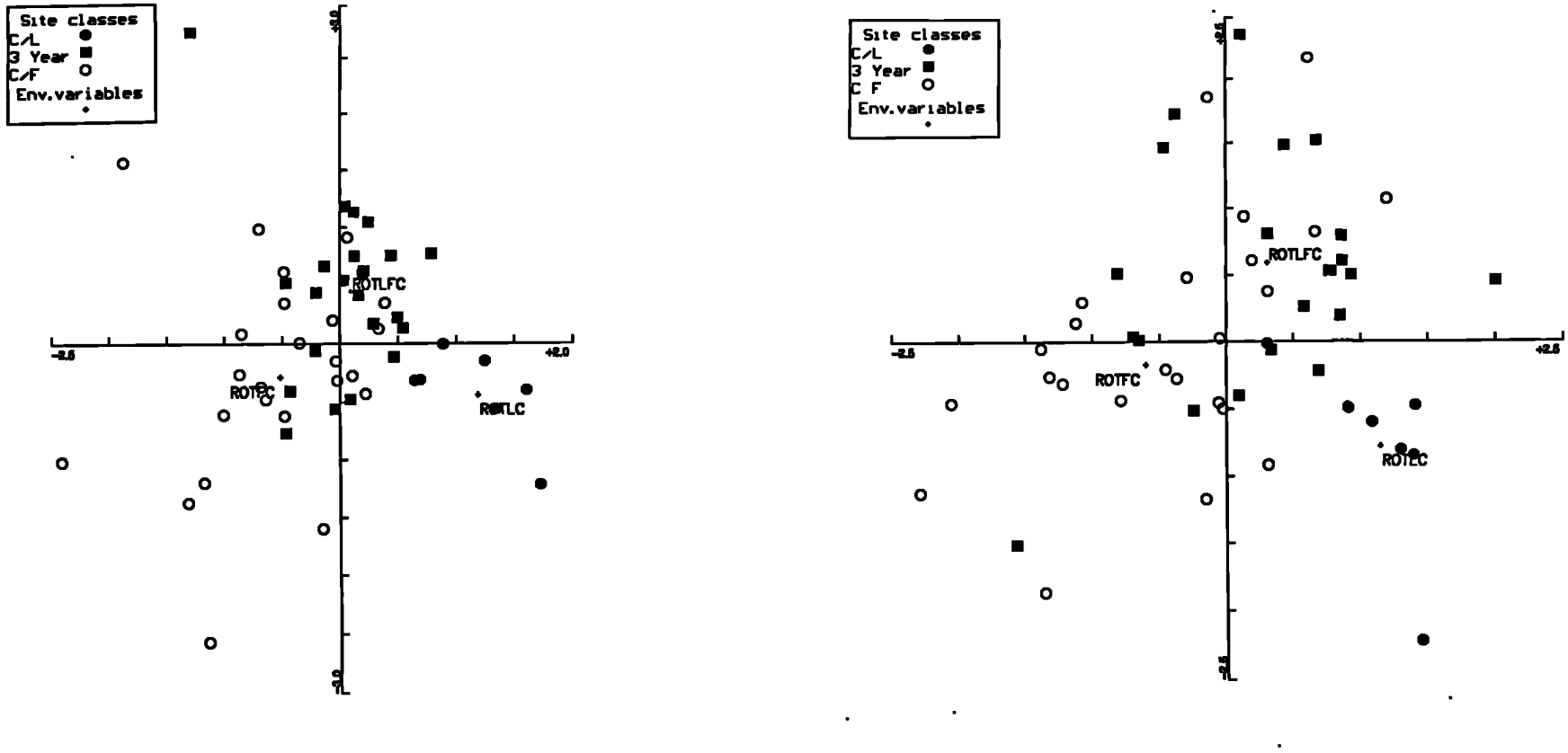


Figure 7.50 **a** PCCA of All Fields and 49 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable (*Axis I x II*).

b PCCA of All Fields and 27 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable (*Axis I x II*).

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow
ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume

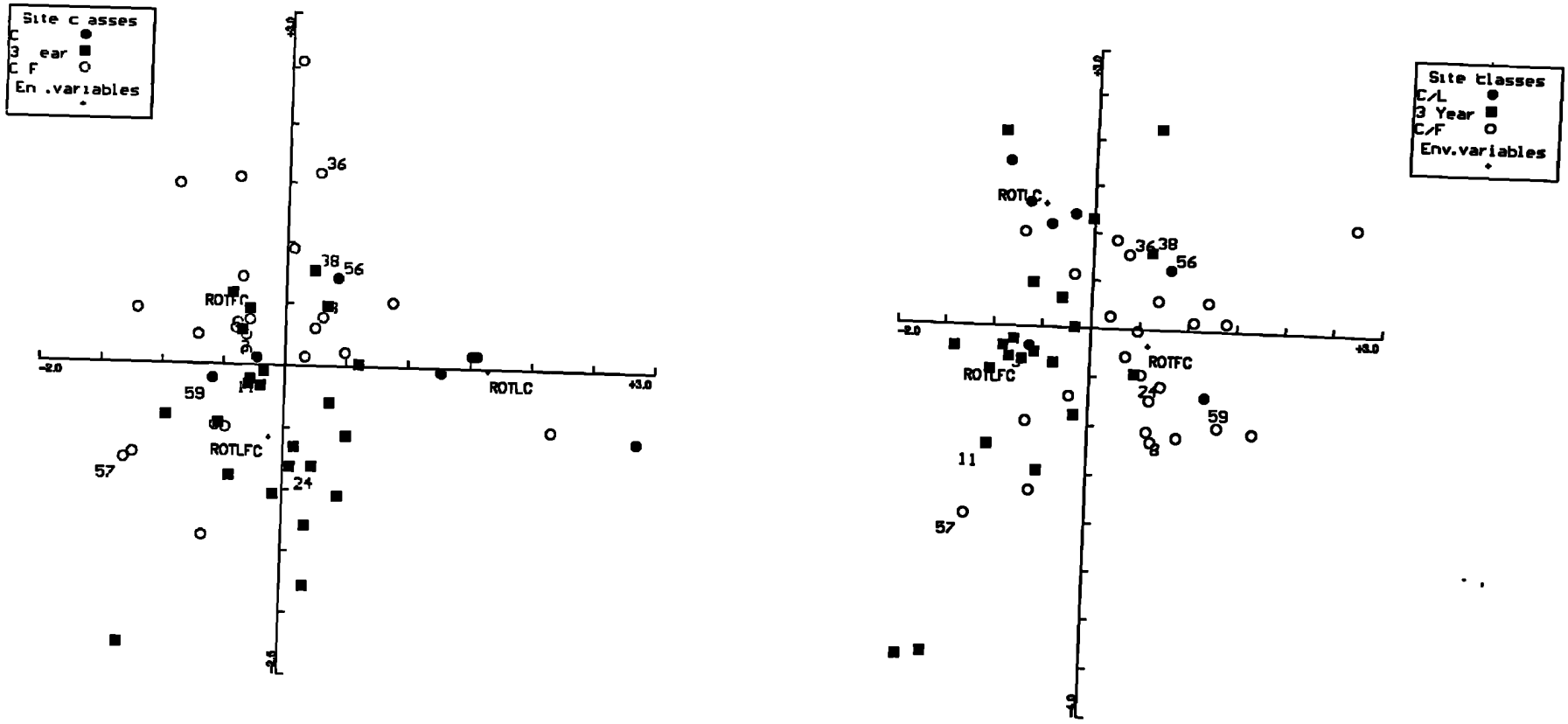


Figure 7.51 **a** PCCA of 45 Fields and 9 Passive Fields (3 from each category) and 44 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation. Zone as the Co-variable *(Axis I x II).*

b PCCA of 45 Fields and 9 Passive Fields (3 from each category) and 24 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Passive Fields: Cereal-Legume = 3, 56, 59; Cereal-Fallow = 8, 36, 57; 3 Year Regime = 11, 24, 38

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow
ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume

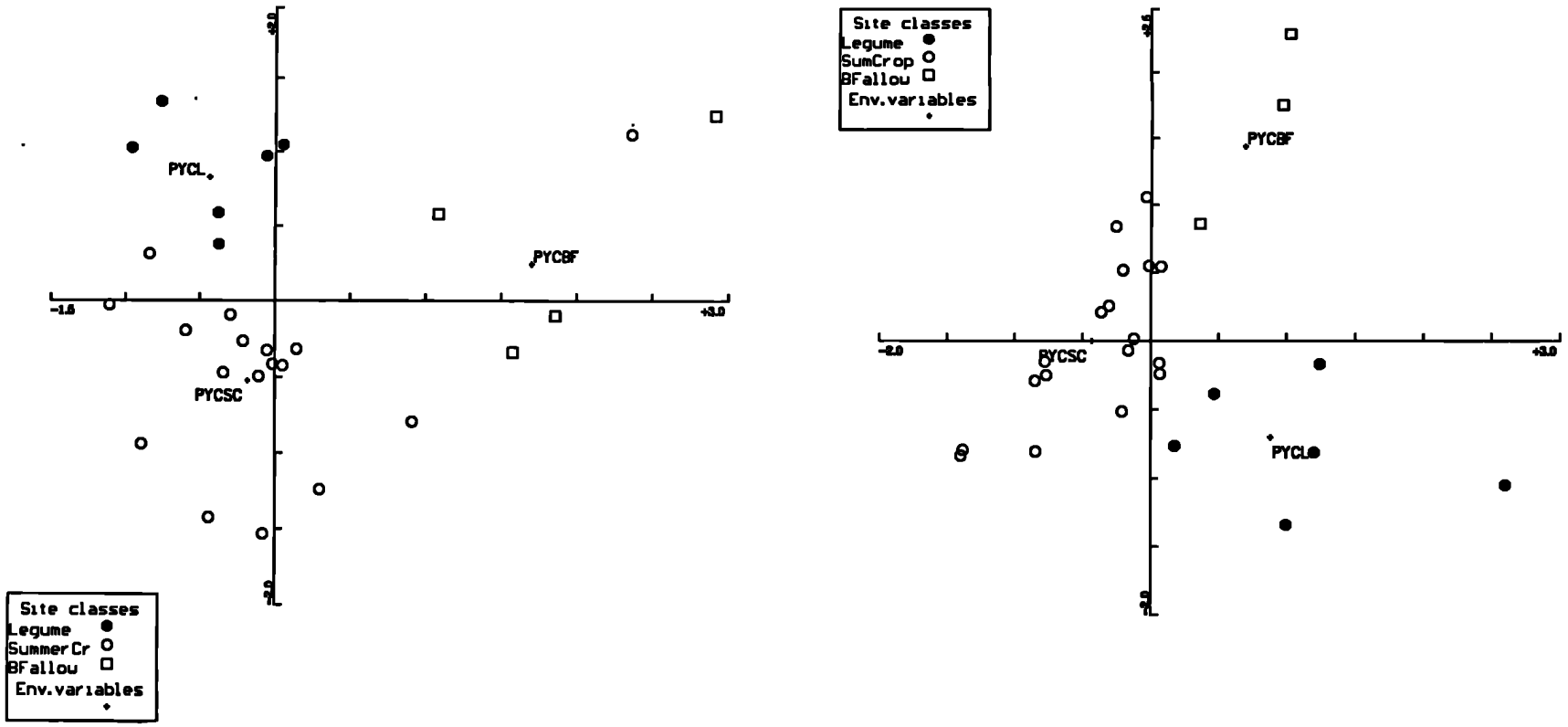


Figure 7.52 **a** PCCA of the First Group of Fields and 48 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

b PCCA of the Second Group of Fields and 48 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Fallow + Summer Crop; BFallow = Bare Fallow
PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Summer Crop

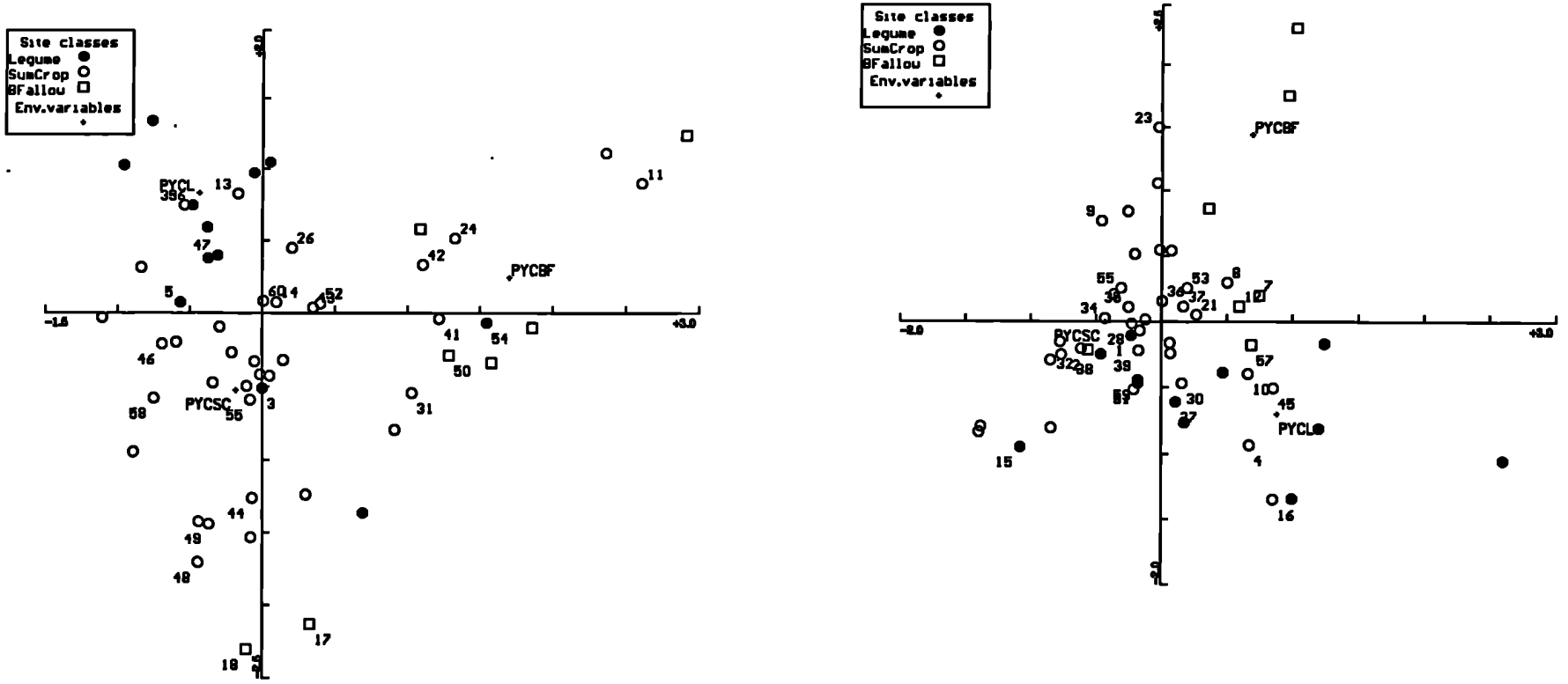
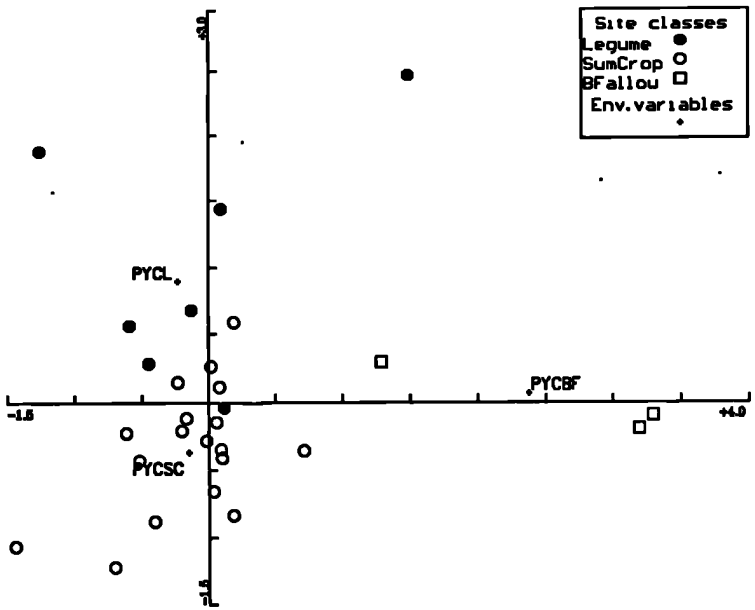


Figure 7.53 **a** PCCA of the First Group of Fields with the Second Group made Passive and 48 'Indicator Taxa' using Previous Year's Crop as the ConstrainingVariable and Vegetation Zone as the Co-variable*(Axis I x II).*

b PCCA of the Second Group of Fields and the First Group made Passive and 48 'Indicator Taxa' using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Group 1 Fields: 1, 2, 4, 7, 8, 9, 10, 12, 15, 16, 21, 23, 27, 28, 30, 32, 34, 35, 36, 37, 38, 39, 45, 51, 53, 57, 59
Group 2 Fields: 3, 5, 11, 13, 14, 17, 18, 24, 26, 29, 31, 33, 41, 42, 43, 44, 46, 47, 48, 49, 50, 52, 54, 55, 56, 58, 60

Key: Legume = Legume Crop; SumCrop = Fallow + Summer Crop; BFallow = Bare Fallow
PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Summer Crop



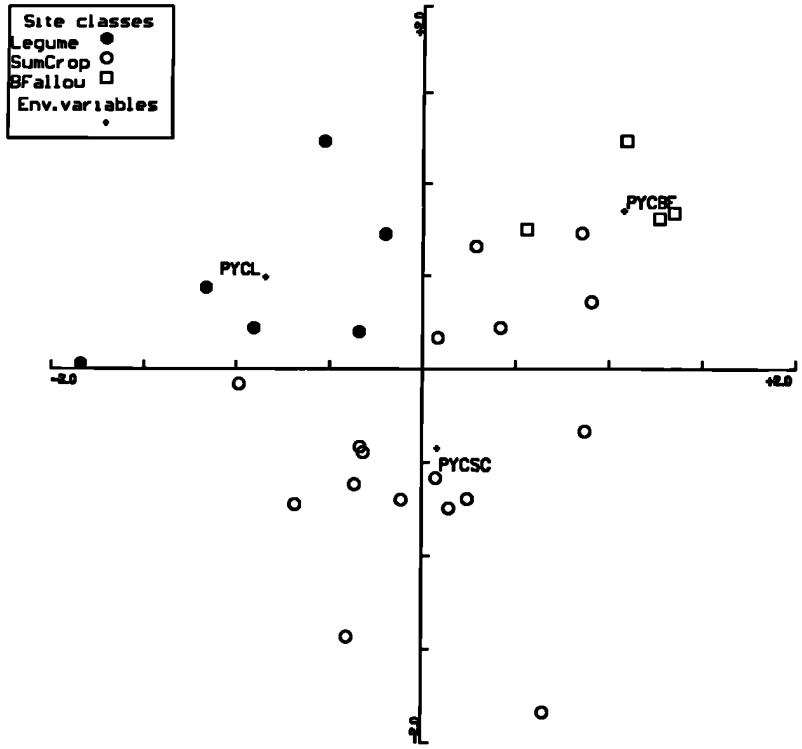
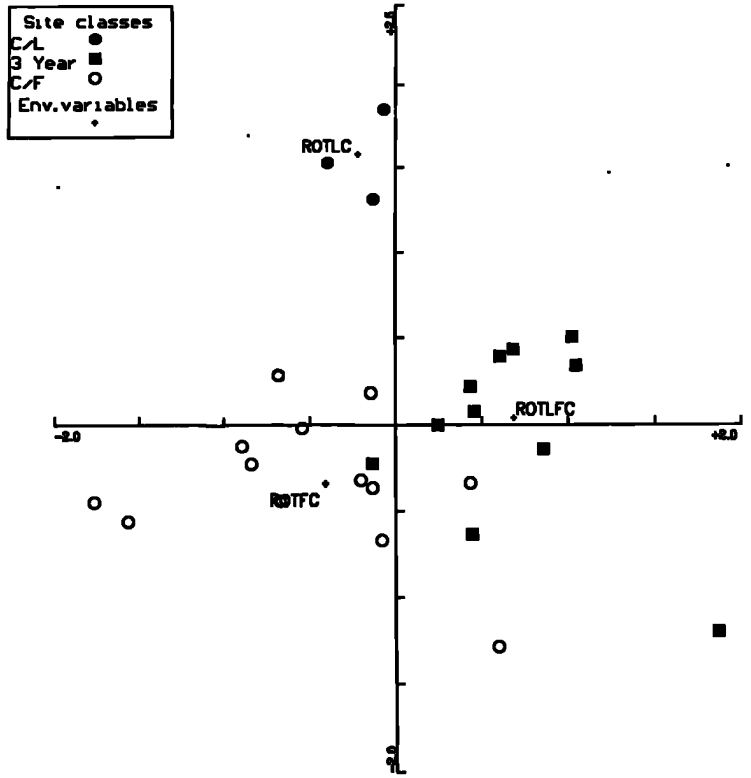


Figure 7.54 **a** PCCA of the Second Group of Fields with 48 'Indicator Taxa' from the First Group using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

b PCCA of the First Group of Fields with 48 'Indicator Taxa' from the Second Group using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: Legume = Legume Crop; SumCrop = Fallow + Summer Crop; BFallow = Bare Fallow
PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Summer Crop



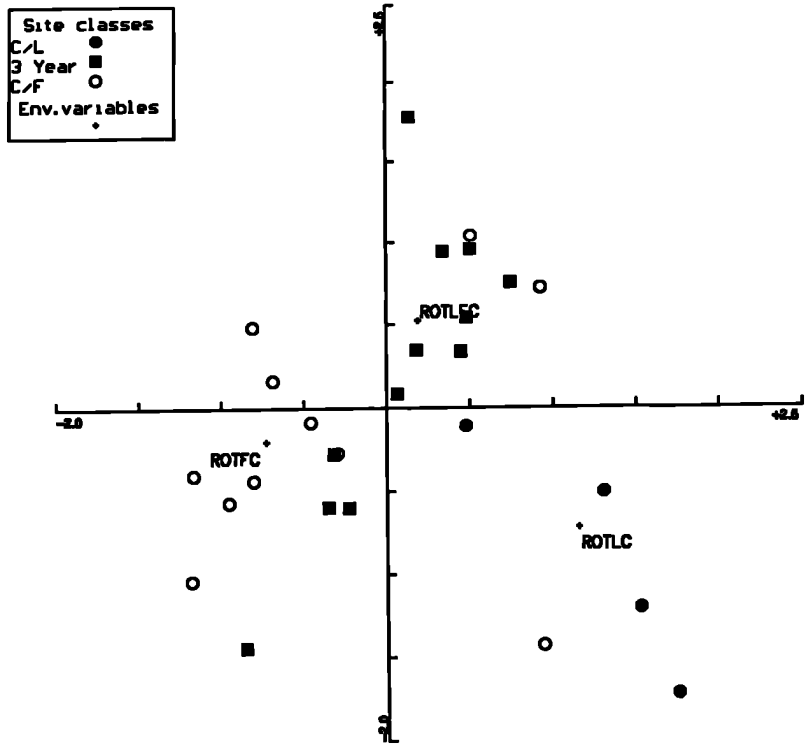


Figure 7.55 **a** PCCA of the First Group of Fields and 48 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

b PCCA of the Second Group of Fields and 48 'Indicator Taxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow
ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume

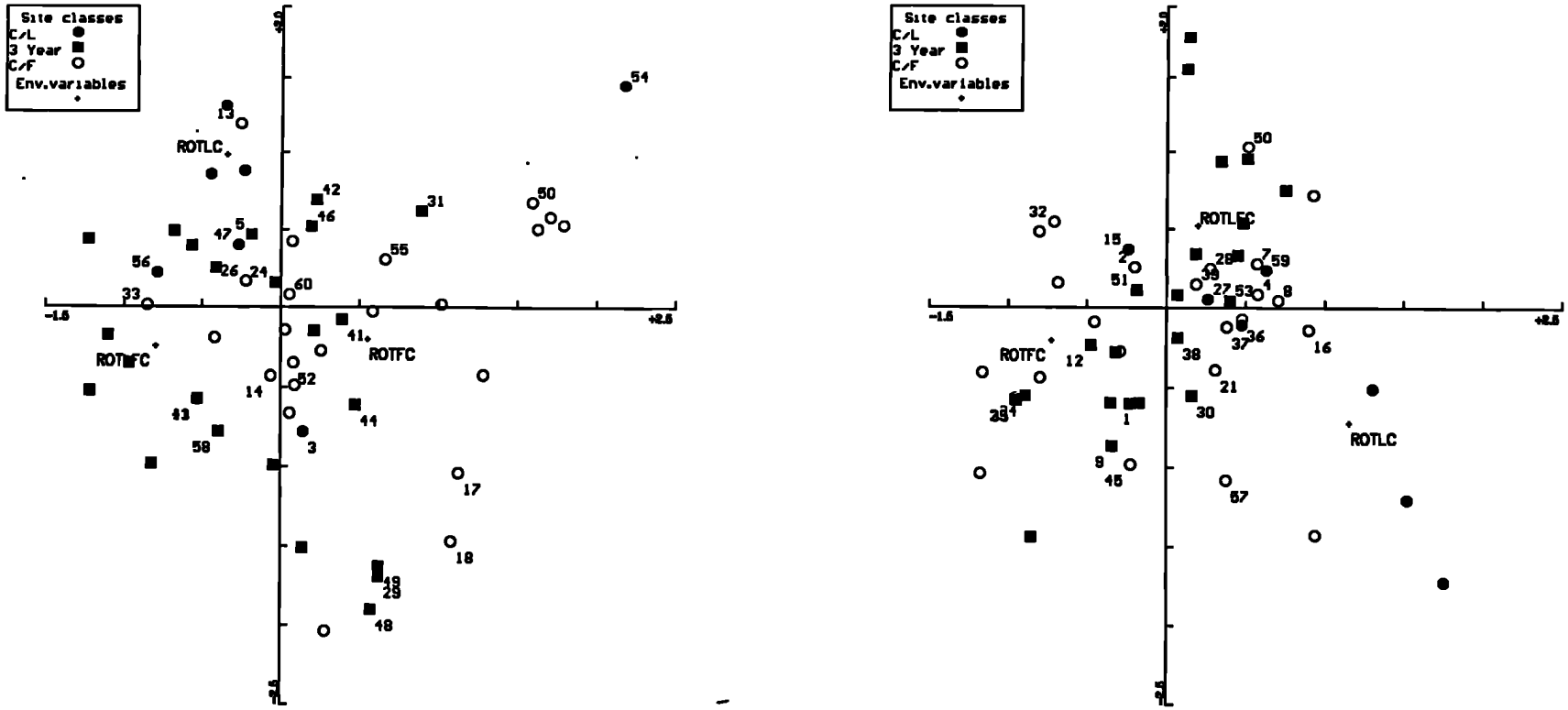


Figure 7.56 **a** PCCA of the First Group of Fields with the Second Group made Passive and 48 'Indicator Taxa' using Crop Rotation Regime as the ConstrainingVariable and Vegetation Zone as the Co-variable*(Axis I x II).*

b PCCA of the Second Group of Fields and the First Group made Passive and 48 'IndicatorTaxa' using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Group 1 Fields: 1, 2, 4, 7, 8, 9, 10, 12, 15, 16, 21, 23, 27, 28, 30, 32, 34, 35, 36, 37, 38, 39, 45, 51, 53, 57, 59
Group 2 Fields: 3, 5, 11, 13, 14, 17, 18, 24, 26, 29, 31, 33, 41, 42, 43, 44, 46, 47, 48, 49, 50, 52, 54, 55, 56, 58, 60

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow
ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume

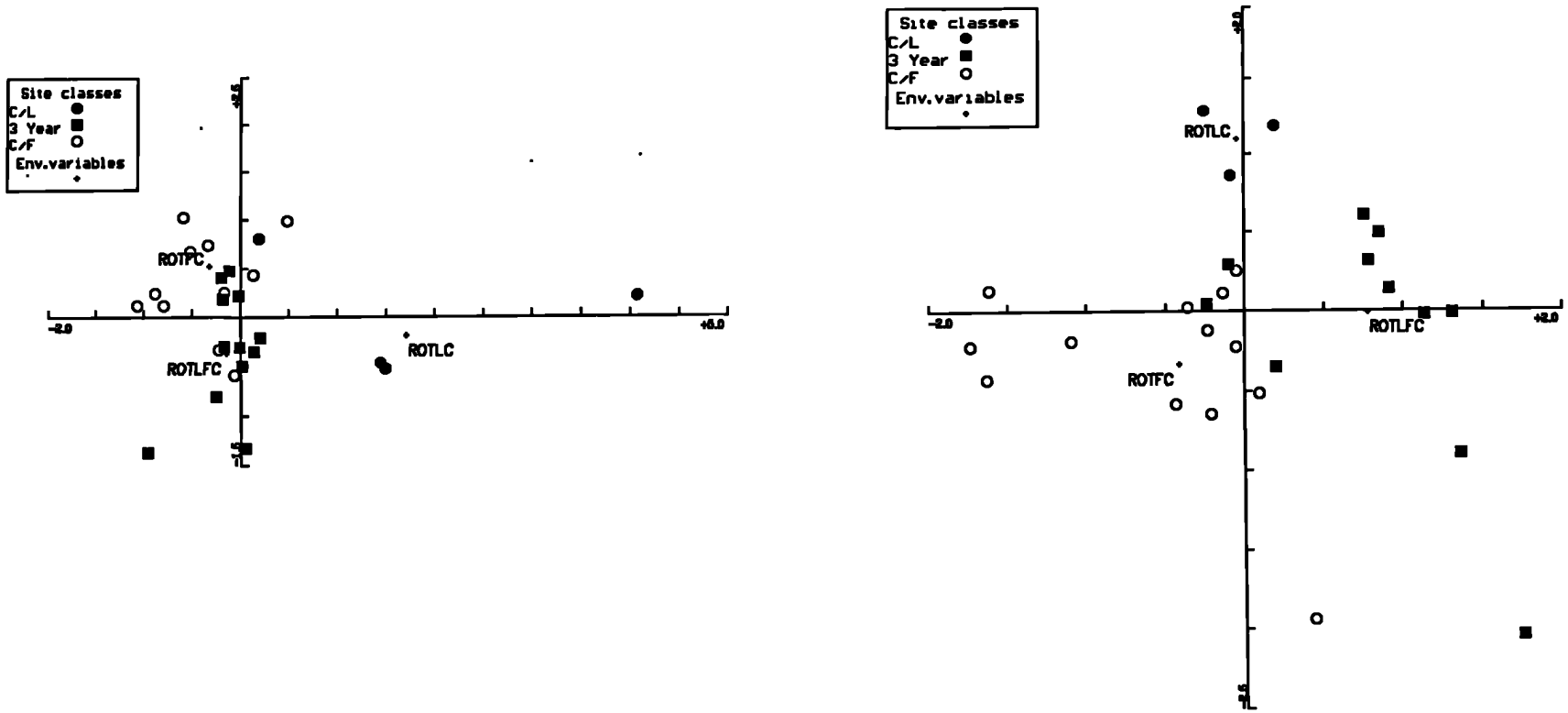
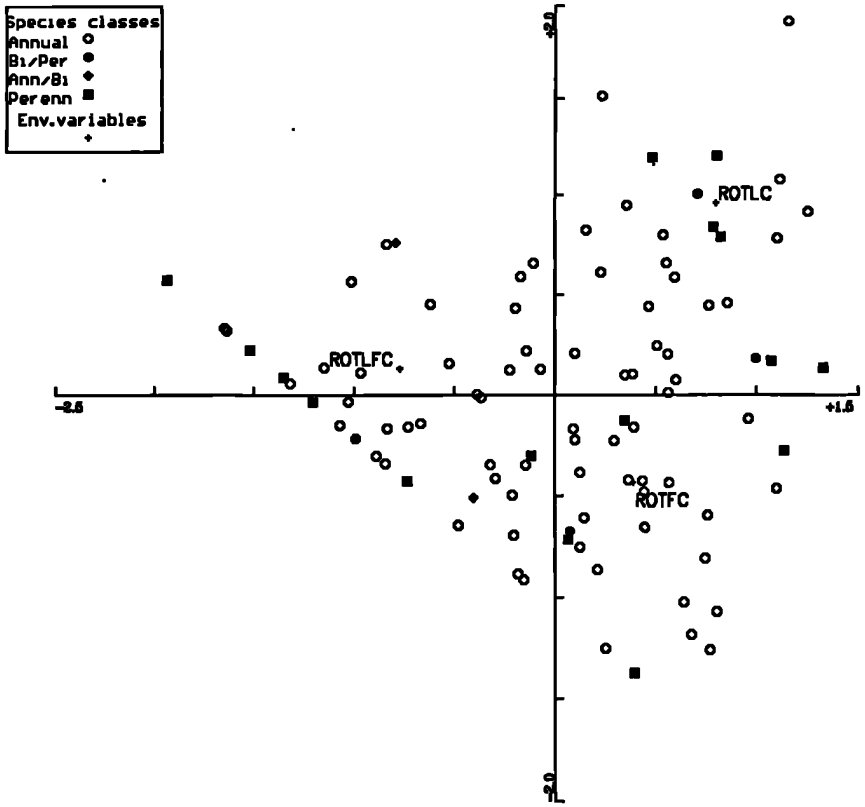


Figure 7.57 **a** PCCA of the Second Group of Fields with 48 'Indicator Taxa' from the First Group using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

b PCCA of the First Group of Fields with 48 'Indicator Taxa' from the Second Group using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable *(Axis I x II).*

Key: C/L = Cereal-Legume; 3 Yr = 3 Year Crop Rotation Regime; C/F = Cereal-Fallow
ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume



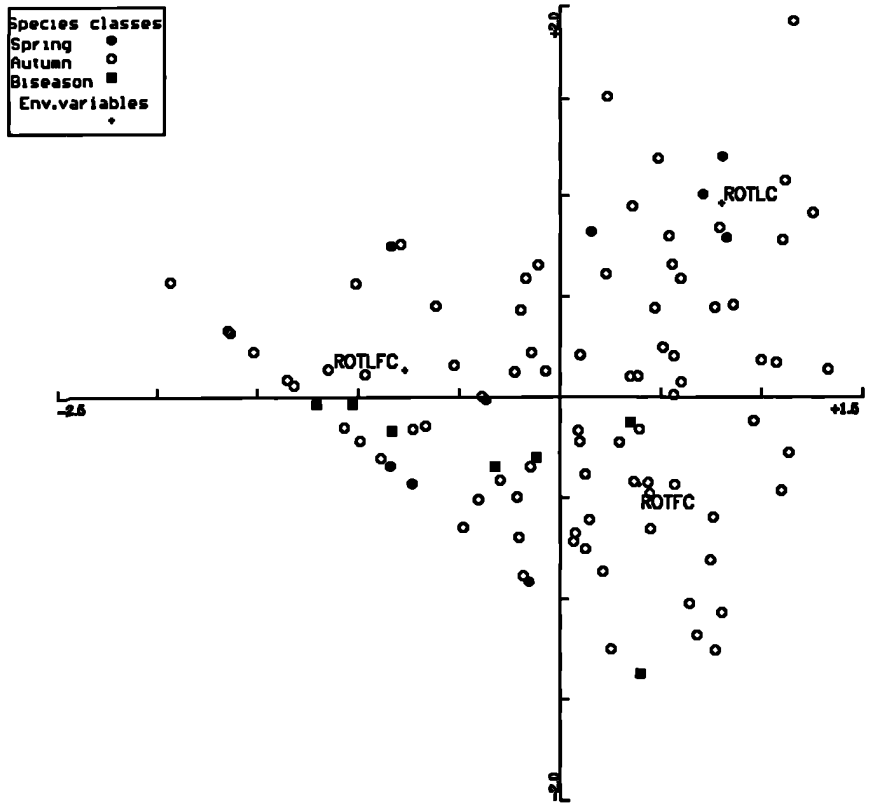


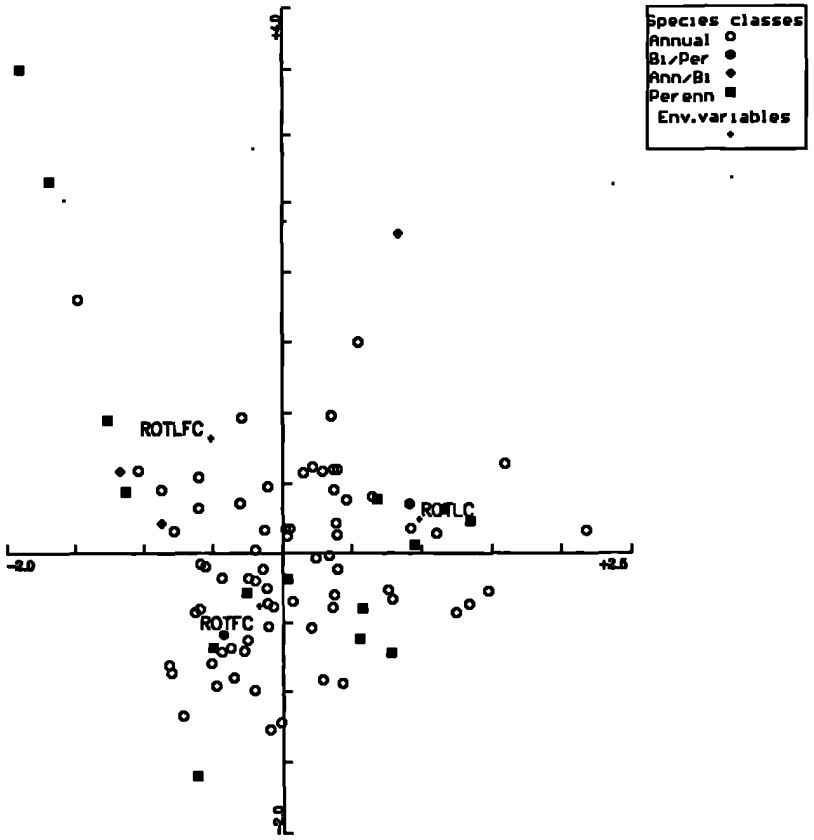
Figure 7.58 **a** CCA of All Fields using Crop Rotation Regime as the Constraining Variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of All Fields using Crop Rotation Regime as the Constraining Variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume



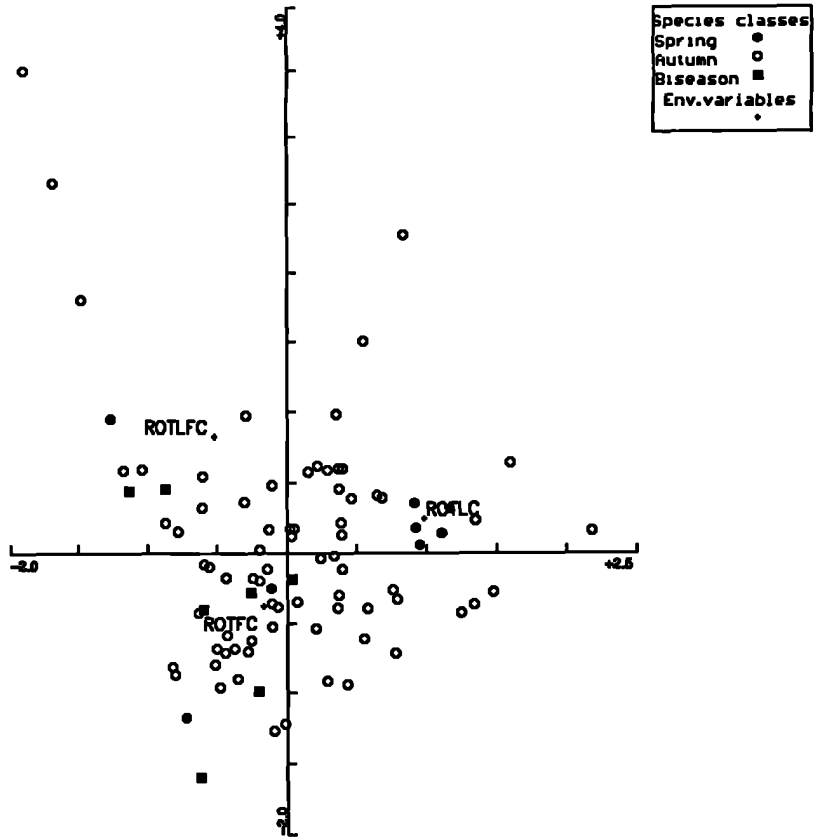


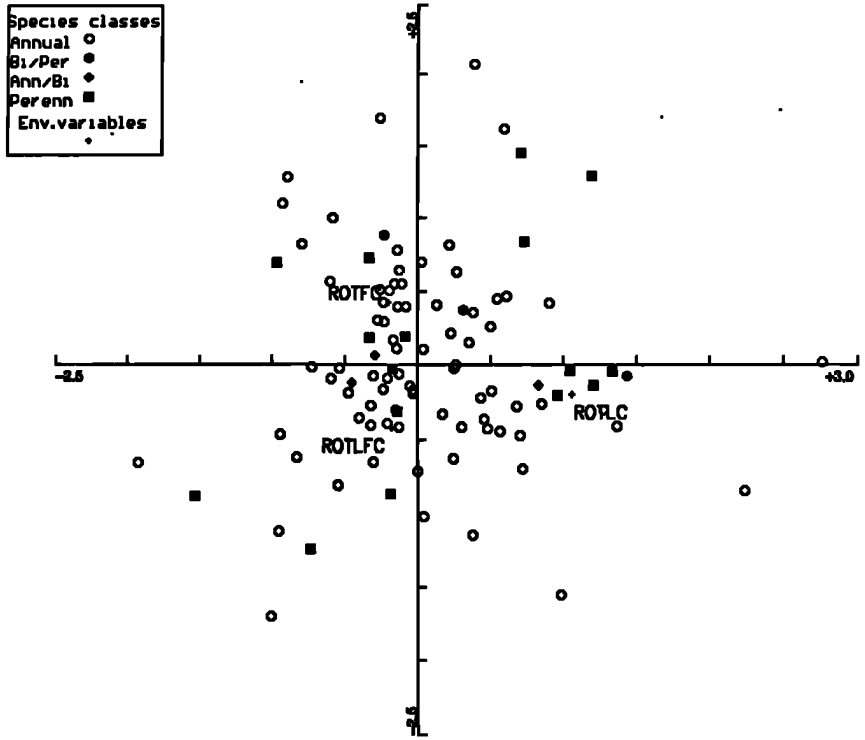
Figure 7.59 **a** CCA of Hills Fields using Crop Rotation Regime as the Constraining Variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of Hills Fields using Crop Rotation Regime as the Constraining Variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume



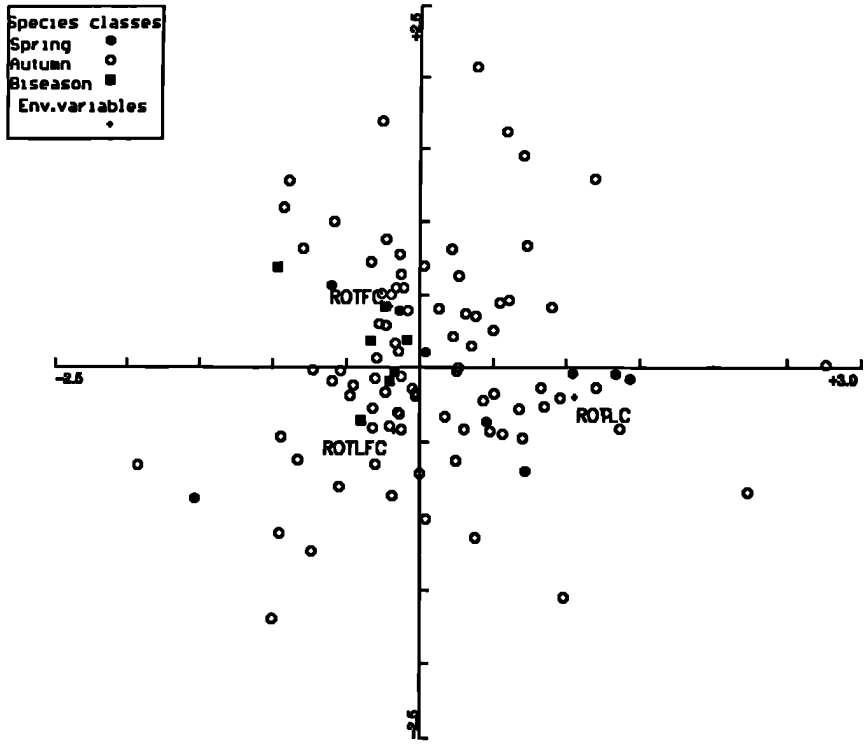


Figure 7.60 **a** CCA of All Fields using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of All Fields using Crop Rotation Regime as the Constraining Variable and Vegetation Zone as the Co-variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: ROTLFC = 3 Yr Rotation Regime; ROTFC = Cereal-Fallow; ROTLC = Cereal-Legume

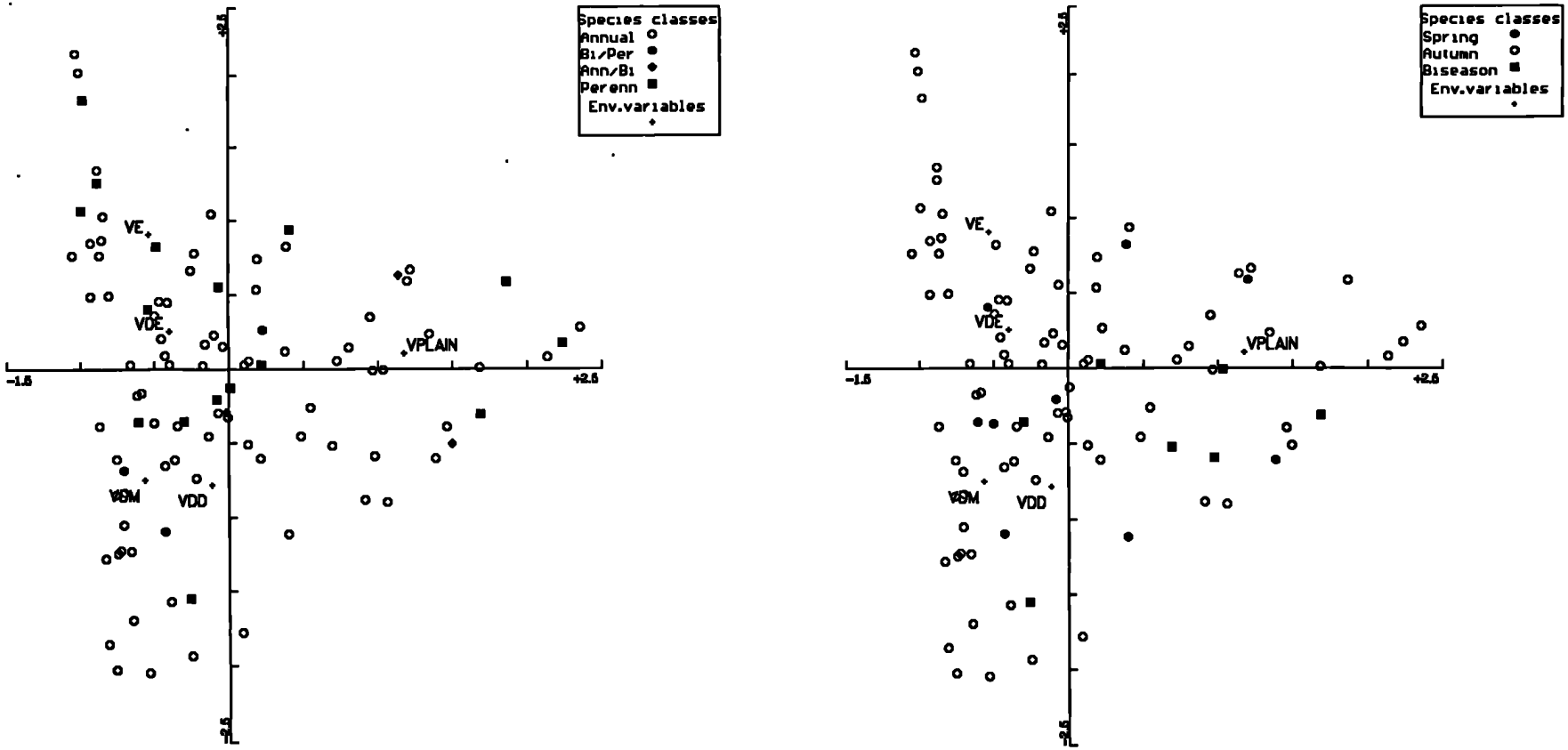


Figure 7.61 **a** CCA of All Fields using Vegetation Zone as the Constraining Variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of All Fields using Vegetation Zone as the Constraining Variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: VE = Evergreen Forest; VDD = Degraded Deciduous Forest; VDM = Degraded Mixed Forest; VDE = Degraded Evergreen Forest; VPLAIN = Plains Vegetation Zone

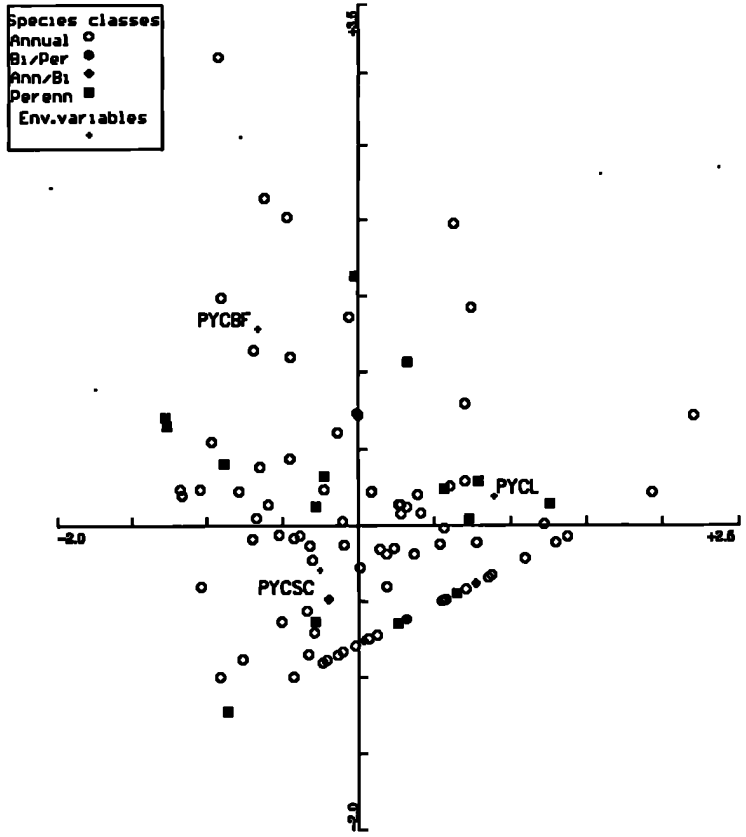
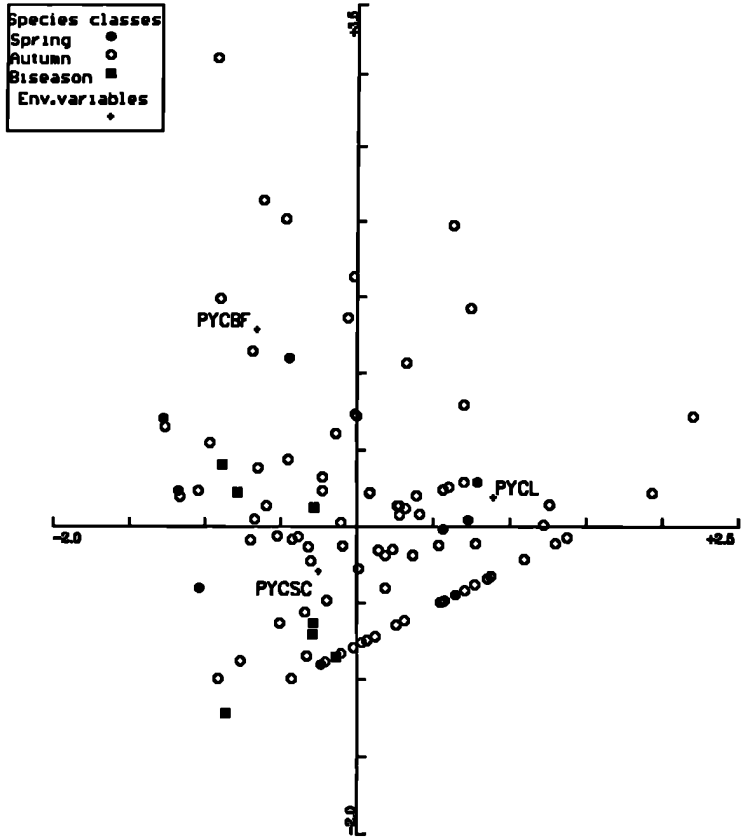


Figure 7.62 **a** CCA of All Fields using Previous Year's Crop as the Constraining Variable.
Taxa Coded According to Life Cycle (Axis I x II).

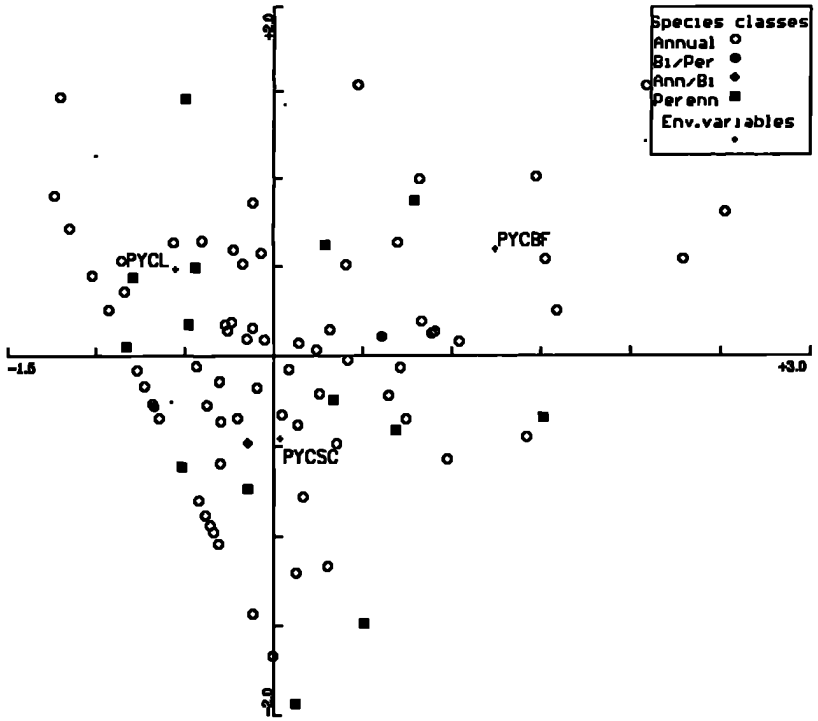
Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)



b CCA of All Fields using Previous Year's Crop as the Constraining Variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Fallow + Summer Crops



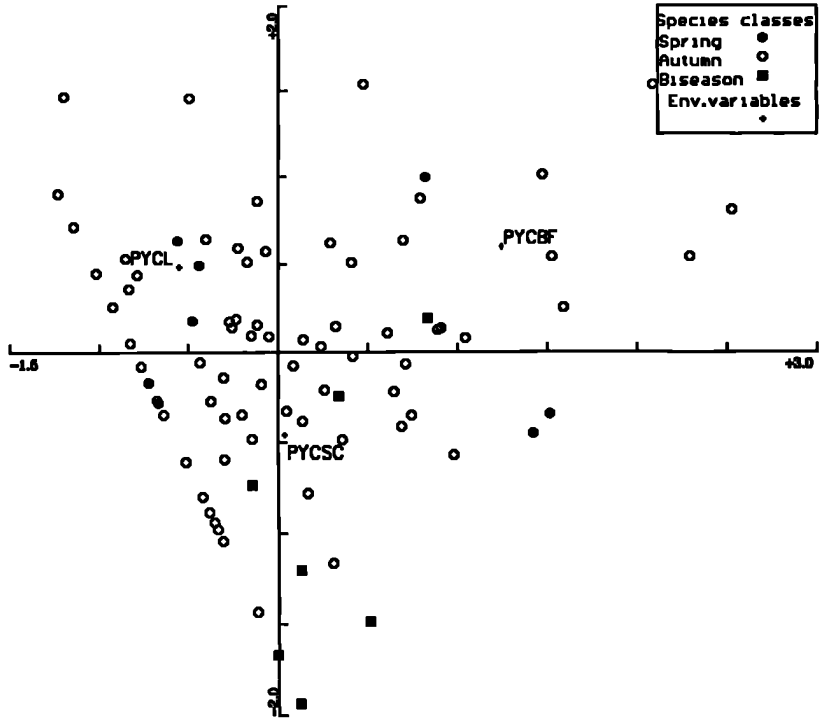


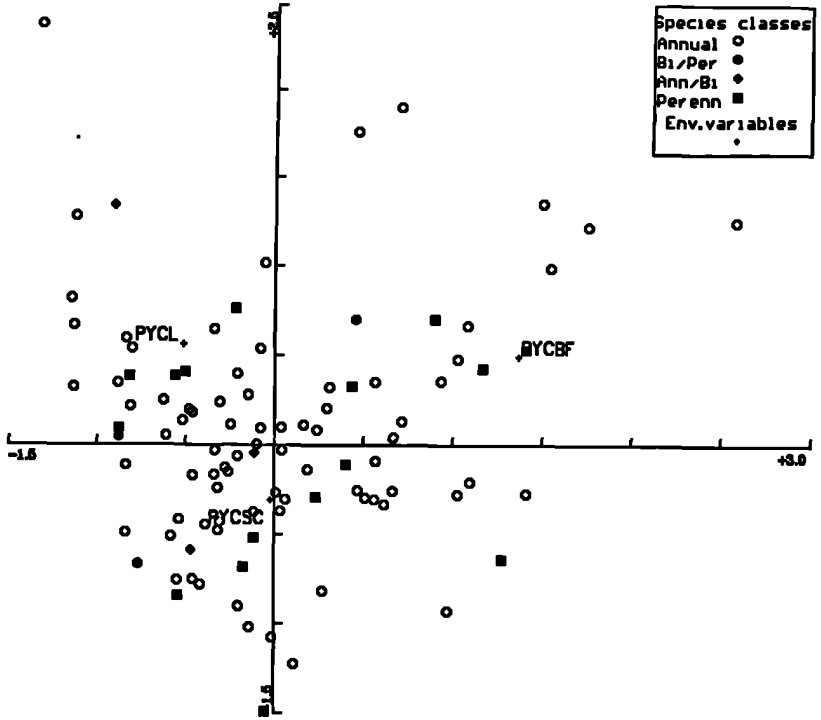
Figure 7.63 **a** CCA of Hills Fields using Previous Year's Crop as the Constraining Variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of Hills Fields using Previous Year's Crop as the Constraining Variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Fallow + Summer Crops



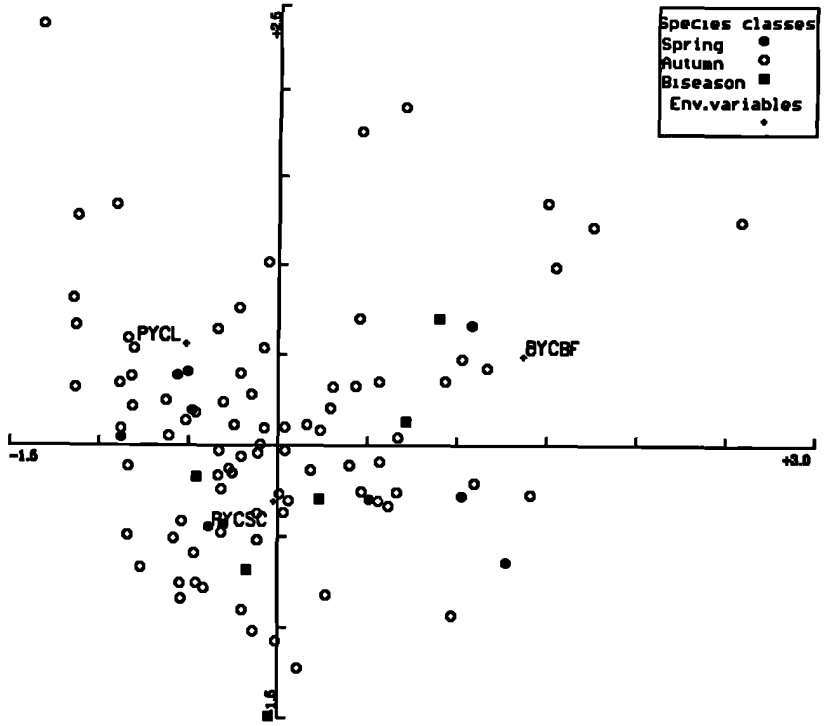


Figure 7.64 **a** CCA of All Fields using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable.
Taxa Coded According to Life Cycle (Axis I x II).

Taxa Life Cycle: Annual; Biennial/Perennial (Bi/Per); Annual/Biennial (Ann/Bi); Perennial (Perenn)

b CCA of All Fields using Previous Year's Crop as the Constraining Variable and Vegetation Zone as the Co-variable.
Taxa Coded According to Germination Time (Axis I x II).

Taxa Germinating Time: Spring; Autumn; Biseasonal

Key: PYCBF = Bare Fallow; PYCL = Legume Crop; PYCSC = Fallow + Summer Crops

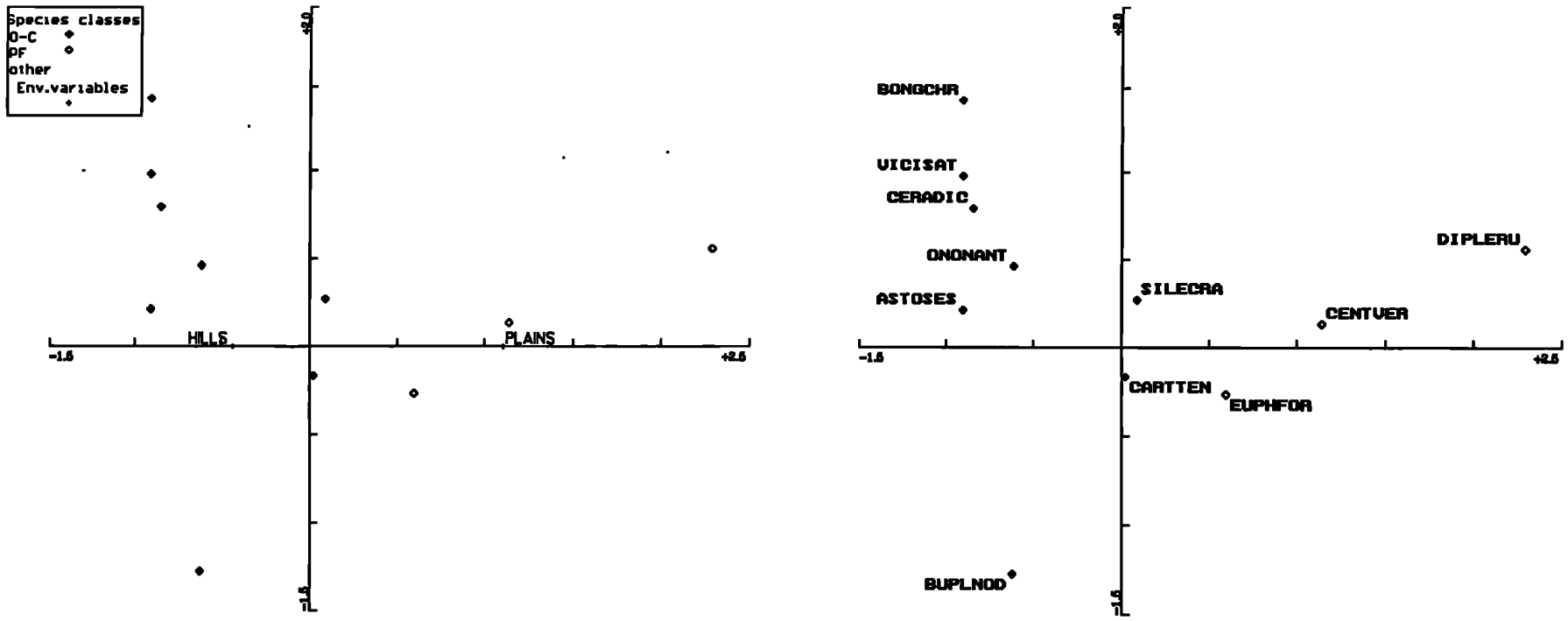


Figure 7.65 a&b CCA of All Fields using Hills/Plains Division as the Constraining Variable. *Only Character/Preferential Taxa of Zohary's Ononis leiosperma-Carthamus tenuis (Hilly) and Scolymeto-Prosopidetum farcatae (Plains) Associations Shown (Axis I x II).*

Association: O-C = Ononis leiosperma-Carthamus tenuis (Hilly); Pl = Scolymeto-Prosopidetum farcatae (Plains)

Key: ASTOSES = *Astoma sesilifolium*; BONGCHR = *Bongardia chrysogonum*; BUPLNOD = *Bulpleurum nodiflorum*; CARTTEN = *Carthamus tenuis*; CENTVER = *Centaurea verutum*; CERADIC = *Cerastium dichotomum*; DIPLERU = *Diplotaxis erucoides*; EUPHFOR = *Euphorbia falcata/reuteriana*; ONONANT = *Ononis antiquorum* (Syn. *O. leiosperma*); SILECRA = *Silene crassipes*; VICISAT = *Vicia sativa* subsp. *angustifolia*

Tables

Table 2.1 1901 Grain Production Figures for the Hauran Districts (reproduced from Issawi 1988, 313).

District	Population	Area under Cultivation (acres)	Wheat (bushels)	Barley (bushels)
Hauran	53,540	297,175	1,063,741	447,708
Jebel Druze	33,090	245,140	791,700	416,967
'Ajlun	30,000	225,000	1,680,000	420,000

Table 2.2 Percentage Distribution of Crop Area among Cereal and Leguminous Crops, 1933 (source: Konikoff 1943, 46).

District	% Wheat	% Barley	% Dhura (Sorghum)	% Maize & Sesame	% Legumes
Irbid	54	11	5	2	28
'Ajlun	63	18	4	2	13
Jarash	49	18	4	-	29

Table 3.1 Approximate Minimum Precipitation Requirements for Some Major Mediterranean Crops (compiled from Arnon 1972b; Doorenbos & Kassam 1979, Saxena 1981; Saxena 1987; Saxena 1988). * denotes summer crops.

Crop	Water Requirement (mm)
Wheat	250-300
Barley	200-250
Sorghum*	300-400
Lentil	300
Chickpea*	400
Faba Bean	500
Flax	300-350
Sesame*	400
Safflower	300
Watermelon*	350

Table 3.2 Wheat Responses to Different Preceding Crops over a 5 Year Period (Littlejohn 1956: 127, Table 3).

Crop	5 Year Average Yield (lb/acre)
Wheat	173
Bare Fallow	437
Green Manure	659
Legume Crop	324

Table 3.3 Nitrogen (N) in kg N/ha and Percentage Derived from Fixation (%df) by Legumes in Two Seasons in Cyprus (Papastylianou 1988: 56, Table 1).

Crop	1982/83*		1983/84**	
	kgN/ha	%df	kgN/ha	%df
Common vetch (*Vicia sativa*)	93	73	106	75
Pea (*Pisum sativum*)	23	36	91	63
Ochrus vetch (*Lathyrus ochrus*)	71	66	105	79
Bitter vetch (*Vicia ervilia*)	45	56	105	70
Faba bean (*Vicia faba major*)	122	63	176	80

* Precipitation = 234 mm ** Precipitation = 330 mm

Table 4.1a The 'Cultural' Variables: Crop Management Practices.

Variable	*Level**	*Categories (Nominal, Ordinal) Units (Quantity)*
1. ROTATION REGIME	Nominal	1 = Cereal/Cereal) Every 2 = Legume/Cereal) 2nd Year 3 = Fallow/Cereal) Wheat 4 = Every 3rd Year Wheat (1 year of 2 cultivated with Legumes) 5 = Previous 5 Years Weedy Fallow 6 = Previous 10 years Summer Crops
2. PREVIOUS YEAR'S CROP	Nominal	1 = Bare Fallow 2 = Fallow with Summer Crops 3 = Legume Crop 4 = Cereal Crop 5 = Weedy Fallow
3. TILLAGE	Nominal	1 = Tractor Tillage 2 = Animal Tillage
4. SOWING RATE	Quantity	kg/dunum
5. SOWING DATE	Nominal	1 = Before Rains 2 = After Rains
6. MANURING	Nominal	1 = Grazing Stubble Only 2 = Manure Applied 3 = ? Chemical Fertiliser Applied
7. WEEDING	Nominal	1 = None 2 = Hand-weeded

(* see Rowntree (1981, 28-34) and section 4.3.3)

Table 4.1b The 'Cultural' Variables: Farming Background.

Variable	*Level**	*Categories (Nominal, Ordinal) Units (Quantity)*
Farmer		
1. AGE	Quantity	Years (estimated)
2. OCCUPATION	Ordinal	Value judgements 1 = 'Educated' 2 = 'Labourer' 3 = Ex- Army 4 = Fellah
3. HOUSEHOLD SIZE	Quantity	Number of children
Land-Holding		
4. TENURE	Ordinal	1 = Rented, for money 2 = Rented, for share 3 = Owned, in part or by close relative 4 = Owned by farmer
5. WHEAT	Quantity	dunum (estimated)
6. TOTAL LAND-HOLDING	Quantity	dunum (estimated)
Livestock		
7. LIVESTOCK	Quantity	FAO Livestock Units
8. EQUIDS	Ordinal	1 = None 2 = Donkeys 3 = Horse 4 = Donkey + Horse

(* see Rowntree (1981, 28-34) and section 4.3.3)

Table 4.1c The 'Environmental' Variables.

Variable	*Level**	*Categories (Nominal, Ordinal) & Units (Quantity)*
Location		
1. HILLS/PLAINS	Nominal	1 = Hills 2 = Plains
2. VEGETATION ZONE	Nominal	1 = Plains Vegetation 2 = Degraded Deciduous Forest 3 = Mixed Degraded Forest 4 = Degraded Evergreen Forest 5 = Evergreen Forest
3. ALTITUDE	Quantity	Meters Above Sea Level
Soil Properties		
4. STONINESS	Quantity	Percentage
5. ORGANIC CONTENT	Quantity	Percentage
6. pH	Quantity	pH Scale
7. MAGNETIC SUSCEPTIBILITY	Quantity	Mass Specific Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)
Situation of the Field		
8. POSITION ON SLOPE	Ordinal	1 = Upper Third 2 = Mid-Slope 3 = Lower Third 4 = Basin Bottom
9. DEGREE OF SLOPE	Ordinal	1 = Flat 2 = Gentle/Flat 3 = Gentle 4 = Steep
10. ASPECT	Nominal	1 = North 2 = South 3 = East 4 = West 5 = Flat/Undifferentiated
The Crop		
11. CROP COVER	Quantity	Percentage (mean for field)
12. HEIGHT OF CROP	Quantity (mean for field)	cm

(* see Rowntree (1981, 28-34) and section 4.3.3)

Table 4.2 Codes Allocated to the Developmental Stages of Taxa Found in Quadrats.

Code	Security of Identification for Taxon	Developmental Stage of Quadrat Specimen/s
8	Securely Identified	Flowering and Fruiting
7	Securely Identified	Fruiting
6	Securely Identified	Flowering
5	Securely Identified	Vegetative
4	Not Securely Identified (cf.)	Flowering and Fruiting
3	Not Securely Identified (cf.)	Fruiting
2	Not Securely Identified (cf.)	Flowering
1	Not Securely Identified (cf.)	Vegetative

Table 4.3 FAO Livestock Units (after Dahl & Hjort 1976: 225, Table 10.1a).

Cattle = 0.8
(Camel = 1)
Goat/Sheep = 0.1

Winter Crops (شتوي - shatawī)				*Summer Crops* (صيفي - ṣaifī)			
Crop	**Botanical Name**	**Arabic**	**Translit.**	**Crop**	**Botanical Name**	**Arabic**	**Translit.**
Wheat (durum)	*Triticum durum* Desf.	قمح	qamḥ	Broom Sorghum	*Sorghum vulgare* Pers. var. *saccharatum*	مكانس	makānis
Barley (hulled 2-row & 6-row)	*Hordeum sativum* L.	شعير	sha'ir	Watermelon	*Citrullus lanatus* (Thunb.) Matsum. & Nakai	بطيخ	baṭṭīkh
Lentil	*Lens culinaris* Medik.	عدس	'adas	Sweet Melon	*Cucumis melo* L.	شمام	shamām
Bitter Vetch	*Vicia ervilia* (L.) Willd.	كرسنة	kirsinna	Snake Cucumber	*Cucumis sativus* L.	فقوس	faqqūs
Horse Bean	*Vicia faba* L.	فول	fūl	Chickpea	*Cicer arietinum* L.	حمص	hummuṣ
Grass Pea	*Lathyrus sativus* L.	جلبانة	jilbāna	Tomato	*Solanum lycopersicum* L.	بندورة	bandūra
Common Vetch	*Vicia sativa* L. subsp. *sativa*	بيقية	biqiya	Okra	*Abelmoschus esculentus* (L.) Moench	باميا	bāmiyā
Fenugreek	*Trigonella foenum-graecum* L.	حلبة	ḥulba	Aubergine	*Solanum melongena* L.	باذنجان	bāḍinjān
				Courgette	*Cucurbita pepo* L.	كوسا	kūsā
				Cowpea	*Vigna unguiculata* (L.) Walp.	لوبيا	lūbiyā
				Field Bean	*Phaseolus vulgaris* L.	فاصوليا	fāṣūliyā
				Tobacco	*Nicotiana tabacum* L.	تتن/دخان	dukhkhān/tutun
				Sesame	*Sesamum indicum* L.	سمسم	simsim

Table 5.1 Common Winter and Summer Crops Cultivated in Northern Jordan.

Table 5.2 Length of the Growing Period for Some Common Summer Crops. (Based on Arnon 1972b; Doorenbos & Pruitt 1977; Doorenbos & Kassam 1979)

Crop	Length of Growing Period (days)
Cucumber	130
Sesame	90-100
Tomato	90-140
Watermelon	80-110

Table 5.3 Local Names and Modern Equivalents for Wheat Measures.

Local Name	Transliteration	Relationship to one ṣāʿ	Weight (c. kg)
رطل	ruṭul	0.25	2.5
ربعية	ruba'iya	0.5	5
صاع	ṣāʿ	1	10
مد	mudd	2	20
كيل/علبة	'alba/kail	6	60
شوال	shuwāl	12	120

Table 5.4 Classification of Ard Components.

Part	Arabic Name	Transliteration
Beam (entire)	عود	'awd ('long stick')
Lower part	برك	burk
Upper part	وصيلة	wasĵla ('connection')
Stilt/sole	ذكر	dhakar ('boy')
Tip end of sole	فجلة	fujla ('radish')
Handle	كابوسة	kābūsa
Reinforcing brace	نطاح	naṭṭāḥ ('butting heads')
Metal band	طوك	ṭūk
Wedge	بلعة	bal'aa
Share	سكة	sikka
Body	حلق	ḥalaq ('ring')
	or بطن	baṭn ('belly')
Wings	أذان	ādhān ('ears')
Socket reinforcement	يد	yad ('hand')
Tongue	حسمة	ḥisma
	or راس	rās ('head')

Table 5.5 Normal Draught and Work Potential of Various Animals (adapted from Hopfen (1969: 10-11, Table 2), after Russell (1988, 120, Table 24)).

ANIMAL	Average Weight (kg)	Approximate Draught (kg)	Average Speed of Work (km/hr)	Horsepower Developed	Daily Work (hrs)
Light horse	400-700	60-80	3.6	1.00	8+
Ox	500-900	60-80	2.2-3.1	0.75	6-8
Buffalo	400-900	50-80	2.9-3.2	0.75	- - -
Cow	400-600	50-60	2.5	0.45	2-3
Mule	350-500	50-60	3.2-3.6	0.70	8+
Donkey	200-300	30-40	2.5	0.35	- - -

Table 5.6 Reported Tillage Efficiencies and Draughts of Symmetrical Ards (after Russell 1988: 123, Table 27).

LOCATION	DRAUGHT	HRS/UNIT AREA	HRS/DU	SOURCE
Palestine	2 oxen	10/3-3.75 du	2.7-3.3	Mishna Ohalot 17A
Palestine	2 oxen	10/1-4 du	2.5-10	Avitsur 1965:iv
Palestine	2 oxen	10/2.5-3 du	3.3-4.0	"
Yemen	1 donkey	0.5/100 m^2	5.0	Varisco 1982:167
Iran	2 oxen	10/3,700 m^2	2.7	Alberts 1963:350

Table 5.7 Sowing Rates used by the Study Group (72 farmers). The weights refer to the local names for measures (see 5.2.1 and Table 5.3). For complete version of this table (with vegetation zones in the hills) see Table 6.14 and also Fig. 6.4.

Location /Sowing Rate (kg/dunum)	*Plains*	*Hills*	Total
7-10 (c. ṣāʿ)	*3 13.0%* *11.5%*	*20 87.0%* *43.5%*	23 31.9%
>10-15	*9 39.1%* *34.6%*	*14 60.9%* *30.4%*	23 31.9%
>15-20 (c. mudd)	*14 53.8%* *53.8%*	*12 46.2%* *26.1%*	26 36.1%
Total	*26 36.1%*	*46 63.9%*	72

Table 5.8 Wheat Grain Yields (rainfed agriculture) in the Near East (kg/dunum).

Location	Source	Yield (kg/dunum)
Jordan	Duwayri 1985, 130	55 kg/dunum (1974-1982)
Palestine/Transjordan /Hauran	Pinner 1930, 67-8	65 kg/dunum (1914-1923)
Palestine	Simpson 1930, 177	50 kg/dunum
Asvan, Turkey	Hillman 1973, 226-7	63 kg/dunum

Table 6.1a Mean, Standard Deviation, Minimum and Maximum Values of Selected Variables for All Farmers.

ALL FARMERS (n = 72)				
Variable	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
Age (years)	55.71	11.61	30	88
No. of Children	8.11	2.65	0	15
Area of wheat cultivated (dunum)	13.94	11.08	2	60
Sowing Rate (kg/dunum)	14.17	3.91	8	20
No. of Livestock (FAO livestock units - see Table 4.3)	1.67	4.29	0	33

Table 6.1b Mean, Standard Deviation, Minimum and Maximum Values of Selected Variables for Hills Farmers.

HILLS FARMERS (n = 46)				
Variable	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
Age (years)	56.02	10.05	40	75
No. of Children	8.02	2.34	0	12
Area of wheat cultivated (dunum)	11.85	8.39	2	40
Sowing Rate (kg/dunum)	13.30	3.90	9	20
No. of Livestock (FAO livestock units - see Table 4.3)	1.87	4.94	0	33

Table 6.1c Mean, Standard Deviation, and Minimum and Maximum Values of Selected Variables for Plains Farmers.

Plains FARMERS (n = 26)				
Variable	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
Age (years)	55.15	14.16	30	88
No. of Children	8.27	3.16	2	15
Area of wheat cultivated (dunum)	17.65	14.14	3	60
Sowing Rate (kg/dunum)	15.69	3.52	8	20
No. of Livestock (FAO livestock units - see Table 4.3)	1.30	2.86	0	10

Table 6.2 Age Groups of Farmers.

Age Group/ Location	30-40	>40-50	>50-60	>60-70	>70	Total
Hills	*4 8.7% 40.0%*	*18 39.1% 78.3%*	*14 30.4% 63.6%*	*8 17.4% 61.5%*	*2 4.3% 50.0%*	*46 63.9%*
Plains	*6 23.1% 60%*	*5 19.2% 21.7%*	*8 30.8% 36.4%*	*5 19.2% 38.5%*	*2 7.7% 50.0%*	*26 36.1%*
Total	10 13.9%	23 31.9%	22 30.6%	13 18.1%	4 5.6%	72 100.0%

Note: Key to Cross-Tables

X	Y%
Z%	

X = column figure Y = column figure as % of row total Z = column figure as % of column total

Table 6.3 Age Groups and Occupation

Occupation/ Age Group	'Educated'	'Labour'	Ex-army	Fellah	Total
30-40	6 60.0% 54.5%	1 10.0% 7.7%		3 30.0% 8.3%	10 13.9%
>40-50	5 21.7% 45.5%	9 39.1% 69.2%	5 21.7% 41.7%	4 17.4% 11.1%	23 31.9%
>50-60		3 13.6% 23.1%	5 22.7% 41.7%	14 63.6% 38.9%	22 30.6%
>60-70			2 15.4% 16.7%	11 84.6% 30.6%	13 18.1%
>70				4 100.0% 11.1%	4 5.6%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.4 Farmer's Occupation and Vegetation Zone.

Occupation /Location	'Educated'	'Labour'	Ex-army	Fellah	Total
Plains	*8 30.8% 72.7%*	*2 7.7% 15.4%*	*2 7.7% 16.7%*	*14 53.9% 38.9%*	*26 36.1%*
Hills (Total of zones with trees)	*3 6.5% 27.3%*	*11 23.9% 84.6%*	*10 21.7% 83.3%*	*22 47.8% 61.1%*	*46 63.9%*
Degraded Deciduous Forest	1 8.3% 9.1%	2 16.7% 15.4%	3 25.0% 25.0%	6 50.0% 16.7%	12 16.7%
Degraded Mixed Forest	1 14.3% 9.1%	2 28.6% 15.4%	1 14.3% 8.3%	3 42.9% 8.3%	7 9.7%
Degraded Evergreen Forest	1 7.1% 9.1%	6 42.9% 46.2%		7 50.0% 19.4%	14 19.4%
Evergreen Forest		1 7.7% 7.7%	6 46.2% 50.0%	6 46.2% 16.7%	13 18.1%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.5 Area of Wheat Cultivated (dunum) and Vegetation Zone.

Vegetation Zone /Area of Wheat (dunum)	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
5<	*2 20.0% 7.7%*	*8 80.0% 17.4%*	4 40.0% 33.3%	1 10.0% 14.3%		3 30.0% 23.1%	10 13.9%
>5-10	*8 26.7% 30.8%*	*22 73.3% 47.8%*	8 26.7% 66.7%	2 6.7% 28.6%	5 16.7% 35.7%	7 23.3% 53.8%	30 41.7%
>10-20	*12 48.0% 46.1%*	*13 52.0% 28.3%*		3 12.0% 42.9%	8 32.0% 57.1%	2 8.0% 15.4%	25 34.7%
>20	*4 57.1% 15.4%*	*3 42.9% 6.5%*		1 14.3% 14.3%	1 14.3% 7.1%	1 14.3% 7.7%	7 9.7%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.6 Market Prices (from Irbid) of Crops Cultivated in northern Jordan - August 1990.

Crop	Price (JD/Ton)
Wheat	130-140
Barley	90
Bitter Vetch	135
Lentil	220
Wheat Straw	80
Bitter Vetch Straw	120
Lentil Straw	100
Horse Bean	150
Fenugrek	220
Chickpea	340-350

Table 6.7 Tillage Power and Vegetation Zone.

Vegeta-tion Zone /Tillage Power	*Plains*	*Hills (Total of zones with trees)*	Degraded Decid-uous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
Tractor Tillage	*24 51.1% 92.3%*	*23 48.9% 50.0%*	7 14.9% 58.3%	2 4.3% 28.6%	9 19.1% 64.3%	5 10.6% 38.5%	47 65.3%
Animal Tillage	*2 8.0% 7.7%*	*23 92.0% 50.0%*	5 20.0% 41.7%	5 20.0% 71.4%	5 20.0% 35.7%	8 32.0% 61.5%	25 34.7%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.8 Farmers' Occupation and Tillage Power.

Tillage Power/ Occupation	Tractor Tillage	Animal Tillage	Total
'Educated'	11 100.0% 23.4%		11 15.3%
'Labour'	7 53.8% 14.9%	6 46.2% 24.0%	13 18.1%
Ex-army	5 41.7% 10.6%	7 58.3% 28.0%	12 16.7%
Fellah	24 66.7% 51.1%	12 33.3% 48.0%	36 50.0%
Total	47 65.3%	25 34.7%	72 100.0%

Table 6.11 Ownership of Donkeys and Horses and Vegetation Zone.

Vegetation Zone/ Donkey & Horse Ownership	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Degraded Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
No Donkeys /Horses	*18 66.7% 69.2*	*9 33.3% 19.6%*	3 11.1% 25.0%	1 3.7% 14.3%	4 14.8% 28.6%	1 3.7% 7.7%	27 37.5
Donkey/s Only	*6 16.2% 23.1%*	*31 83.8% 67.4%*	9 24.3% 75.0%	5 13.5% 71.4%	9 24.3% 64.3%	8 21.6% 61.5%	37 51.4%
Horse/s Only	*1 50.0% 3.9%*	*1 50.0% 2.2%*				1 50.0% 7.7%	2 2.8%
Donkey/s and Horse/s	*1 16.7% 3.9%*	*5 83.3% 10.9%*		1 16.7% 14.3%	1 16.7% 7.1%	3 50.0% 23.1%	6 8.3%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.12 Farmers' Occupation and Ownership of Horses and Donkeys.

Donkey & Horse Ownership /Occupation	No Donkeys /Horses	Donkey/s Only	Horse/s Only	Donkey/s and Horse/s	Total
'Educated'	11 100.0% 40.7%				11 15.3%
'Labour'	4 30.8% 14.8%	8 61.5% 21.6%		1 7.7% 16.7%	13 18.1%
Ex-army	1 8.3% 3.7%	8 66.7% 21.6%	2 16.7% 100.0%	1 8.3% 16.7%	12 16.7%
Fellah	11 30.6% 40.7%	21 58.3% 56.8%		4 11.1% 66.7%	36 50.0%
Total	27 37.5%	37 54.1%	2 2.8%	6 8.3%	72 100.0%

Table 6.13 Ownership of Donkey/s and Horse/s and Tillage Power.

Tillage Power /Tillage	Tractor Tillage	Animal Tillage	Total
No Donkey/s Horses	27 100.0% 57.4%		27 37.5%
Donkey/s Only	15 40.5% 31.9%	22 59.5% 88.0%	37 51.4%
Horses/s Only	1 50.0% 2.1%	1 50.0% 4.0%	2 2.8%
Donkey/s and Horse/s	4 66.7% 8.5%	2 33.3% 8.0%	6 8.3%
Total	47 65.3%	25 34.7%	72 100.0%

Table 6.14 Sowing Date and Vegetation Zone.

Vegeta-tion Zone /Sowing Date	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
Before Rains ('afir)		*3 100.0% 6.5%*			2 66.7% 14.3%	1 33.3% 8.3%	3 4.2%
After Rains (riyy)	*26 37.7% 100.0%*	*43 62.3% 93.5%*	12 17.4% 100.0%	7 16.3% 100.0%	12 27.9% 85.7%	12 27.9% 92.3%	69 95.8%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.15 Sowing Rate (kg/dunum) and Vegetation Zone.

Vegeta-tion Zone / Sowing Rate (kg/ dunum)	*Plains*	*Hills (Total of zones with trees)*	Degraded Decid-uous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
<10	*3 13.0% 11.5%*	*20 87.0% 43.5%*	5 25.0% 41.7%	2 10.0% 28.6%	5 25.0% 35.7%	8 40.0% 61.5%	23 31.9%
>10-15	*9 39.1% 34.6%*	*14 60.9% 30.4%*	6 42.9% 50.0%	1 7.1% 14.3%	3 21.4% 21.4%	4 28.6% 30.8%	23 31.9%
>15-20	*14 53.8% 53.8%*	*12 46.2% 26.1%*	1 8.3% 8.3%	4 33.3% 57.1%	6 50.0% 42.9%	1 8.3% 7.7%	26 36.1%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.16 Hand-Weeding and Vegetation Zone.

Vegeta-tion Zone /Weeding	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
No Weeding	*19 38.8%* *73.1%*	*30 61.2%* *65.2%*	6 12.2% 50.0%	3 6.1% 42.9%	11 22.4% 78.6%	10 20.4% 76.9%	49 68.1%
Weeding	*7 30.4%* *26.9%*	*16 69.6%* *34.8%*	6 26.1% 50.0%	4 17.4% 57.1%	3 13.0% 21.4%	3 13.0% 23.1%	23 31.9%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.17a Hand-Weeding and Farmers' Occupation.

Occupation/ Weeding	'Educated'	'Labour'	Ex-army	Fellah	Total
No Weeding	11 22.4% 100.0%	10 20.4% 76.9%	5 10.2% 41.7%	23 46.9% 63.9%	49 68.1%
Weeding		3 13.0% 23.1%	7 30.4% 58.3%	13 56.5% 36.1%	23 31.9%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.17b Hand-Weeding and Farmers' Occupation in the Hills.

Occupation/ Weeding	'Educated'	'Labour'	Ex-army	Fellah	Total
No Weeding	3 10.0% 100.0%	8 26.7% 72.7%	5 16.7% 50.0%	14 46.7% 63.6%	30 65.2%
Weeding		3 18.8% 27.3%	5 31.3% 50.0%	8 50.0% 36.4%	16 34.8%
Total	3 6.5%	11 23.9%	10 21.7%	22 47.8%	46 100.0%

Table 6.18 Hand-Weeding and Farmers' Age.

Age Group/ Weeding	30-40	>40-50	>50-60	>60-70	>70	Total
No Weeding	9 18.4% 90%	17 34.7% 73.9%	15 30.6% 68.2%	6 12.2% 46.2%	2 4.1% 50.0%	49 68.1%
Weeding	1 4.3% 10.0%	6 26.1% 26.1%	7 30.4% 31.8%	7 30.4% 53.8%	2 8.7% 50.0%	23 31.9%
Total	10 13.9%	23 31.9%	22 30.6%	13 18.1%	4 5.6%	72 100.0%

Table 6.19 Hand-Weeding and Number of Children.

No. of Children/ Weeding	0-2	>2-5	>5-8	>8	Total
No Weeding	2 4.1% 66.7%	4 8.2% 66.7%	25 51.0% 73.5%	18 36.7% 62.1%	49 68.1%
Weeding	1 4.3% 33.3%	2 8.7% 33.3%	9 39.1% 26.5%	11 47.8% 37.9%	23 31.9%
Total	3 4.2%	6 8.3%	34 47.2%	29 40.3%	72 100.0%

Table 6.20 Hand-Weeding and Land Tenure.

Tenure/ Weeding	Rent (money)	Rent (share)	Own (with relatives)	Own	Total
No Weeding	5 10.2% 83.3%	8 16.3% 88.9%	6 12.2% 33.3%	30 61.2% 76.9%	49 68.1%
Weeding	1 4.3% 16.7%	1 4.3% 11.1%	12 52.2% 66.7%	9 39.1% 23.1%	23 31.9%
Total	6 8.3%	9 12.5%	18 25.0%	39 54.2%	72 100.0%

Table 6.21a Hand-Weeding and Livestock (FAO livestock units). See Table 4.3 or Fig. 6.3 for livestock equivalents.

Livestock/ Weeding	0	0-1	>1-3	>3-6	>6-9	>9	Total
No Weeding	26 53.1% 76.5%	5 10.2% 35.7%	12 24.5% 80.0%	4 8.2% 80.0%		2 4.1% 66.7%	49 68.1%
Weeding	8 34.8% 23.5%	9 39.1% 64.3%	3 13.0% 20.0%	1 4.3% 20.0%	1 4.3% 100.0%	1 4.3% 33.3%	23 31.9%
Total	34 47.2%	14 19.4%	15 20.8%	5 6.9%	1 1.4%	3 4.2%	72 100.0%

Table 6.21b Hand-Weeding and Livestock (FAO livestock units) in the Hills Alone. See Table 4.3 or Fig. 6.3 for livestock equivalents.

Livestock/ Weeding	0	>0 - 1.0	>1.0 - 3.0	>3.0 - 6.0	>6.0 - 9.0	>9.0	Total
No Weeding	10 33.3% 71.4%	5 16.7% 38.5%	12 40.0% 80.0%	1 3.3% 50.0%		2 6.7% 100.0%	30 65.2%
Weeding	4 25.0% 28.6%	8 50.0% 61.5%	3 18.8% 20.0%	1 6.3% 50.0%			16 34.8%
Total	14 30.4%	13 28.3%	15 32.6%	2 4.3%	0 0.0%	2 4.3%	46 100.0%

Table 6.22 Hand-Weeding and Sowing Rate (kg/dunum).

Sowing Rate kg/dunum /Weeding	10<	>10-15	>15-20	Total
No Weeding	13 26.5% 56.5%	15 30.6% 65.2%	21 42.9% 80.8%	49 68.1%
Weeding	10 43.5% 43.5%	8 34.8% 34.8%	5 21.7% 19.2%	23 31.9%
Total	23 31.9%	23 31.9%	26 36.1%	72 100.0%

Table 6.23 Hand-Weeding and Crop Rotation Regime.

Rotation Regime/ Weeding	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
No Weeding	1 2.0% 100.0%	5 10.2% 50.0%	19 38.8% 73.1%	24 49.0% 68.6%	49 68.1%
Weeding		5 21.7% 50.0%	7 30.4% 26.9%	11 47.8% 31.4%	23 31.9%
Total	1 1.4%	10 13.9%	26 36.1%	35 48.6%	72 100.0%

Table 6.24 Hand-Weeding and Previous Year's Crop.

Previous Year's Crop/ Weeding	Bare Fallow	Fallow with Summer Crops	Legume Crop	Cereal Crop	Total
No Weeding	5 10.2% 62.5%	33 67.3% 68.8%	10 20.4% 66.7%	1 2.0% 100.0%	49 68.1%
Weeding	3 13.0% 37.5%	15 65.2% 31.2%	5 21.7% 33.3%		23 31.9%
Total	8 11.1%	48 66.7%	15 20.8%	1 1.4%	72 100.0%

Table 6.25 Hand-Weeding and Fertilisation.

Fertilisation/ Weeding	Grazed	Manure	Chemical Fertiliser	Total
No Weeding	45 91.8% 75.0%	1 2.0% 33.3%	3 6.1% 33.3%	49 68.1%
Weeding	15 65.2% 25.0%	2 8.7% 66.7%	6 26.1% 66.7%	23 31.9%
Total	60 83.3%	3 4.2%	9 12.5%	72 100.0%

Table 6.26 Hand-Weeding and Tillage Power.

Tillage Power /Weeding	Tractor Tillage	Animal Tillage	Total
No Weeding	39 79.6% 83.0%	10 20.4% 40.0%	49 68.1%
Weeding	8 34.8% 17.0%	15 65.2% 60.0%	23 31.9%
Total	47 65.3%	25 34.7%	72 100.0%

Table 6.27 Fertilisation and Farmers' Occupation.

Occupation/ Fertilisation	'Educated'	'Labourer'	Ex-army	Fellah	Total
Grazing	10 16.7% 90.9%	12 20.0% 92.3%	8 13.3% 66.7%	30 50.0% 83.3%	60 83.3%
Manured		1 33.3% 7.7%		2 66.6% 5.6%	3 4.2%
Chemical Fertiliser	1 11.1% 9.1%		4 44.4% 33.3%	4 44.4% 11.1%	9 12.5%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.28 Fertilisation and Land Tenure.

Tenure/ Fertilisation	Rent (money)	Rent (share)	Own (with relative)	Own	Total
Grazing	5 8.3% 83.3%	9 15.0% 100%	14 23.3% 77.8%	32 53.3% 82.1%	60 83.3%
Manured				3 100.0% 7.7%	3 4.2%
Chemical Fertiliser	1 11.1% 16.7%		4 44.4% 22.2%	4 44.4% 10.3%	9 12.5%
Total	6 8.3%	9 12.5%	18 25.0%	39 54.2%	72 100.0%

Table 6.29 Fertilisation and Livestock (FAO livestock units). See Table 4.3 or Fig. 6.3 for livestock equivalents.

Livestock/ Fertilisation	0	>0-1	>1-3	>3	Total
Grazed	29 48.3% 85.3%		25 41.7% 86.2%	6 10.0% 66.7%	60 83.3%
Manured			1 33.3% 3.4%	2 66.7% 22.2%	3 4.2%
Chemical Fertiliser	5 55.6% 14.7%		3 33.3% 10.3%	1 11.1% 11.1%	9 12.5%
Total	34 47.2%		29 40.3%	9 12.5%	72 100.0%

Table 6.30 Fertilisation and Crop Rotation Regime.

Crop Rotation Regime/ Fertilisation	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
Grazed	1 1.7% 100.0%	10 16.7% 100.0%	22 36.7% 84.6	27 45.0% 77.1%	60 83.3%
Manured			1 33.3% 3.9%	2 66.7% 5.8%	3 4.2%
Chemical Fertiliser			3 33.3% 11.5%	6 66.7% 17.1%	9 12.5%
Total	1 1.4%	10 13.9%	26 36.1%	35 48.6%	72 100.0%

Table 6.31 Fertilisation and Previous Year's Crop.

Previous Year's Crop /Fertilisation	Bare Fallow	Fallow with Summer Crops	Legume Crop	Cereal Crop	Total
Grazed	6 10.0% 75%	39 65.0% 81.3%	14 23.3% 93.3%	1 1.7% 100%	60 83.3%
Manured		2 66.6% 4.2%	1 33.3% 6.7%		3 4.2%
Chemical Fertiliser	2 22.2% 25%	7 77.8% 14.6%			9 12.5%
Total	8 11.1%	48 66.7%	15 20.8%	1 1.4%	72 100.0%

Table 6.32 Crop Rotation Regime and Vegetation Zone.

Vegetation Zone/ Rotation Regime	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
Cereal /Cereal		*1 100.0% 2.2%*			1 100.0% 7.1%		1 1.4%
Cereal /Legume	*1 10.0% 3.8%*	*9 90.0% 19.6%*	1 10.0% 8.3%	2 20.0% 28.6%	3 30.0% 21.4%	3 30.0% 23.1%	10 13.9%
Cereal /Fallow	*3 11.5% 11.5%*	*23 88.5% 50.0%*	5 19.2% 41.7%	5 19.2% 71.4%	7 26.9% 50.0%	6 23.1% 46.2%	26 36.1%
3 Year Rotation	*22 62.9% 84.6%*	*13 37.1% 28.3%*	6 17.1% 50.0%		3 8.6% 21.4%	4 11.4% 30.8%	35 48.6%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.33 Previous Year's Crop and Vegetation Zone.

Vegetation Zone/ Previous Year's Crop	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
Bare Fallow	*1 12.5% 3.8%*	*7 87.5% 15.2%*	2 25.0% 16.7%	1 12.5% 14.3%	3 37.5% 21.4%	1 12.5% 7.7%	8 11.1%
Fallow with Summer Crops	*23 47.9% 88.5%*	*25 52.1% 54.4%*	8 16.7% 66.7%	4 8.3% 57.1%	7 14.6% 50.0%	6 12.5% 46.2%	48 66.7%
Legume Crop	*2 13.3% 7.7%*	*13 86.7% 28.3%*	2 13.3% 16.7%	2 13.3% 28.6%	3 20.0% 21.4%	6 40.0% 46.2%	15 20.8%
Cereal Crop		*1 100.0% 2.2%*			1 100.0% 7.1%		1 1.4%
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.34 Crop Rotation Regime and Farmers' Occupation.

Occupation /Rotation Regime	'Educated'	'Labour'	Ex-army	Fellah	Total
Cereal/Cereal		1 100.0% 7.7%			1 1.4%
Cereal/Legume		4 40.0% 30.8%	2 20.0% 16.7%	4 40.0% 11.1%	10 13.9%
Cereal/Fallow	3 11.6% 27.3%	4 15.4% 30.8%	5 19.2% 41.7%	14 53.8% 38.9%	26 36.1%
3 Year Rotation	8 22.9% 72.7%	4 11.4% 30.8%	5 14.3% 41.7%	18 51.4% 50.0%	35 48.6%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.35 Previous Year's Crop and Occupation.

Occupation /Previous Year's Crop	'Educated'	'Labour'	Ex-army	Fellah	Total
Bare Fallow				8 100.0% 22.2%	8 11.1%
Fallow with Summer Crops	10 20.8% 90.9%	7 14.6% 53.8%	9 18.8% 75.0%	22 45.8% 61.1%	48 66.7%
Legume Crop	1 6.7% 9.1%	5 33.3% 38.5%	3 20.0% 25.0%	6 40.0% 16.7%	15 20.8%
Cereal		1 100.0% 7.7%			1 1.4%
Total	11 15.3%	13 18.1%	12 16.7%	36 50.0%	72 100.0%

Table 6.36 Number of Children and Crop Rotation Regime.

Rotation Regime /No. of Children	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
0-2			2 66.7% 7.7%	1 33.3% 2.9%	3 4.2%
>2-5		1 16.7% 10.0%	1 16.7% 3.9%	4 66.7% 11.4%	6 8.3%
>5-8		5 14.7% 50.0%	12 35.3% 46.2%	17 50.0% 48.6%	34 47.2%
>8	1 3.4% 100.0%	4 13.8% 40.0%	11 37.9% 42.3%	13 44.8% 37.1%	29 40.3%
Total	1 1.4%	10 13.9%	26 36.1%	35 48.6%	72 100.0%

Table 6.37 Number of Children and Previous Year's Crop.

Previous Year's Crop /No. of Children	Bare Fallow	Fallow with Summer Crops	Legume Crop	Cereal Crop	Total
0-2	1 33.3% 12.5%	2 66.7% 4.2%			3 4.2%
>2-5	1 16.7% 12.5%	4 66.7% 8.3%	1 16.7% 6.7%		6 8.3%
>5-8	4 11.8% 50.0%	22 64.7% 45.8%	8 23.5% 53.3%		34 47.2%
>8	2 6.9% 25.0%	20 69.0% 41.7%	6 20.7% 40.0%	1 3.4% 100.0%	29 40.3%
Total	8 11.1%	48 66.7%	15 20.8%	1 1.4%	72 100.0%

Table 6.38 Land Tenure and Vegetation Zone.

Vegeta-tion Zone/ Tenure	*Plains*	*Hills (Total of zones with trees)*	Degraded Deciduous Forest	Mixed Forest	Degraded Evergreen Forest	Evergreen Forest	Total
Rent (money)	*2 33.3% 7.7%*	*4 66.7% 8.7%*		2 33.3% 28.6%	1 16.7% 7.1%	1 16.7% 7.7%	6 8.3%
Rent (share)	*1 11.1% 3.8%*	*8 88.9% 17.4%*	2 22.2% 16.7%	2 22.2% 28.6%	2 22.2% 14.3%	2 22.2% 15.4%	9 12.5%
Own (with relative)	*9 50.0% 34.6%*	*9 50.0% 19.6%*	2 11.1% 16.7%	3 16.7% 42.9%	2 11.1% 14.3%	2 11.1% 15.4%	18 25.0%
Own	*14 35.9% 53.9%*	*25 64.1% 54.3%*	8 20.5% 66.7%		9 23.1% 64.3%	8 20.5% 61.5%	39 54.2
Total	*26 36.1%*	*46 63.9%*	12 16.7%	7 9.7%	14 19.4%	13 18.1%	72 100.0%

Table 6.39a Land Tenure and Crop Rotation Regime.

Tenure/ Rotation Regime	Rented (money)	Rented (share)	Owned (with relative)	Owned	Total
Cereal/Cereal	1 100.0% 16.7%				1 1.4%
Cereal/Legume	1 10.0% 16.7%	2 20.0% 22.2%	4 40.0% 22.2%	3 30.0% 7.7%	10 13.9%
Cereal/Fallow	2 7.7% 33.3%	5 19.2% 55.6%	6 23.1% 33.3%	13 50.0% 33.3%	26 36.1%
3 Year Rotation	2 5.7% 33.3%	2 5.7% 22.2%	8 22.9% 44.4%	23 65.7% 59.0%	35 48.6%
Total	6 8.3%	9 12.5%	18 25.0%	39 54.2%	72 100.0%

Table 6.39b Land Tenure and Crop Rotation Regime in the Hills.

Tenure/ Rotation Regime	Rented (money)	Rented (share)	Owned (with relative)	Owned	Total
Cereal/Cereal	1 100.0% 25.0%				1 2.2%
Cereal/Legume	1 11.1% 25.0%	2 22.2% 25.0%	3 33.3% 33.3%	3 33.3% 12.0%	9 19.6%
Cereal/Fallow	2 8.7% 50.0%	5 21.7% 62.5%	4 17.4% 44.4%	12 52.2% 48.0%	23 50.0%
3 Year Rotation		1 7.7% 12.5%	2 15.4% 22.2%	10 76.9% 40.0%	13 28.3%
Total	4 8.7%	8 17.4%	9 19.6%	25 54.3%	46 100.0%

Table 6.40 Land Tenure and Previous Year's Crop.

Tenure/ Previous Year's Crop	Rented (money)	Rented (share)	Owned (with relative)	Owned	Total
Bare Fallow	1 12.5% 16.7%	1 12.5% 11.1%	1 12.5% 5.6%	5 62.5% 12.8%	8 11.1%
Fallow with Summer Crops	3 6.3% 50.0%	6 12.5% 66.7%	13 27.1% 72.2%	26 54.2% 66.7%	48 66.7%
Legume Crop	1 6.7% 16.7%	2 13.3% 22.2%	4 26.7% 22.2%	8 53.3% 20.5%	15 20.8%
Cereal Crop	1 100.0% 16.7%				1 1.4%
Total	6 8.3%	9 12.5%	18 25.0%	39 54.2%	72 100.0%

Table 6.41 Area of Wheat Cultivated (dunum) and Crop Rotation Regime.

Rotation Regime /Area of Wheat (dunum)	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
1-5		1 10.0% 10%	4 40.0% 15.4%	5 50.0% 14.3%	10 13.9%
>5-10		3 10.0% 30.0%	11 36.7% 42.3%	16 53.3% 45.7%	30 41.7%
>10-20	1 4.0% 100%	5 20.0% 50.0%	9 36.0% 34.6%	10 40.0% 28.6%	25 34.7%
>20		1 14.3% 10%	2 28.6% 7.7%	4 57.1% 11.4%	7 9.7%
Total	1 1.4%	10 13.9%	26 36.1%	35 48.6%	72 100.0%

Table 6.42a Livestock (FAO livestock units) and Crop Rotation Regime. See Table 4.3 or Fig. 6.3 for livestock equivalents.

Rotation Regime /Livestock	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
0			12 35.5% 46.1%	22 64.7% 62.9%	34 47.2%
>0 - 1.0	1 7.1% 100.0%	4 28.6% 40.0%	6 42.9% 23.1%	3 21.4% 8.6%	14 19.4%
>1.0-3.0		4 26.7% 40.0%	7 46.7% 26.9%	4 26.7% 11.4%	15 20.8%
>3.0		2 22.2% 20.0%	1 11.1% 3.9%	6 66.7% 17.1%	9 12.5%
Total	1 1.4%	10 13.9%	26 36.1%	35 48.6%	72 100.0%

Table 6.42b Livestock (FAO livestock units) and Crop Rotation Regime in the Hills. See Table 4.3 or Fig. 6.3 for livestock equivalents.

Rotation Regime /Livestock	Cereal /Cereal	Cereal /Legume	Cereal /Fallow	3 Year Rotation	Total
0			11 78.6% 47.8%	3 21.4% 23.1%	14 30.4%
>0 - 1.0	1 7.7% 100.0%	4 30.8% 44.4%	5 38.5% 21.7%	3 23.1% 23.1%	13 28.3%
>1.0-3.0		4 26.7% 44.4%	7 46.7 30.4%	4 26.7% 30.8%	15 32.6%
>3.0		1 25.0% 11.1%		3 75.0% 23.1%	4 8.7%
Total	1 2.2%	9 19.6%	23 50.0%	13 28.3%	46 100.0%

Table 7.1a Crop Rotation Regimes of Fields Sampled in the Hills and Plains.

Rotation Regime	Hills	Plains
Cereal-Cereal	1	
Cereal-Legume	7	
Cereal-Fallow	22	2
Three Year Regime	8	16
5 Years Weedy Fallow	3	
10 Years Summer Crops	1	

Table 7.1b The Previous Year's Crop of Fields Sampled in the Hills and Plains.

Previous Year's Crop	Hills	Plains
Bare Fallow	6	
Fallow with Summer Crops	21	17
Winter Legume Crop	11	1
Cereal Crop	1	
Weedy Fallow	3	

Table 7.2 Summary of the Correspondence Analysis of All the Fields.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.339	0.208	0.192	0.165	3.347
Cumulative percentage variance of weed data	:	10.1	16.4	22.1	27.0	
Sum of all unconstrained eigenvalues						3.347

Table 7.3 Summary of the CA of All the Fields Cultivated under Two and Three Year Crop Rotation Regimes.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.340	0.222	0.203	0.153	3.173
Cumulative percentage variance of weed data	:	10.7	17.8	24.2	29.0	
Sum of all unconstrained eigenvalues						3.173

Table 7.4a Summary of the CCA of All the Fields using All the External Variables as Constraining Variables.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.297	0.208	0.165	0.135	3.154
Taxa-external correlations	:	0.947	0.969	0.929	0.977	
Cumulative percentage variance						
of weed data	:	9.4	16.0	21.2	25.5	
of taxa-external relation	:	14.0	23.9	31.7	38.1	
Sum of all unconstrained eigenvalues						3.154
Sum of all canonical eigenvalues						2.113

Table 7.4b Summary of the CCA of all the Fields using All the External Variables excluding aspect, slope, position on the slope as the Constraining Variables.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.285	0.197	0.137	0.130	3.154
Taxa-external correlations	:	0.930	0.953	0.915	0.942	
Cumulative percentage variance						
of weed data	:	9.1	15.3	19.7	23.8	
of weed-external relation	:	16.4	27.7	35.6	43.1	
Sum of all unconstrained eigenvalues						3.154
Sum of all canonical eigenvalues						1.741

Table 7.5a Fields Cultivated under Two and Three Year Crop Rotation Regimes in the Hills Vegetation Zones.

Rotation Regime	Evergreen	Degraded Evergreen	Degraded Mixed	Degraded Deciduous	Total
Cereal-Legume	1	3	2	1	7
Cereal-Fallow	5	8	5	4	22
Three Year Regime	3	1		3	7
Total	9	12	7	8	36

Table 7.5b Previous Year's Crops of Fields Cultivated under Two and Three Year Crop Rotation Regimes in the Hills Vegetation Zones.

Previous Year's Crop	Evergreen	Degraded Evergreen	Degraded Mixed	Degraded Deciduous	Total
Winter Legume Crop	4	3	2	2	11
Fallow with Summer Crops	4	5	5	5	19
Bare Fallow	1	4		1	6
Total	9	12	7	8	36

Table 7.6 Summary of the CA for Fields in the Hills.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.259	0.231	0.181	0.159	2.450
Cumulative percentage variance of weed data	:	10.6	20.0	27.4	33.9	
Sum of all unconstrained eigenvalues						2.450

Table 7.7a Summary of the Canonical Correspondence Analysis of the Hills Fields using All the External Variables as Constraining Variables.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.253	0.225	0.178	0.155	2.450
Taxa-external correlations	:	0.992	0.990	0.995	0.990	
Cumulative percentage variance						
of weed data	:	10.3	19.5	26.8	33.1	
of taxa-external relation	:	11.1	20.9	28.7	35.4	
Sum of all unconstrained eigenvalues						2.450
Sum of all canonical eigenvalues						2.289

Table 7.7b Summary of the Canonical Correspondence Analysis of the Hills Fields using all the External Variables excluding position on the slope, degree of slope, and aspect as Constraining Variables.

Axes		1	2	3	4	Total inertia
Eigenvalues	:	0.232	0.181	0.167	0.136	2.450
Taxa-external correlations	:	0.958	0.934	0.985	0.987	
Cumulative percentage variance						
of weed data	:	9.5	16.9	23.7	29.2	
of taxa-external relation	:	13.6	24.3	34.1	42.1	
Sum of all unconstrained eigenvalues						2.450
Sum of all canonical eigenvalues						1.702

Table 7.8 Comparison of the Summaries of the CCAs using Crop Rotation Regime, Previous Year's Crop and Vegetation Zone as the Constraining Variables: eigenvalues and taxa-external correlation coefficients for the first two axes and the sum of the canonical eigenvalues.

	Axis 1	Axis 2	Sum of canonical eigenvalues
	Eigenvalues		
Crop Rotation Regime			
Cereal-legume, cereal-fallow, & 3 year rotation regimes (3 categories)	0.154	0.062	0.216
2 year & 3 year regimes(2 categories)	0.150	0.246	0.150
Cereal-legume & regimes with fallow (2 categories)	0.086	0.316	0.086
Previous Year's Crop			
Legume, bare fallow & fallow with summer crops (3 categories)	0.086	0.060	0.147
Legume & fallow (2 categories)	0.086	0.319	0.086
Vegetation Zone (5 categories)	0.247	0.142	0.543
	Taxa-external correlations		
Crop Rotation Regime			
Cereal-legume, cereal-fallow, & 3 year rotation regimes (3 categories)	0.731	0.785	
2 year & 3 year regimes (2 categories)	0.725	0.000	
Cereal-legume & regimes with fallow (2 categories)	0.680	0.000	
Previous Year's Crop			
Legume, bare fallow & fallow with summer crops (3 categories)	0.710	0.680	
Legume & fallow (2 categories)	0.696	0.000	
Vegetation Zone (5 categories)	0.891	0.885	

Table 7.9 Comparison of the Summaries of the CCAs using Crop Rotation Regime, Previous Year's Crop and Vegetation Zone as the Constraining Variables for the Hills Fields: eigenvalues and taxa-external correlation coefficients for the first two axes and the sum of the canonical eigenvalues.

	Axis 1	Axis 2	Sum of canonical eigenvalues
	Eigenvalues		
Crop Rotation Regime			
Cereal-legume, cereal-fallow, & 3 year rotation regimes (3 categories)	0.081	0.059	0.140
2 year & 3 year regimes (2 categories)	0.061	0.251	0.061
Cereal-legume & regimes with fallow (2 categories)	0.081	0.256	0.081
Previous Year's Crop			
Legume, bare fallow & fallow with summer crops (3 categories)	0.099	0.062	0.161
Legume & fallow (2 categories)	0.083	0.255	0.083
Vegetation Zone (5 categories)	0.172	0.117	0.372
	Taxa-external correlations		
Crop Rotation Regime			
Cereal-legume, cereal-fallow, & 3 year rotation regimes (3 categories)	0.788	0.740	
2 year & 3 year regimes (2 categories)	0.725	0.000	
Cereal-legume & regimes with fallow (2 categories)	0.789	0.000	
Previous Year's Crop			
Legume, bare fallow & fallow with summer crops (3 categories)	0.839	0.734	
Legume & fallow (2 categories)	0.796	0.000	
Vegetation Zone (5 categories)	0.914	0.858	

Table 7.10 Partial Canonical Correspondence Analysis of the Crop Rotation Regimes (3 categories).

Constraining Variable	Co-Variables	Significance	Figure No.
Rotation Regime (Cereal-legume, Cereal-fallow & 3 Year Regimes)	Vegetation Zone	0.41	7.35
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content	0.26	7.36
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content, Crop Cover & Crop Height	0.34	-
"	All the 'other' external co-variables (see text)	0.43	-

Table 7.11 Partial Canonical Correspondence Analysis of the Crop Rotation Regimes (2 and 3 year regimes).

Constraining Variable	Co-Variables	Significance	Figure No.
Rotation Regime (2 Year Regimes & 3 Year Regimes)	Vegetation Zone	0.64	7.37
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content	0.29	7.38
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content, Crop Cover & Crop Height	0.32	-
"	All the 'other' external co-variables (see text)	0.29	-

Table 7.12 Partial Canonical Correspondence Analysis of the Crop Rotation Regimes (cereal-legume and regimes including a fallow year).

Constraining Variable	Co-Variables	Significance	Figure No.
Rotation Regime (cereal-legume & regimes including fallow)	Vegetation Zone	0.24	7.39
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content	0.27	7.40
"	Vegetation Zone, Altitude Stoniness, pH, Organic Content, Crop Cover & Crop Height	0.37	-
"	All the 'other' external co-variables (see text)	0.37	-

Table 7.13 Partial Canonical Correspondence Analysis of the Previous Year's Crop (3 categories).

Constraining Variable	Co-Variables	Significance	Figure No.
Previous Year's Crop (Legume- Crop, Fallow- with Summer Crops & Bare Fallow)	Vegetation Zone	0.30	7.41
	Vegetation Zone, Altitude Stoniness, pH, Organic Content	0.36	7.42
	Vegetation Zone, Altitude Stoniness, pH, Organic Content, Crop Cover & Crop Height	0.28	-
	All the 'other' external co-variables (see text)	0.26	-

Table 7.14 Partial Canonical Correspondence Analysis of the Previous Year's Crops (legume and fallow).

Constraining Variable	Co-Variables	Significance	Figure No.
Previous Year's Crop (Legume Crop & Fallow)	Vegetation Zone	0.56	7.43
	Vegetation Zone, Altitude Stoniness, pH, Organic Content	0.34	7.44
	Vegetation Zone, Altitude Stoniness, pH, Organic Content, Crop Cover & Crop Height	0.49	-
	All the 'other' external co-variables (see text)	0.42	-

Table 7.15a Taxa Associated with a Preceding Legume Crop, Fallow with Summer Crops, and Bare Fallow (see text for explanation). (* 'indicator taxa' common to both groups when fields split in two - see 7.4.2.2)

Legume	Fallow with Summer Crops	Bare Fallow
*Ainsworthia trachycarpia**	*Bifora testiculata**	*Bunium elegans*
*Astoma sesilifolium**	*Cardaria draba*	*Cephalaria syriaca**
Carthamus tenuis	*Convolvulus althaeoides*	*Convolulus betonicifolius*
*Catapodium rigidum**	*Convolvulus arvensis*	*Fumaria parviflora**
Coronilla scorpioides	*Euphorbia falcata/reuteriana*	*Lagoecia cuminoides**
*Crepis aspera**	*Geranium rotundiflorium*	*Lallemantia iberica*
Gladiolus italica	*Hirschfeldia incana**	*Picnomon acarna*
Hypericum triquetrifolium	*Lathyrus aphaca**	*Senecio vernalis*
Neslia apiculata	*Medicago orbicularis*	*Silene vulgaris*
Notobasis syriaca	*Medicago rotata*	*Turgenia latifolia**
Ononis antiquorum	*Medicago scutellata**	*Vicia peregrina*
*Papaver argemone**	*Ononis natrix*	
Rhagadiolus stellatus	*Plantago afra*	
Ranunculus arvensis	*Rumex pulcher*	
*Rapistrum rugosum**	*Stachys arabica*	
*Reseda lutea**	*Trifolium clusii*	
Silene damascena	*Urospermum picroides*	
Trifolium dasyurum	*Vicia sativa* subsp. *angustifolia*	
Veronica syriaca		

Table 7.15b Taxa Associated with Cereal-Legume, Cereal-Fallow and Three Year Crop Rotation (see text for explanation). (* 'indicator taxa' common to both groups when fields split in two - see 7.4.2.2)

Cereal-Legume	Cereal-Fallow	Three Year Rotation
*Ainsworthia trachycarpia**	*Anchus italica*	*Bunium elegans*
Anchusa strigosa	*Bifora testiculata**	*Convolulus althaeoides**
*Astoma sesilifolium**	*Erucaria hispanica**	*Coronilla scorpioides**
Carthamus tenuis	*Falcaria vulgaris*	*Euphorbia aleppica*
*Catapodium rigidum**	*Lamium amplexicaule*	*Galium tricornutum*
*Crepis aspera**	*Lathyrus aphaca*	*Gladiolus italica**
Eryngium creticum	*Lathyrus inconspicuus*	*Lagoecia cuminoides*
*Geranium rotundiflorium**	*Linaria chalepensis*	*Lallemantia iberica*
Hypericum triquetrifolium	*Lophlocloa cristata*	*Rapistrum rugosum*
*Ononis antiquorum**	*Medicago orbicularis**	*Salvia syriaca**
Papaver argemone	*Minuartia hybrida*	*Silene damascena*
Rhagadiolus stellatus	*Medicago scutellata**	*Scorpiurus murialis*
Ranunculus arvensis	*Ononis natrix**	*Stachys arabica**
Senecio vernalis	*Silene crassipes*	*Thesium humile*
Scandix pecten-veneris	*Turgenia latifolia**	*Trigonella caelesyriaca*
Trifolium dasyurum	*Vicia sativa* subsp. *angustifolia**	*Vicia peregrina*
		Urospermum picroides

Table 7.16 Taxa found in three fields or more which are character (or preferential/differential) species of the associations Scolymeto-Prosopidetum farctae and the Ononis leiosperma-Carthamus tenuis.

Scolymeto-Prosopidetum farctae	Ononis leiosperma-Carthamus tenuis
Centaurea verutum	*Astoma sesilifolium*
Diplotaxis erucoides	*Bongardia chrysogonum*
Euphorbia falcata (differential)	*Bupleurum nodiflorum*
	Carthamus tenuis subsp. *foliosus* (preferential)
	Cerastium dichotomum
	Ononis antiquorum (preferential) (syn. *O. leiosperma*)
	Silene crassipes
	Vicia sativa subsp. *angustifolia*

Appendix 1.1 Glossary of Local Arabic Words

ا

ب

engine-powered mill	بابور	bābūr
semi-desert, steppe	بادية	bādiya
aubergine, egg plant	باذنجان	bādhinjān
bedouin woman	بدوية	badawīya
okra	باميا	bāmiyā
seed	بذر (pl. بذار)	(pl. bidhār) bidhr
to sow	بذر	badhara
to sow thickly	بذر عبي	badhara 'abiy
to sow sparsely	بذر دليل	badhara dalīl
cooked, parched and crushed wheat	برغل	burghul
watermelon	بطيخ	baṭṭīkh
local, native	بلدي	baladī
tomatoes	بندورة	bandūra
'weedy fallow', uncultivated land	بور	būr
seed tube attached to the back of ard	بوق	būq
'hair' tent, bedouin tent	بيت الشعر	bait esh-sha'r
threshing floor, mound of crop to be threshed	بيدر (pl. بيادر)	(pl. bayādir) baidar

underground cistern (for water collection or grain storage)	بير	bīr
common vetch	بيقية	bīqiya

ت

chaff/straw	تبن	tibn
'white' chaff/straw, cereal chaff/straw	تبن ابيض	tibn abyaḍ
'red' chaff/straw, legume chaff/straw	تبن احمر	tibn aḥmar
building for storing fodder	تبان	tibbān
tobacco	تتن	tutun
furrow	تلم	talam
fig	تين	tīn

ث

thumna (local land measure; half a rub'a) (also translates as 'one eighth')	ثمنة	thumna
ox	ثور (pl. ثيران)	(pl. thīrān) thaur

ج

hand rotary quern	جاروشة	jārūsha
cheese	جبنة	jibna
grass pea, chickling vetch	جلبانه	jilbāna
Tetragonolobus palestinus Boiss. et Bl.	جلطون	jalaṭūn
defatted dehydrated yoghurt	جميد	jamīd
chemical powder used to prevent pest infestation of grain	جنزارة	jinzāra

Appendix 1.1 Glossary (cont.)

ح

grain, seed	حب (pl. حبوب)	ḥabb (pl. ḥubūb)
rope, cord	حبل (pl. حبال)	ḥabl (pl. ḥibāl)
stone mason	حجار	ḥajjār
smith, blacksmith	حداد	ḥaddād
Peganum harmala L.	حرمل	ḥarmal
to harvest, reap	حصد	ḥaṣada
pebble	حصوة	ḥaṣwa
ploughman	حراث (pl. حراثين)	ḥarāth (pl. ḥarāthīn)
to till, plough	حرث	ḥaratha
fenugrek	حلبة	ḥulba
chick-pea	حمص	ḥummuṣ

خ

out-house for animals or storage	خان	khān
Marubium vulgare L.	خرفيش	khurfaysh
tribal tribute, protection fee	خوة	khuwa

د

household	دار	dār
molasses	دبس	dibs
tobacco	دخان	dukhkhān

ذ

millet	ذرة بيضا	dhura baiḍā'
broom millet	ذرة صفرا	dhura ṣafrā'
man, male	ذكر (pl. ذكور)	(pl. dhukūr) dhakar

ر

shepherd	راعي	rā'ī
rub'a (local land measure; equivalent to 24 qirāṭ) (also translates as 'one quarter'; equivalent to 'one quarter' of a fidān)	ربعة	rub'a
ruba'iya (local measure c.5 kg wheat) (related to word rub'a - 'one quarter'; equivalent to one quater of a mud)	ربعية	ruba'iya
ruṭul (local measure c. 2.5 kg wheat)	رطل	ruṭul
pomegranate	رمان	rummān
roman (e.g. 'roman' olive trees)	روماني	rūmānī
wetting, watering, irrigation	ري	riyy

ز

manure	زبل	zibl
to sow, plant	زرع	zara'a
man (also former share in 'hills' land)	زلمة	zalama
olive	زيتون	zaitūn

س

purified fermented butter	سمنة	samna
(plough) share (also name for complete ard)	سكة	sikka
sesame	سمسم	simsim
ear of wheat	سنبلة (pl. سنابل)	sunbula (pl. sanābil)

ش

large fork	شاعوب	shaʿūb
winter (noun)	شتا	shitāʾ
winter (adj.)	شتوي	shatawī
barley	شعير	shaʿīr
'cleaving open', widely spaced furrows	شقاق	shaqāq
hide bag used to sepate curds and whey	شقوة	shiqwa
sweet melon	شمام	shammām
yoghurt whey	شنينة	shanīna
(large) sack also shuwāl (local measure c. 120 kg wheat)	شوال	shuwāl

ص

ṣāʿ (local measure c. 10 kg wheat)	صاع	ṣāʿ
summer (noun)	صيف	ṣaif
summer (adj.)	صيفي	ṣaifī

ض

ط

ṭraditional clay oven	طابون	ṭābūn
water mills	طواحين الماء	ṭawāḥīn el-mā'

ظ

ع

family group (5 generations)	عائلة	'ā'ila
lentil(s)	عدس	'adas
nomadic pastoralists	عرب (pl. عراب)	(pl. 'arāb) 'arab
cave	عراق (pl. عرقان)	(pl. 'araqān) 'arāq
to weed	عشب	'ashiba
weed, plant, herb	عشب (pl. اعشاب)	(pl. a'shāb) 'ushub
'tribe', kin group	عشيرة	'ashīra
dry - particularly sowing before rain	عفير	'afīr
box, container 'alba (local measure c. 60 kg wheat see also kayl)	علبة	'alba
grape	عنب	'inab
ard, scratch plough (see also maḥarāth)	عود حراث	'awd ḥarāth

غ

fine sieve	غربال	ghurbāl

ف

common European bean	فاصوليا	fāṣūliyā
fidān - pair of oxen; also aerial measure	فدان	fidān
to rub	فرك	faraka
frīka - green wheat which is scorched and then 'rubbed' (i.e. to thresh it)	فريكة	frīka
snake cucumber	فقوس	faqqūs
fellah (pl. fellaheen), cultivator	فلاح (pl. فلاحين) (fem. فلاحة)	fallāḥ (pl. fallāḥīn) fallāḥa
to till, cultivate	فلح	falaḥa
fallow year	سنة فلحة	sana falaḥa
horse bean	فول	fūl

ق

stage when wheat is ready for harvesting	قايش	qāysh
straw (long, good quality)	قش	qash
legume crops, pulses	قطانة	qaṭāna
large grain storage bin	قطع	quṭa'
uproot, pull out	قلع	qala'a
wheat	قمح	qamḥ
qīrāṭ (local land measure)	قيراط	qīrāṭ

ك

to measure	كال	kāla
cultivated fallow	كراب	krāb

Appendix 1.1 Glossary (cont.)

'cold fallow', bare fallow	كراب بارد	krāb bārid
coarse sieve	كربال	kirbāl
bread made from sorghum	كرديش	kiradīsh
bitter vetch	كرسنة	kirsinna
to break, shatter (during threshing)	كسر	kasara
food derived from burghul and milk	كشك	kishk
courgette, zucchini	كوسا	kūsā
clay grain storage bin	كوارة (pl. كوايير)	(pl. kuwāyir) kuwāra
kail (local measurement c. 60 kg wheat)	كيل	kail

ل

yoghurt	لبن	laban
strained yoghurt	لبنة	labana
glean, pick up from the ground	لقط	laqaṭ
gleaners	لقطات	laqaṭāt
cowpea	لوبيا بلدي	lūbiyā baladī
threshing sledge	لوح الدراسة	lawḥ ed-darāsa
pound (monetary unit)	ليرا	līrā

م

three year crop rotation regime	مثالثة	muthālatha
ard, scratch plough (see also 'aūd ḥarāth)	محراث	maḥarāth
mud (local measure c. 20 kg wheat)	مد (pl. تمداد)	(pl. timdād) mudd
Convolulus spp.	مديدة	mudaiyda

Appendix 1.1 Glossary (cont.)

winnowing fork	مذراة	midhrāt
joint (or common) ownership	مشاع	mushā'a
apricot	مشمش	mishmish
old variety of local wheat	مشمول	mushmūl
large coarse sieve	مقطف	muqṭuf
broom sorghum	مكانس	makānis
sickle	منجل	minjal
traditional feast dish	منسف	mansaf

ن

to make soft (during threshing)	ناعيم	nā'ima
guard (of crops)	ناطور	naṭūr
Cynodon dactylon (L.) Pers.	نجيل	najīl
dew	ندى	nadā
trickle, drop (seed)	نقط	naqaṭa
gypsies	نور	nawar

و

onset of the winter rains (also 'mark')	وسم	wasm
late onset of winter rains	وسم لوكسي	wasm lūksī

ي

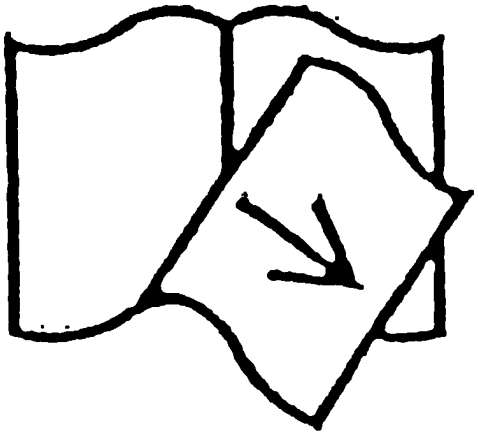
dry	يابس	yābis

Plates

Appendices

PAGE(S) MISSING
NOT AVAILABLE

APPENDICES 2 AND 3!



Appendix 4.1 Full Taxa List and Taxa Codes

Taxa	Code
Adonis cf. *aestivalis* L.	ADONAES
Adonis aleppica Boiss.	ADONALE
Aegilops biuncialis Vis.	AEGIBIU
Aegilops peregrina (Hackel) Maire & Weller	AEGIPER
Ainsworthia trachycarpa Boiss.	AINSTRA
Alcea acaulis (Cav.) Alef.	ALCEACA
Alhagi maurorum Medik.	ALHAMAU
Anagallis arvensis L.	ANAGARV
Anchusa italica Retz.	ANCHITA
Anchusa strigosa Banks & Sol.	ANCHSTR
Anemone coronaria L.	ANEMCOR
Anthemis cf. *hebronica* Boiss. & Ky.	ANTHHEB
Anthemis palestina Reut.	ANTHPAL
Anthemis pseudocotula Boiss. emend Eig.	ANTHPSE
Anthemis spp.	ANTHSPP
Antirrhinum orontium L.	ANTIORO
Asparagus aphyllus L.	ASPAAPH
Asperula arvensis L.	ASPEARV
Astoma sesilifolium DC.	ASTOSES
Astragalus cruciatus Link	ASTRCRU
Astragalus hamosus L.	ASTRHAM
Astragalus macrocarpus DC.	ASTRMAC
Avena sterilis L. subsp. *sterilis*	AVENSTE
Bifora testiculata (L.) Spreng.ex Schult.	BIFOTES
Biscutella didyma L.	BISCDID
Bongardia chrysogonum (L.) Sp.	BONGCHR
Bromus alopecuros subsp. *carolini-henrici*	BROMALO
Bromus lanceolatus Roth (Greuter) P. M. Smith	BROMLAN
Bromus tectorum L.	BROMTEC
Bryonia syriaca Boiss.	BRYOSYR
Buglossoides arvensis (L.) I. M. Johnston	BUGLARV
Bunium elegans (Fenzl) Freyn	BUNIELE
Bupleurum lancifolium Hornem.	BUPLLAN
Bupleurum nodiflorum Sm.	BUPLNOD
Bupleurum brevicaule Schlecht.	BUPLBRE
Calendula arvensis L.	CALEARV
Calendula palaestina Boiss.	CALEPAL
Campanula strigosa Banks & Sol.	CAMPSTR
Cardaria draba (L.) Desv.	CARDDRA
Carthamus persicus Willd.	CARTPER
Carthamus tenuis (Boiss. et Blanche) Bornm. subsp. *foliosus* Hanelt	CARTTEN
Catapodium rigidum (L.) C. E. Hubbard	CATARIG
Centaurea hyalolepis Boiss.	CENTHYA
Centaurea verutum L.	CENTVER
Cephalaria syriaca (L.) Schrad.	CERADIC
Cerastium dichotomum L.	CEPHSYR
Chrysanthemum coronarium L.	CHRYCOR
Cichorium pumilum Jacq.	CICHPUM
Convolvulus althaeoides L.	CONVALT
Convolvulus arvensis L.	CONVARV
Convolvulus betonicifolius Mill.	CONVBET
Convolvulus humilis Jacq.	CONVHUM

Appendix 4.1 (cont.) Full Taxa List and Taxa Codes

Taxa	Code
Coronilla scorpioides (L.) Koch	COROSCO
Crepis aspera L.	CREPASP
Crucianella macrostachya Boiss.	CRUCMAC
Cynodon dactylon (L.) Pers.	CYNODAC
Daucus bicolor Sm.	DAUCBIC
Daucus carota L.	DAUCCAR
Diplotaxis erucoides (L.) DC.	DIPLEUR
Echballium eleratum (L.) A. Rich.	ECHBELE
Echium judaeum Lacaita	ECHIJUD
Erucaria hispanica (L.) Druce	ERUCHIS
Eryngium creticum Lam.	ERYNCRE
Euphorbia aleppica L.	EUPHALE
Euphorbia falcata L.	EUPHFAL
Euphorbia reuteriana Boiss.	EUPHREU
Euphorbia reuteriana or *E. falcata*	EUPHFOR
Exocantha heterophylla Labill.	EXOCHET
Falcaria vulgaris Bernh.	FALCVUL
Filago pyramidata L.	FILAPYR
Fumaria parviflora Lam.	FUMAPAR
Galium tricornutum Dandy	GALITRI
Geranium rotundifolium L.	GERAROT
Geropogon hybridus (L.) Sch. Bip.	GEROHYB
Gladiolus italicus Mill.	GLADITA
Glaucium corniculatum (L.) J.H. Rud.	GLAUCOR
cf.*Hedypnois rhagadioloides* (L.) F. W.	HEDYRHA
Hirschfeldia incana (L.) Lagreze-Fossat	HIRSINC
Hypericum triquetrifolium Turra	HYPETRI
Lagoecia cuminoides L.	LAGOCUM
Lallemantia iberica (Bieb.) Fisch.	LALLIBE
Lamium amplexicaule L.	LAMIAMP
Lathyrus aphaca L.	LATHAPH
Lathyrus gorgonei Parl.	LATHGOR
Lathyrus hierosolymitanus Boiss.	LATHHIE
Lathyrus inconspicuus L.	LATHINC
Lavatera punctata All.	LAVAPUN
Legousia speculum-veneris (L.) Chaix	LEGOSPE
Linaria chalepensis (L.) Mill.	LINACHA
Linum mucronatum Bertol.	LINUMUC
Linum pubescens Banks et Sol.	LINUPUB
Lolium rigidum Gaudin	LOLIRIG
Lolium subulatum Vis.	LOLISUB
Lolium temulentum L.	LOLITEM
Lolium spp.	LOLISPP
Lophochloa cristata (L.) Hyl.	LOPHCRI
Malva parviflora L.	MALVPAR
Medicago orbicularis (L.) Bart.	MEDIORB
Medicago rotata Boiss.	MEDIROT
Medicago scutellata (L.) Mill.	MEDISCU
Medicago turbinata (L.) All.	MEDITUR
Minuartia hybrida (Vill.) Schisch.	MINUHYB
Molucella laevis L.	MOLULAE
Neslia apiculata Fisch., Mey.et Ave-Lall.	NESLAPI
Notobasis syriaca (L.) Cass.	NOTOSYR

Appendix 4.1 (cont.) Full Taxa List and Taxa Codes

Taxa	Code
Ochthodium aegyptiacum (L.) DC.	OCHTAEG
Onobrychis squarrosa Viv.	ONOBSQU
Ononis antiquorum L.	ONONANT
Ononis natrix L.	ONONNAT
Ononis pubescens L.	ONONPUB
Orlaya daucoides (L.) Greuter	ORLADAU
Papaver argemone L.	PAPAARG
Papaver glaucum Boiss.	PAPAGLA
Papaver rhoeas L.	PAPARHO
Phalaris brachystachys Link	PHALBRA
Phalaris paradoxa L.	PHALPAR
Phalaris tuberosa L.	PHALTUB
Phlomis pungens Willd.	PHLOPUN
Picnomon acarna (L.) Cass.	PICNACA
Picris galilaea (Boiss.) Benth. & Hook. fil. ex Eig	PICRGAL
Picris sprengariana (L.) Chaix	PICRSPR
Pimpinella cretica Poiret	PIMPCRE
Plantago afra L.	PLANAFR
Plumbago europea L.	PLUMEUR
Polygonum patulum M.B.	POLYPAT
Ranunculus arvensis L.	RANUARV
Rapistrum rugosum (L.) All.	RAPIRUG
Reseda lutea L.	RESELUT
Rhagdiolus stellatus (L.) Gaertner	RHAGSTE
Ridolfia segetum (Guss.) Moris	RIDOSEG
Rumex pulcher L.	RUMEPUL
Salvia palaestina Benth.	SALVPAL
Salvia syriaca L.	SALVSYR
Scandix palaestina (Boiss.) Boiss.	SCANPAL
Scandix pecten-veneris L.	SCANPEC
Scolymus maculatus L.	SCOLMAC
Scorpiurus muricatus L.	SCORMUR
Senecio vernalis Waldst. & Kit.	SENEVER
Sherardia arvensis L.	SHERARV
Silene conoidea L.	SILECON
Silene crassipes Fenzl	SILECRA
Silene damascena Boiss. et Gaill	SILEDAM
Silene trinervis Banks et Sol.	SILETRI
Silene vulgaris (Moench) Garke	SILEVUL
Sinapis arvensis L.	SINAARV
Sorghum halepense (L.) Pers.	SORGHAL
Stachys arabica Hornem.	STACARA
Tetragonolobus palaestinus Boiss. et Bl.	TETRPAL
Thesium humile Vahl	THESHUM
Thymelaea passerina (L.) Coss. & Germ.	THYMPAS
Tordylium aegyptiacum (L.) Lam.	TORDAEG
Torilis arvensis (Huds.) Link	TORIARV
Trachynia distachya (L.) Link F.P.	TRACDIS
Tragopogon buphthalmoides (DC.) Boiss.	TRAGBUP
Tragopogon coelesyricacus Boiss.	TRAGCOE
Trifolium campestre Schreber	TRIFCAM
Trifolium clusii Godr. et Gren.	TRIFCLU
Trifolium dasyurum C. Presl.	TRIFDAS

Appendix 4.1 (cont.) Full Taxa List and Taxa Codes

Taxa	Code
Trifolium purpureum Loisel.	TRIFPUR
Trifolium stellatum L.	TRIFSTE
Trigonella caelesyriaca Boiss.	TRIGCAE
Turgenia latifolia (L.) Hoffm.	TURGLAT
Urospermum picroides (L.) F. W. Schmidt	UROSPIC
Vaccaria pyrimidata Medik.	VACCPYR
Velezia rigida L.	VELERIG
Veronica syriaca Roem. & Schult.	VEROSYR
Vicia hybrida L.	VICIHYB
Vicia peregrina L.	VICIPER
Vicia sativa L. subsp. *angustifolia* (L.) Aschers et Graebn.	VICISAT
Vulpia ciliata Dumort.	VULPCIL

Appendix 4.2 Taxa Found in One or Two Fields Only.

Adonis cf. *aestivalis* L.
Adonis aleppica Boiss.
Aegilops biuncialis Vis.
Aegilops peregrina (Hackel) Maire & Weiller
Alhagi maurorum Medik.
Anemone coronaria L.
Anthemis cf. *hebronica* Boiss. & Ky.
Antirrhinum orontium L.
Asparagus aphyllus L.
Biscutella didyma L.
Bryonia syriaca Boiss.
Buglossoides arvensis (L.) I. M. Johnston
Bupleurum brevicaule Schlecht.
Calendula arvensis L.
Calendula palaestina Boiss.
Carthamus persicus Willd.
Chrysanthemum coronarium L.
Convolvulus humilis Jacq.
Crepis foetida L.
Crucianella macrostachya Boiss.
Echballium eleratum (L.) A. Rich.
Echinops L.
Echium judaeum Lacaita
Exocantha heterophylla Labill.
Glaucium corniculatum (L.) J.H. Rud.
cf.*Hedypnois rhagadioloides* (L.) F. W. Schmidt emend. Spreng.
Heliotropium L.
Lathyrus hierosolymitanus Boiss.
Lavatera punctata All.
Linum mucronatum Bertol.
Malva cf. *parviflora* L.
Molucella laevis L.
Ochthodium aegyptiacum (L.) DC.
Ononis pubescens L.
Orlaya daucoides (L.) Greuter
Papaver glaucum Boiss.
Phalaris tuberosa L.
Phleum subulatum (Savi) Ascerson & Graebner
Phlomis pungens Willd.
Picris galilaea (Boiss.) Benth. & Hook. fil. ex Eig
Pimpinella cretica Poiret
Plumbago europea L.
Salvia palaestina Benth.
Scandix palaestina (Boiss.) Boiss.
Sherardia arvensis L.
Silene trinervis Banks et Sol.
Sorghum halepense (L.) Pers.
Thymelaea passerina (L.) Coss. & Germ.
Tordylium aegyptiacum (L.) Lam.
Torilis leptophylla (L.) Reich. F.
Torilis nodosa (L.) Gaertn.
Trachynia distachya (L.) Link F.P. = *Brachypodium distachyon* (L.) Beauv.
Tragopogon buphthalmoides (DC.) Boiss.
Tragopogon coelesyricacus Boiss.
Trifolium clypeteaum L.
Trifolium purpureum Loisel.
Trigonella arabica Del.
Trigonella sp. - 2 species
Velezia rigida L.
Vicia hybrida L.
Vulpia ciliata Dumort.

Appendix 4.3 Individual Treatment of Taxa at Level 1 and Level 2

Taxa	Level 1 Treatment	Level 2 Treatment
Adonis aestivalis	Include All	Exclude cf. & V
Adonis aleppica	Include All	Exclude cf. & V
Aegilops biuncialis	Include All	Exclude cf. & V
Aegilops peregrina	Include All	Exclude cf. & V
Ainsworthia trachycarpa	Include All	Exclude cf. & V
Alcea acaulis	Include All	Exclude cf. & V
Alhagi maurorum	Include All	Exclude cf.
Anagallis arvensis	Include All	Exclude cf. & V
Anchusa italica	Include All	Exclude cf. & V
Anchusa strigosa	Include All	Exclude cf. & V
Anemone coronaria	Include All	Exclude cf. & V
Anthemis hebronica	Exclude All	Exclude cf. & V, F
Anthemis palestina	Exclude All	Exclude cf. & V, F
Anthemis pseudocotula	Exclude All	Exclude cf. & V, F
Anthemis spp.	Include All (above 3 combined)	Exclude All
Antirrhinum orontium	Include All	Exclude cf. & V
Asparagus aphyllus	Include All	Exclude cf. & V
Asperula arvensis	Include All	Exclude cf. & V
Astoma sesilifolium	Include All	Exclude cf. & V
Astragalus cruciatus	Include All	Exclude cf. & V, F
Astragalus hamosus	Include All	Exclude cf. & V, F
Astragalus macrocarpus	Include All	Exclude cf. & V
Avena sterilis subsp. *sterilis*	Include All	Exclude cf. & V
Bifora testiculata	Include All	Exclude cf.
Biscutella didyma	Include All	Exclude cf. & V, F
Bongardia chrysogonum	Include All	Exclude cf.
Bromus alopecuros subsp. *carolini-henrici*	Include All	Exclude cf. & V
Bromus lanceolatus	Include All	Exclude cf. & V
Bromus tectorum	Include All	Exclude cf. & V
Bryonia syriaca	Include All	Exclude cf. & V
Buglossoides arvensis	Include All	Exclude cf. & V
Bunium elegans	Include All	Exclude cf. & V
Bupleurum lancifolium	Include All	Exclude cf. & V
Bupleurum nodiflorum	Include All	Exclude cf. & V
Bupleurum brevicaule	Include All	Exclude cf. & V
Calendula arvensis	Include All	Exclude cf. & V, F
Calendula palaestina	Include All	Exclude cf. & V, F
Campanula strigosa	Include All	Exclude cf. & V
Cardaria draba	Include All	Exclude cf. & V
Carthamus persicus	Include All	Exclude cf. & V
Carthamus tenuis subsp. *foliosus*	Include All	Exclude cf.
Catapodium rigidum	Include All	Exclude cf. & V
Centaurea hyalolepis	Include All	Exclude cf. & V
Centaurea verutum	Include All	Exclude cf. & V
Cephalaria syriaca	Include All	Exclude cf. & V
Cerastium dichotomum	Include All	Exclude cf. & V
Chrysanthemum coronarium	Include All	Exclude cf. & V

V = Vegetative Stage
F = Flowering Stage
P = Fruiting Stage

Appendix 4.3 (cont.) Individual Treatment of Taxa at Level 1 and Level 2

Taxa	Level 1 Treatment	Level 2 Treatment
Cichorium pumilum	Include All	Exclude cf. & V
Convolvulus althaeoides	Include All	Exclude cf.
Convolvulus arvensis	Include All	Exclude cf.
Convolvulus betonicifolius	Include All	Exclude cf.
Convolvulus humilis	Include All	Exclude cf. & V
Coronilla scorpioides	Include All	Exclude cf. & V
Crepis aspera	Include All	Exclude cf. & V
Crucianella macrostachya	Include All	Exclude cf. & V
Cynodon dactylon	Include All	Exclude cf.
Daucus bicolor	Include All	Exclude cf. & V
Daucus carota	Include All	Exclude cf. & V
Diplotaxis erucoides	Include All	Exclude cf. & V, F
Echballium eleratum	Include All	Exclude cf. & V
Echium judaeum	Include All	Exclude cf. & V
Erucaria hispanica	Include All	Exclude cf. & V
Eryngium creticum	Include All	Exclude cf. & V
Euphorbia aleppica	Include All	Exclude cf.
Euphorbia falcata	Exclude All	Exclude cf. & V
Euphorbia reuteriana	Exclude All	Exclude cf. & V
E. falcata or *E. reuteriana*	Include All (combined)	Exclude All
Exocantha heterophylla	Include All	Exclude cf.
Falcaria vulgaris	Include All	Exclude cf.
Filago pyramidata	Inlcude All	Exclude cf. & V
Fumaria parviflora	Include All	Exclude cf. & V, P
Galium tricornutum	Include All	Exclude cf. & V
Geranium rotundifolium	Include All	Exclude cf. & V
Geropogon hybridus	Include All	Exclude cf. & V, F
Gladiolus italicus	Include All	Exclude cf. & V
Glaucium corniculatum	Include All	Exclude cf. & V, F
Hedypnois rhagadioloides	Include All	Exclude cf. & V, F
Hirschfeldia incana	Include All	Exclude cf. & V, F
Hypericum triquetrifolium	Include All	Exclude cf.
Lagoecia cuminoides	Include All	Exclude cf. & V
Lallemantia iberica	Include All	Exclude cf. & V
Lamium amplexicaule	Include All	Exclude cf. & V
Lathyrus aphaca	Include All	Exclude cf. & V
Lathyrus gorgonei	Include All	Exclude cf. & V
Lathyrus hierosolymitanus	Include All	Exclude cf. & V
Lathyrus inconspicuus	Include All	Exclude cf. & V
Lavatera punctata	Include All	Exclude cf. & V
Legousia speculum-veneris	Include All	Exclude cf. & V
Linaria chalepensis	Include All	Exclude cf. & V
Linum mucronatum	Include All	Exclude cf. & V
Linum pubescens	Include All	Exclude cf. & V
Lolium rigidum Gaudin	Exclude All	Exclude cf. & V, F
Lolium subulatum Vis.	Exclude All	Exclude cf. & V
Lolium temulentum L.	Exclude All	Exclude cf. & V, F
Lolium spp.	Include All (above 3 combined)	Exclude All
Lophochloa cristata	Include All	Exclude cf. & V

V = Vegetative Stage
F = Flowering Stage
P = Fruiting Stage

Appendix 4.3 (cont.) Individual Treatment of Taxa at Level 1 and Level 2

Taxa	Level 1 Treatment	Level 2 Treatment
Malva parviflora	Include All	Exclude cf. & V
Medicago orbicularis	Include All	Exclude cf. & V, F
Medicago rotata	Include All	Exclude cf. & V, F
Medicago scutellata	Include All	Exclude cf. & V, F
Medicago turbinata	Include All	Exclude cf. & V, F
Minuartia hybrida	Include All	Exclude cf. & V
Molucella laevis	Include All	Exclude cf. & V
Neslia apiculata	Include All	Exclude cf. & V, F
Notobasis syriaca	Include All	Exclude cf. & V
Ochthodium aegyptiacum	Include All	Exclude cf. & V, F
Onobrychis squarrosa	Include All	Exclude cf. & V
Ononis antiquorum	Include All	Exclude cf.
Ononis natrix	Include All	Exclude cf.
Ononis pubescens	Include All	Exclude cf. & V
Orlaya daucoides	Include All	Exclude cf. & V, F
Papaver argemone	Include All	Exclude cf. & V, F
Papaver glaucum	Include All	Exclude cf. & V, F
Papaver rhoeas	Include All	Exclude cf. & V, F
Phalaris brachystachys	Include All	Exclude cf. & V
Phalaris paradoxa	Include All	Exclude cf. & V
Phalaris tuberosa	Include All	Exclude cf. & V
Phlomis pungens	Include All	Exclude cf. & V
Picnomon acarna	Include All	Exclude cf.s
Picris galilaea	Include All	Exclude cf. & V
Picris sprengariana	Include All	Exclude cf. & V
Pimpinella cretica	Include All	Exclude cf. & V
Plantago afra	Include All	Exclude cf. & V
Plumbago europea	Include All	Exclude cf.
Polygonum patulum	Include All	Exclude cf. & V
Ranunculus arvensis	Include All	Exclude cf. & V, F
Rapistrum rugosum	Include All	Exclude cf. & V, F
Reseda lutea	Include All	Exclude cf. & V
Rhagdiolus stellatus	Include All	Exclude cf. & V, F
Ridolfia segetum	Include All	Exclude cf.
Rumex pulcher	Include All	Exclude cf. & V
Salvia palaestina	Include All	Exclude cf. & V
Salvia syriaca	Include All	Exclude cf. & V
Scandix palaestina	Include All	Exclude cf. & V, F
Scandix pecten-veneris	Include All	Exclude cf. & V, F
Scolymus maculatus	Include All	Exclude cf.
Scorpiurus muricatus	Include All	Exclude cf.
Senecio vernalis	Include All	Exclude cf. & V
Sherardia arvensis	Include All	Exclude cf. & V
Silene conoidea	Include All	Exclude cf. & V
Silene crassipes	Include All	Exclude cf. & V
Silene damascena	Include All	Exclude cf. & V
Silene trinervis	Include All	Exclude cf. & V
Silene vulgaris	Include All	Exclude cf. & V
Sinapis arvensis	Include All	Exclude cf. & V, F
Sorghum halepense	Include All	Exclude cf. & V

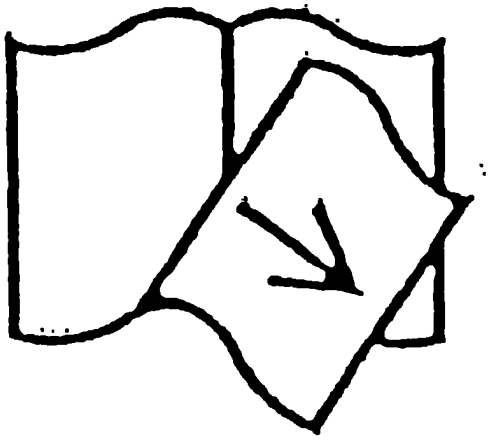
V = Vegetative Stage
F = Flowering Stage
P = Fruiting Stage

Appendix 4.3 (cont.) Individual Treatment of Taxa at Level 1 and Level 2

Taxa	Level 1 Treatment	Level 2 Treatment
Stachys arabica	Include All	Exclude cf. & V
Tetragonolobus palaestinus	Include All	Exclude cf. & V
Thesium humile	Include All	Exclude cf. & V
Thymelaea passerina	Include All	Exclude cf. & V
Tordylium aegyptiacum	Include All	Exclude cf. & V, F
Torilis arvensis	Include All	Exclude cf. & V, F
Trachynia distachya	Include All	Exclude cf. & V
Tragopogon buphthalmoides	Include All	Exclude cf. & V, F
Tragopogon coelesyricacus	Include All	Exclude cf. & V, F
Trifolium campestre	Include All	Exclude cf. & V
Trifolium clusii	Include All	Exclude cf. & V
Trifolium clypeteaum	Include All	Exclude cf. & V
Trifolium dasyurum	Include All	Exclude cf. & V
Trifolium purpureum	Include All	Exclude cf. & V
Trifolium stellatum	Include All	Exclude cf. & V
Trigonella caelesyriaca	Include All	Exclude cf. & V
Turgenia latifolia	Include All	Exclude cf. & V
Urospermum picroides	Include All	Exclude cf. & V
Vaccaria pyrimidata	Include All	Exclude cf. & V
Velezia rigida	Include All	Exclude cf. & V
Veronica syriaca	Include All	Exclude cf. & V
Vicia hybrida	Include All	Exclude cf. & V
Vicia peregrina	Include All	Exclude cf. & V
Vicia sativa subsp. *angustifolia*	Include All	Exclude cf. & V
Vulpia ciliata	Include All	Exclude cf. & V

V = Vegetative Stage
F = Flowering Stage
P = Fruiting Stage

PAGE(S) MISSING
NOT AVAILABLE



Appendix 7.1a Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
ADONAES								1												
ADONALE																				
AEGIBIU																				
AEGIPER																				1
AINSTRA			3	1																
ALCEACA						1													1	
ALHAMAU																				
ANAGARV	1	4	6	7	4		9	8		10	2	2	1			7				1
ANCHITA																				
ANCHSTR																			2	
ANEMCOR																				
ANTHSPP	10	10	10	10	2	1	6	9	1	1				1		8			5	6
ANTIORO				1																
ASPAAPH			1																	
ASPEARV	3	3	7	1	1		2	2		1	2	6		1	3	9		2	2	1
ASTOSES	7	3	4	3	8								2	2	1	2			7	5
ASTRCRU			1																	
ASTRHAM						1														
ASTRMAC																				
AVENSTE			1	1	8	3	1						2	1	8	2	1	2	3	9
BIFOTES		1	2	5	4		3						1	1					2	3
BISCDID																				
BONGCHR																			1	
BROMALO																			2	3
BROMLAN																			4	2
BROMTEC																				
BRYOSYR		1														1				
BUGLARV																				
BUNIELE						2						2								
BUPLLAN	2	5	2	2	2								10	10	3	1	1			
BUPLNOD	1	2	5	7	4	1	3	3			1		8	9		6				
BUPLBRE																				
CALEARV															2					
CALEPAL																				
CAMPSTR	1	2	10	10	8		8	9	4				4	2	5	9				6
CARDDRA																				
CARTPER																				
CARTTEN															1					
CATARIG													3		2	2			2	
CENTHYA	4						1	1		1		1							4	
CENTVER																				
CERADIC	10			3	3											1	1		8	4
CEPHSYR					1			1		2	1	4					3			
CHRYCOR						2	6													
CICHPUM	1		1	1				7		1									4	3
CONVALT										9										
CONVARV		3	2			1	1		3		3	1	6	10	4					1
CONVBET									4		6	8					1			
CONVHUM																				
COROSCO				1	8					6			1	6						1
CREPASP	2		2	1			1						2		1				5	7
CRUCMAC																				
CYNODAC						1		7	1				6	3	4			3		6
DAUCBIC							1	2												
DAUCCAR			.																2	
DIPLEUR										1	5	1								
ECHBELE																				
ECHIJUD									1											
ERUCHIS				1		3	8	6	9											
ERYNCRE																				
EUPHALE				.		2	3	10	5	10	8	10				.		3		

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
EUPHFOR																				
EXOCHET																				
FALCVUL												2					2			
FILAPYR			3	8															1	1
FUMAPAR							8	5												
GALITRI	10	2						2		9	9	10				2		3		
GERAROT			4	1												2				1
GEROHYB					1									1						
GLADITA																				
GLAUCOR																				
HEDYRHA																				
HIRSINC				1					1											1
HYPETRI										2				1	1		2			
LAGOCUM							3	3												
LALLIBE																	1			
LAMIAMP								2	3											
LATHAPH		2			2			1	1								1	1		
LATHGOR	7	7							4											
LATHHIE																				
LATHINC					3												8	2		
LAVAPUN																				2
LEGOSPE	4		10	6			3	4					3	4	4	8			9	
LINACHA	1	3	3	5			5	1								2				1
LINUMUC																				
LINUPUB				1	2							1								
LOLISPP	3	2	1	8	3	1	2	3	1							1			5	
LOPHCRI							4	3						1		3			4	
MALVPAR																				
MEDIORB																				2
MEDIROT		1	1												1				1	10
MEDISCU				1									10	9	10					4
MEDITUR	3	7	2	4	1	7		4											3	
MINUHYB			3	3				3	2					1		6			5	2
MOLULAE																	7			
NESLAPI	8	2	4	3	5										2	2			8	4
NOTOSYR	2	3	1		2										1	2			1	2
OCHTAEG																				
ONOBSQU						3													1	
ONONANT																				
ONONNAT								1								3				
ONONPUB				2																
ORLADAU													1	7						
PAPAARG	1																		1	
PAPAGLA							1													
PAPARHO	9	1	5	9	6		3	3					1	1					4	6
PHALBRA	2	4	2	4	2					1			1	1		1	5			2
PHALPAR						1		2	1	3		4	1							
PHALTUB																				
PHLOPUN																3				
PICNACA		3	1				3			2	7	3							1	3
PICRGAL								1												
PICRSPR		2														1				
PIMPCRE								1	1											
PLANAFR			1	2				1											1	
PLUMEUR			2																	
POLYPAT		1			3	5	5	2	6				1				9	7		
RANUARV	1				7							1							1	6
RAPIRUG																				
RESELUT																				
RHAGSTE	8	1	9	7	10		7	7					1	2	4	10			9	10
RIDOSEG		8				7													1	

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
RUMEPUL																				
SALVPAL																				
SALVSYR									2										1	
SCANPAL																				
SCANPEC		1	8	2	3		1						1			3				2
SCOLMAC																				
SCORMUR										10	9	1								
SENEVER	1		2				1													
SHERARV																				
SILECON	10	3	6	9	6		1	6						3	4	4	2	1	10	2
SILECRA	4	3			2			1					1						1	3
SILEDAM	5	6							1					4	5	3				
SILETRI																				
SILEVUL																				
SINAARV	6	7	6	5	1	1		3	2	1	1	1			2	2	9	1		
SORGHAL						2														
STACARA														3						
TETRPAL	2	7	2	4	1				6				1	5	7					1
THESHUM			1	4							1									
THYMPAS																				
TORDAEG				2																
TORIARV	2		3	3	3		4	10		1		1	1			2		1	4	
TRACDIS					2															
TRAGBUP																				
TRAGCOE					1			1												
TRIFCAM		10	6	6	7			1	1				9	5	4	2			3	2
TRIFCLU	2		5	5		1		3	5				1			8			2	7
TRIFDAS			1	2				1							6	4				3
TRIFPUR	1							1												
TRIFSTE			2						1											
TRIGCAE			2	1				2	2		1									1
TURGLAT							1													
UROSPIC			1																	1
VACCPYR	2	3	1	3	9		3	3	5	5	6	1	3	8	2			1	8	1
VELERIG								1												
VEROSYR					3										2				6	
VICIHYB				2																
VICIPER	9	6			8		3	5								1		10		8
VICISAT	1	1			3														3	
VULPCIL								3												

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
ADONAES																				
ADONALE																				
AEGIBIU																				
AEGIPER																				
AINSTRA																			1	
ALCEACA							1													
ALHAMAU																				
ANAGARV						3	5		1	2	4		1	3			5	1	4	2
ANCHITA					1				2										2	2
ANCHSTR					1		2	1									1			
ANEMCOR																				
ANTHSPP	8				1	8	10	2		2	3		10		1	7	1	4	5	6
ANTIORO																				
ASPAAPH																				
ASPEARV	8		5	10	3	1	9	10	3	10	5	5	1	1	1	3	9	2	2	6
ASTOSES	2		1		7		10	2				3	6							
ASTRCRU																				
ASTRHAM																				
ASTRMAC																				1
AVENSTE	6			4	5			2		3	9	1	1	2		4	2	2	9	4
BIFOTES	6		1	1	2		3					9	2			4				9
BISCDID					1															
BONGCHR	3				3			2										1		
BROMALO					7															
BROMLAN	1				6		2							1						
BROMTEC																				
BRYOSYR																				
BUGLARV																				
BUNIELE				4												1				
BUPLLAN					1	1		5		2	3	1	3				4		7	1
BUPLNOD							9	7			2		1				9		3	
BUPLBRE							1							4						
CALEARV																				
CALEPAL																				
CAMPSTR					4	4		5			4	1	1	6	1				1	5
CARDDRA	2						2	1								5	4	1		
CARTPER																				
CARTTEN					1		1			1		4				2				
CATARIG				1			2													
CENTHYA			2	4		2			3				2							2
CENTVER							1	1			1			8	5					
CERADIC					5	2	7	1				8	7			9		2		3
CEPHSYR				8							1			2						
CHRYCOR																				
CICHPUM	1						8			2		2	4	1		1	2	3	8	
CONVALT										2	2									
CONVARV	6	8	5		2	5		2		5	5	4	4	9		4	8	5	2	5
CONVBET				8		4			3											
CONVHUM																				
COROSCO																				2
CREPASP							4											6		
CRUCMAC							2													
CYNODAC	9		1	1	3	2	6	5				3	1	1			3	2	6	1
DAUCBIC										2	3									
DAUCCAR			.		2					1										
DIPLEUR				1																
ECHBELE																				
ECHIJUD																				
ERUCHIS								1									2	3	7	
ERYNCRE							3												3	
EUPHALE			1	3		5		2		8	10	1		5	1	·				10

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
EUPHFOR							2	4	3		1									
EXOCHIT																	2		1	
FALCVUL	5			1					6					1	1			1	5	1
FILAPYR																				
FUMAPAR						1														
GALITRI	1	2	1	9		6	4	2	7	6	4	5	10	7	9	7		7		
GERAROT																1				
GEROHYB									4	5	1				2					2
GLADITA						1				1										
GLAUCOR																				
HEDYRHA																				
HIRSINC						1		1		1			8	1	2		1	7	2	
HYPETRI	3			1			2		1							1	8	1	1	
LAGOCUM											1									
LALLIBE			1																	
LAMIAMP																				
LATHAPH	1						1					8				3		1		
LATHGOR													7				1		2	3
LATHHIE																				
LATHINC	9															3				
LAVAPUN																				
LEGOSPE					2	4	8	9				10	1				10	2	9	
LINACHA					2			1			2	1		7	2		1	2		1
LINUMUC																				
LINUPUB																				
LOLISPP					3	1	6				1	2	6			1			1	
LOPHCRI			1	5	9					1										
MALVPAR														1						
MEDIORB										1										
MEDIROT	1									2	1		1							
MEDISCU							1	4			1	8						1		7
MEDITUR										4			4							
MINUHYB					2	4	1										3	3	7	
MOLULAE																				
NESLAPI	2				5	2	4	5				2	9				1	2	1	
NOTOSYR		1					2		2				3						1	
OCHTAEG										1										
ONOBSQU					1					1										
ONONANT		6	1	1			1			1			1						4	
ONONNAT				1																
ONONPUB																				
ORLADAU																				
PAPAARG																				
PAPAGLA																				
PAPARHO					5	6	2	1				3	7		1				6	
PHALBRA			4	1	6	7	1			3	8		4	10	4		7			6
PHALPAR						1	1		1		1		1	7	3	9	5		1	5
PHALTUB																		1		
PHLOPUN				1																
PICNACA				1	3											1				
PICRGAL																				
PICRSPR					2															
PIMPCRE																				
PLANAFR							1													
PLUMEUR																				
POLYPAT	3		10	1		1	7	9	2		1	2				10	10	7	5	8
RANUARV	5			4	3					1	1			3	1	2	3			2
RAPIRUG						1						4					1	6	1	
RESELUT									3											
RHAGSTE				7	9		9	3	1	8	3	1	9		3		2		2	7
RIDOSEG						1					9		2							

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
RUMEPUL							3					1					2		2	
SALVPAL				1																
SALVSYR		3	4	2	1									1		2				
SCANPAL																				
SCANPEC				2	4		1				2		2							
SCOLMAC					3	2			6	2	4		2				1		4	
SCORMUR				7					10	1										
SENEVER																				
SHERARV																				
SILECON			7		1	1	1	1	1				8	4	2	2		2	3	9
SILECRA				7	2	8	5	4				2	3	3	6			7	3	6
SILEDAM					2			1		2	2	6			2		5	8	3	
SILETRI							6													
SILEVUL																1				
SINAARV	2	2	6	3	2	9				4	4	1	9	4	5	2	6	6	6	1
SORGHAL																				
STACARA								3						1			2			
TETRPAL						3	2	7		2	6	1	1		3		6	6	4	5
THESHUM									5	2	2									
THYMPAS									1											
TORDAEG																				
TORIARV			1		3	1	6	3			2	4	1	1	1		6	1	4	
TRACDIS																				
TRAGBUP	8	1																		
TRAGCOE																				
TRIFCAM					7	1	1	2		1			2				6	3	5	
TRIFCLU										2		2						1	3	
TRIFDAS		1																		
TRIFPUR																				
TRIFSTE												1								
TRIGCAE																				1
TURGLAT	1								3											
UROSPIC																	3	1		
VACCPYR	1		2	5		2	6	5	10	1	4	8	3		9	3	6	6	6	9
VELERIG																				
VEROSYR							2	3				2				5		4		
VICIHYB																				
VICIPER			10		2								4							3
VICISAT																1				
VULPCIL																				

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
ADONAES																				
ADONALE			2																	
AEGIBIU																1				
AEGIPER																				
AINSTRA														1				1		
ALCEACA																				
ALHAMAU	4	3																		
ANAGARV		1	3		6		1					1	1	2			2		3	
ANCHITA	2		1				1				1	5	1				3			
ANCHSTR	2					1							1	2	1	1				1
ANEMCOR																				
ANTHSPP			2		6		7			3		2	5	5		7		6	5	3
ANTIORO																				
ASPAAPH																				
ASPEARV	1		2				10	1		2	9	5	3		2		10	5	8	4
ASTOSES							6					6			3	8			1	1
ASTRCRU																				
ASTRHAM																				
ASTRMAC																				
AVENSTE	1	8	1	3		9	7			7	8		7	2	4	7	6	5	10	4
BIFOTES										1	2	3			7		1			5
BISCDID																				
BONGCHR																3	3		1	
BROMALO																		1		
BROMLAN			1				1				1		1		3					
BROMTEC																				
BRYOSYR																				
BUGLARV																				
BUNIELE																				
BUPLLAN	2	9	9				6			1	6			1			3		2	1
BUPLNOD						1							2					4	8	1
BUPLBRE																				
CALEARV						2								2						
CALEPAL																				
CAMPSTR		2		8	10	5			1	2		6	3				3			
CARDDRA					4										1	4			1	3
CARTPER								1												
CARTTEN											3	2		7			2	8		
CATARIG																				
CENTHYA	3		1	1	2			6				3								
CENTVER						2						3	1			1			2	
CERADIC							6			10	7	9			7	9			1	7
CEPHSYR	1		1	4	1			1	1						1					
CHRYCOR																				
CICHPUM	1		5				6							6				4	1	5
CONVALT						2		1	5				1							
CONVARV	8	5	2	2	3		4	1	4		5	1			5		1		4	7
CONVBET			5	1																
CONVHUM								3	1											
COROSCO		1	1								1									
CREPASP														1						
CRUCMAC																		1		
CYNODAC		1	8	6	5	4				10	1	2	3	5	2		5	2	3	3
DAUCBIC																				
DAUCCAR																				
DIPLEUR				3	3	1		10	4											
ECHBELE				1																
ECHIJUD						1														
ERUCHIS			1										2	2				3		
ERYNCRE			2										2	1		1		1		
EUPHALE	9	1		1	1	3	1			2	9	4	4	2			8	4		1

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
EUPHFOR			9	1	1	2		4	1				1				1	2		
EXOCIET																				
FALCVUL					4		1				4					2	6			3
FILAPYR										8		6		8						
FUMAPAR																				
GALITRI	5	4	4	8		6	2	10	10	6	1		10	1	1	1	6		3	6
GERAROT	1																			
GEROHYB	10		2					1	2		1						5			3
GLADITA		2									4		1				1			
GLAUCOR												1								
HEDYRHA														1						
HIRSINC			1		1	1	1					1						4		
HYPETRI					1		5				1		1	5	1	4	1	2	1	3
LAGOCUM														1						
LALLIBE											1						2			
LAMIAMP							1			2					6					
LATHAPH					6		1					1			1				1	
LATHGOR			3				2					2								
LATHHIE			1																	
LATHINC															5	2				
LAVAPUN																				
LEGOSPE					1					5				4	3				3	
LINACHA				6	5	2						4	1				1	1		
LINUMUC																		3		
LINUPUB																				
LOLISPP						5	2							2	1	1	1	2		
LOPHCRI																				
MALVPAR					2															
MEDIORB			1																	
MEDIROT			3			3		3	1											
MEDISCU			9																1	
MEDITUR							1							2				1	1	
MINUHYB							1												1	
MOLULAE											1									
NESLAPI							4				5	4	3	1	5	5			8	
NOTOSYR				1	1	6						1								
OCHTAEG																				
ONOBSQU					1															
ONONANT							1		5		1	3	2	1		3	3	1	6	1
ONONNAT																				
ONONPUB																				
ORLADAU																				
PAPAARG												1			1	4				
PAPAGLA																				
PAPARHO				1	9	3		2				8	1	6	1	1		1		
PHALBRA		3	2	9	5	4	1	9		7	2		5	1	4		4	2	2	2
PHALPAR	10	9	2	3		3	6	6	5	2		1	7	1	6	2		2	6	
PHALTUB																				
PHLOPUN																				
PICNACA						1			1		4	2			3	3	2			1
PICRGAL																				
PICRSPR																				
PIMPCRE																				
PLANAFR			1															2		
PLUMEUR			.																	
POLYPAT					1			2	1	3	1	9		1	5	2	2	6	1	
RANUARV	8		3						1		8				3	10	2	1	9	7
RAPIRUG								1										1	3	
RESELUT				1	2	1			1				2	2						
RHAGSTE			2	1		1	5			4	10			10	.	10	5	6		7
RIDOSEG	9	5	1	.									2			.				
				.																

Appendix 7.1a (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 1). See Appendix 4.1 for explanation of taxa codes.

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
RUMEPUL																		1		1
SALVPAL																				
SALVSYR			2										1				5			
SCANPAL			1						1											
SCANPEC			5				4			2	3		1			1	4		2	
SCOLMAC	1		4	2			1		2				3					4		
SCORMUR	8	3	6		1			6	9											
SENEVER										1										1
SHERARV							4												2	
SILECON			1	3	7	3	1	1	1	3	8	9		1	8	7	4			
SILECRA				2	6	1	5			2	3	3			10		3		4	8
SILEDAM		1			2	6	5		5	3			1					6	7	
SILETRI																				
SILEVUL																	1			
SINAARV			2	8		4	1	8	3	9		9			10		3	6	1	1
SORGHAL			2																	
STACARA				2			1		7	1								4		1
TETRPAL	10	9	8				3			7	1						2	4	8	8
THESHUM			3					10	2									1		
THYMPAS																				
TORDAEG																				
TORIARV				2	1	7	5				1			2	4			2	3	
TRACDIS																				
TRAGBUP																3				
TRAGCOE																				
TRIFCAM	1	1				1													1	
TRIFCLU			1									2			1				1	
TRIFDAS			1			1														
TRIFPUR																				
TRIFSTE																				
TRIGCAE				3		2		2	1									2		
TURGLAT			3														5			
UROSPIC			3															4		
VACCPYR	1	1	2	8	2	7	7	10	10	2	4	8	1	2	7		5	2	5	3
VELERIG																				
VEROSYR							4							1	3					
VICIHYB																				
VICIPER			1				1				5	10		1			2			
VICISAT							1					8							1	2
VULPCIL																				

Appendix 7.1b Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
ADONAES								1												
ADONALE																				
AEGIBIU																				1
AEGIPER																				
AINSTRA			3	1															1	
ALCEACA						1														
ALHAMAU																				
ANAGARV	1	4	6	7	4		9	8		10	2	2	1			7				1
ANCHITA																				
ANCHSTR																			2	
ANEMCOR																				
ANTPAL	1	1	1	1			1	1	1							2				
ANTHPSE		1								1										
ANTIORO				1																
ASPAAPH			1																	
ASPEARV	3	3	7	1	1		2	2		1	2	6		1	3	9		2	2	1
ASTOSES	7	3	4	3	8								2	2	1	2			7	5
ASTRCRU			1																	
ASTRMAC																				
AVENSTE			1	1	8	3	1						2	1	8	2	1	2	3	9
BIFOTES		1	2	5	4		2						1	1					2	3
BISCDID																				
BONGCHR																			1	
BROMALO																			2	3
BROMLAN																			4	2
BROMTEC																				
BRYOSYR		1														1				
BUGLARV																				
BUNIELE						2						2								
BUPLLAN	2	5	1	2	2								10	10	3	1	1			
BUPLNOD	1	2	5	7	4	1	3	3			1		8		9	5	6			
BUPLBRE																				
CALEARV															2					
CALEPAL															5					
CAMPSTR	1	1	10	10	8		8	9	4				4	2		9				6
CARDDRA																				
CARTPER															1					
CARTTEN															2					
CATARIG													3			2			2	
CENTHYA	4						1	1		1		1							4	
CENTVER																				
CERADIC	10			3	3											1	1		8	4
CEPHSYR					1			1		2	1	4					3			
CHRYCOR						2	6													
CICHPUM	1		1	1				7		1									4	3
CONVALT										9										
CONVARV		3	2			1	1		3		3	1	6	10	4					1
CONVBET									4		6	8					1			
CONVHUM																				
COROSCO				1	8					6			1	5						1
CREPASP	2		2	1			1						2		1				5	7
CRUCMAC																				
CYNODAC						1		7	1				6	3	4			3		6
DAUCBIC							1	2												
DAUCCAR							1												2	
DIPLEUR										1	5	1								
ECHBELE																				
ECHIJUD									1											
ERUCHIS				1		3	8	6	2											
ERYNCRE																				

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
EUPHALE						2	3	10	5	10	8	10						3		
EUPHFOR																				
EXOCHET																				
FALCVUL												2					2			
FILAPYR			3	8															1	1
FUMAPAR							1	5												
GALITRI	8	2						2		9	9	10				2		3		
GERAROT			4	1												2				1
GEROHYB					1									1						
GLADITA																				
GLAUCOR																				1
HIRSINC				1					1											
HYPETRI									2					1	1		2			
LAGOCUM							2	3												
LALLIBE																	1			
LAMIAMP								2	3											
LATHAPH		2			2			1	1								1	1		
LATHGOR	7	7							4											
LATHHIE																				
LATHINC					3												8	2		
LAVAPUN																				1
LEGOSPE	4		10	6			3	4						3	4	4	8		9	
LINACHA	1	3	3	5			5	1									2			1
LINUMUC																				
LINUPUB				1	2							1								
LOLIRIG																				
LOLISUB					1	1														
LOLITEM																				
LOPHCRI								4	3						1		3		4	
MALVPAR																				2
MEDIORB																1			1	10
MEDIROT		1	1											9	9	10				4
MEDISCU				1															3	
MEDITUR	2	7	2	4	1	7		3							1		6		5	2
MINUHYB			3	3				3	2									3		
MOLULAE																2	2		8	4
NESLAPI	8	2	4	3	5											1	2		1	2
NOTOSYR	2	3	1		2															
OCHTAEG																			1	
ONOBSQU							3													
ONONANT																	3			
ONONNAT									1											
ONONPUB					1															
ORLADAU														1	7					
PAPAARG	1																		1	
PAPAGLA								1												
PAPARHO	9	1	5	9	6			3	3					1	1		6		4	6
PHALBRA	2	4	2	4	2						1			1	1		1	5		2
PHALPAR							1		2	1	3		4	1						
PHALTUB																				
PHLOPUN																	3			
PICNACA			3	1				3			2	7	3						1	3
PICRGAL									1											
PICRSPR			2														1			
PIMPCRE									1	1										
PLANAFR				1	2				1										1	
PLUMEUR				2																
POLYPAT			1			3	5	5	2	6				1				9	7	
RANUARV		1				7							1						1	6
RAPIRUG																				
RESELUT																				
RHAGSTE		7	1	9	7	10		7	6					1	2	4	10		9	10

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Taxa Code																				
RIDOSEG		8				6													1	
RUMEPUL																				
SALVPAL																				
SALVSYR									2										1	
SCANPAL																				
SCANPEC		1	8	2	3		1						1			3				2
SCOLMAC																				
SCORMUR										10	9	1								
SENEVER	1		2				1													
SHERARV																				
SILECON	10	3	6	9	6		1	6						3	4	4	2	1	10	2
SILECRA	4	3			2			1					1						1	3
SILEDAM	5	6							1					4	5	3				
SILETRI																				
SILEVUL																				
SINAARV	6	7	6	5	1	1		3	2	1	1	1			2	2	9	1		
SORGHAL						2														
STACARA														3						
TETRPAL	2	7	1	4	1				6				1	5	7					
THESHUM			1	4							1									
THYMPAS																				
TORDAEG				2																
TORIARV	2		3	3	3		4	10		1		1	1			2		1	4	
TRACDIS					2															
TRAGBUP																				
TRAGCOE					1			1												
TRIFCAM		10	6	6	7			1	1				9	5	4	2			3	2
TRIFCLU	2		5	5		1		3	5				1			8			2	7
TRIFDAS			1	2				1							6	4				3
TRIFPUR	1							1												
TRIFSTE			2						1											
TRIGCAE			2	1				2	2		1									1
TURGLAT							1													
UROSPIC			1																	1
VACCPYR	2	3	1	3	9		3	3	5	5	6	1	3	8	2			1	8	1
VELERIG								1												
VEROSYR					3										2				6	
VICIHYB				2																
VICIPER	9	6			8		3	5									1	10		8
VICISAT	1	1			3														3	
VULPCIL								3												

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
ADONAES																				
ADONALE																				
AEGIBIU																				
AEGIPER																				
AINSTRA																			1	
ALCEACA							1													
ALHAMAU																				
ANAGARV						3	5		1	2	4		1	3			5	1	4	2
ANCHITA					1				2										2	2
ANCHSTR																				
ANEMCOR																				
ANTHPAL							7	2		2	3		10		1	7	1	4	5	6
ANTHPSE																				
ANTIORO																				
ASPAAPH																				
ASPEARV	8		5	10	3	1	9	10	3	10	5	5	1	1	1	3	9	2	2	6
ASTOSES	2		1		7		10	2				3	6							
ASTRCRU																				
AVENSTE	6			4	5			2		3	9	1	1	2		4	2	2	9	4
BIFOTES	6		1	1	2		3					9	2			4				9
BISCDID					1															
BONGCHR	3				3			2										1		
BROMALO					7															
BROMLAN	1				6		2							1						
BROMTEC																				
BRYOSYR																				
BUGLARV																				
BUNIELE				4												1				
BUPLLAN					1	1		5		2	3	1	3				4		7	1
BUPLNOD							9	7			2		1				9		3	
BUPLBRE														4						
CALEARV																				
CALEPAL																				
CAMPSTR					4	4		5			4	1	1	6	1				1	5
CARDDRA	2						1	1								4	4	1		
CARTPER																				
CARTTEN					1		1			1		4				2				
CATARIG				1			2													
CENTHYA			2	4		2			3				2							2
CENTVER							1	1			1			8	5					
CERADIC					5	2	7	1				8	7			9		2		3
CEPHSYR				8							1			2						
CHRYCOR																				
CICHPUM	1						8			2		2	4	1		1	2	3	8	
CONVALT										2	2									
CONVARV	6	8	5		2	5		2		5	5	4	4	9		4	8	5	2	5
CONVBET				8		4			3											
CONVHUM																				
COROSCO																				2
CREPASP							4											6		
CRUCMAC							2													
CYNODAC	9		1	1	3	2	6	5				3	1	1			3	2	6	1
DAUCBIC										2	3									
DAUCCAR					2					1										
DIPLEUR				1																
ECHBELE																				
ECHIJUD																				
ERUCHIS								1									2	3	7	
ERYNCRE							3												1	

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
EUPHALE			1	3		5		2		8	10	1		5	1					10
EUPHFAL																				
EUPHREU							2	4												
EXOCHET																	2		1	
FALCVUL	5			1					6					1	1			1	5	1
FILAPYR																				
FUMAPAR																				
GALITRI	1	2	1	9		6	4	2	7	6	4	5	10	7	9	7		7		
GERAROT																1				
GEROHYB									4	5	1				2					2
GLADITA						1				1										
GLAUCOR																				
HIRSINC						1		1		1			8	1	2		1	7	2	
HYPETRI	3			1			2		1						1	8	1	1	1	
LAGOCUM											1									
LALLIBE			1																	
LAMIAMP																				
LATHAPH	1						1					8				2			1	
LATHGOR													7				1		2	3
LATHHIE																				
LATHINC	9															3				
LAVAPUN		1																		
LEGOSPE					2	4	8	9				10	1				10	2	9	
LINACHA					2			1			2	1		7	2		1	2		1
LINUMUC																				
LINUPUB																				
LOLIRIG					3								1			1				
LOLISUB																				
LOLITEM																				
LOPHCRI			1	5	9					1										
MALVPAR														1						
MEDIORB										1										
MEDIROT	1									2	1		1							
MEDISCU							1	4			1	8						1		7
MEDITUR										4			4							
MINUHYB					2	4	1										3	3	7	
MOLULAE																				
NESLAPI	1				5	2	4	5				2	9				1	2	1	
NOTOSYR		1					2		2				3						1	
OCHTAEG										1										
ONOBSQU					1					1										
ONONANT		3	1	1			3			1			1						4	
ONONNAT				1																
ONONPUB																				
ORLADAU																				
PAPAARG																				
PAPAGLA																				
PAPARHO					5	6	2	1				3	7		1				6	
PHALBRA			3	1	6	7	1			3	8		4	10	4		7			6
PHALPAR						1	1		1		1		1	7	3	9	5		1	5
PHALTUB																		1		
PHLOPUN				1																
PICNACA				1	3											1				
PICRGAL																				
PICRSPR					2															
PIMPCRE																				
PLANAFR							1													
PLUMEUR																				
POLYPAT	3		10	1		1	7	9	2		1	2				10	10	7	5	8
RANUARV	5			4	3					1	1			3	1	2	3			1
RAPIRUG						1						4					1	6	1	
RESELUT									2											
RHAGSTE				7	9		9	3	1	1	3	1	9		3		2		2	7

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Taxa Code																				
RIDOSEG						1					9		2							
RUMEPUL							3					1					2		2	
SALVPAL				1																
SALVSYR				1																
SCANPAL																				
SCANPEC				2	4		1				2		2							
SCOLMAC					3	2			6	2	4		2				1		4	
SCORMUR				7					10	1										
SENEVER																				
SHERARV																				
SILECON			7		1	1	1	1	1				8	4	2	2		2	3	9
SILECRA				7	2	8	5	4				2	3	3	6			7	3	6
SILEDAM					2			1		2	2	6			2		5	8	3	
SILETRI							6													
SILEVUL																1				
SINAARV	2	2	6	3	2	9				4	4	1	9	4	5	2	6	6	6	1
SORGHAL																				
STACARA								3						1			2			
TETRPAL						3	2	7		2	6	1	1		3		6	6	4	5
THESHUM									5	2	2									
THYMPAS									1											
TORDAEG																				
TORIARV			1		3	1	6	3			2	4	1	1	1		6	1	4	
TRACDIS																				
TRAGBUP	7	1																		
TRAGCOE																				
TRIFCAM					7	1	1	2		1			2				6	3	5	
TRIFCLU										2		2						1	3	
TRIFDAS		1																		
TRIFPUR																				
TRIFSTE												1								
TRIGCAE																				1
TURGLAT	1								3											
UROSPIC																	3	1		
VACCPYR	1		2	5		2	6	5	10	1	4	8	3		9	3	6	6	6	9
VELERIG																				
VEROSYR							2	3				2				5		4		
VICIHYB																				
VICIPER			10		2								4							3
VICISAT																1				
VULPCIL																				

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2)

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
ADONAES																				
ADONALE																				
AEGIBIU																1				
AEGIPER																				
AINSTRA														1				1		
ALCEACA																				
ALHAMAU	4	3																		
ANAGARV		1	3		6		1					1	1	2			2		3	
ANCHITA	2		1				1				1	5	1				3			
ANCHSTR	1					1									1	1				
ANEMCOR																				
ANTHPAL			2		6		7			3		2	5	5		7		6	3	3
ANTHPSE																			2	
ANTIORO																				
ASPAAPH																				
ASPEARV	1		2				10	1		2	9	5	3		2		10	5	8	4
ASTOSES							6					6			3	8			1	1
ASTRCRU																				
ASTRMAC																				
AVENSTE	1	8	1	3		9	7			7	8		7	2	4	7	6	5	10	4
BIFOTES										1	2	3			7		1			5
BISCDID																				
BONGCHR																3	3		1	
BROMALO																		1		
BROMLAN			1				1				1		1		3					
BROMTEC																				
BRYOSYR																				
BUGLARV																				
BUNIELE																				
BUPLLAN	2	9	9				6			1	6			1			3		2	1
BUPLNOD						1							2					4	8	1
BUPLBRE																				
CALEARV						2								2						
CALEPAL																				
CAMPSTR		2		8	10	5			1	2		6	3				3			
CARDDRA					4										1	2				3
CARTPER								1												
CARTTEN											3	2		7			2	8		
CATARIG																				
CENTHYA	3		1	1	2			6				3								
CENTVER						2						3	1			1			2	
CERADIC							6			10	7	9			7	9			1	7
CEPHSYR	1		1	4	1			1	1						1					
CHRYCOR																				
CICHPUM	1		5				6							6				4	1	5
CONVALT						2		1	5				1							
CONVARV	8	5	2	2	3		4	1	4		5	1			5		1		4	7
CONVBET			5	1																
CONVHUM								3	1											
COROSCO	1		1									1								
CREPASP														1						
CRUCMAC																		1		
CYNODAC		1	8	6		5	4			10	1	2	3	5	2		5	2	3	3
DAUCBIC																				
DAUCCAR																				
DIPLEUR				3	3	1		10	4											
ECHBELE				1																
ECHIJUD						1														
ERUCHIS			1										2	2				3		
ERYNCRE			2										2	1		1		1		

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2). See Appendix 4.1 for explanation of taxa codes.

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
EUPHALE	9	1		1	1	3	1			2	9	4	4	2			8	4		1
EUPHFAL								1												
EUPHREU													1							
EXOCHET																				
FALCVUL			4		4		1				4					2	6			3
FILAPYR																				
FUMAPAR																				
GALITRI	5	4	4	8		6	2	10	10	6	1		10	1	1	1	6		3	6
GERAROT																				
GEROHYB	10		2					1	2		1						5			3
GLADITA		2									4		1				1			
GLAUCOR												1								
HIRSINC			1		1	1	1					1						4		
HYPETRI					1		5				1		1	5	1	4	1	2	1	3
LAGOCUM														1						
LALLIBE											1						2			
LAMIAMP							1			2					6					
LATHAPH					6		1					1			1				1	
LATHGOR			3				2					2								
LATHHIE			1																	
LATHINC															5	2				
LAVAPUN																				
LEGOSPE					1					5				4	3				3	
LINACHA				6	5	2						4	1				1	1		
LINUMUC																		3		
LINUPUB																				
LOLIRIG																				
LOLISUB							2								2			2		
LOLITEM																1				
LOPHCRI																				
MALVPAR					2															
MEDIORB			1																	
MEDIROT			3			3		3	1										1	
MEDISCU			9																1	
MEDITUR							1							2				1	1	
MINUHYB							1												1	
MOLULAE											1									
NESLAPI							4				5	4	3	1	5	5			8	
NOTOSYR			1	1	1	6						1								
OCHTAEG																				
ONOBSQU					1															
ONONANT							1		5		1	3	2	1		3	3	1	6	1
ONONNAT																				
ONONPUB																				
ORLADAU																				
PAPAARG												1			1	4				
PAPAGLA																				
PAPARHO				1	9	3		2				8	1	6	1	1		1		
PHALBRA		3	2	9	5	4	1	9			7	2		5	1	4		4	2	2	2
PHALPAR	10	9	2	3		3	6	6	5	2			1	7	1	6	2		2	6	
PHALTUB																				
PHLOPUN																				
PICNACA							1			1		4	2			3	3	2			1
PICRGAL																				
PICRSPR																				
PIMPCRE																				
PLANAFR				1															2	
PLUMEUR																				
POLYPAT						1			2	1	3	1	9		1	5	2	2	6	1
RANUARV		8		3						1		8				3	10	2	1	9	7
RAPIRUG									1										1	3
RESELUT					1	2				1				2	2					
RHAGSTE				2	1		1	5			4	10			10		10	5	6		7

Appendix 7.1b (cont.) Number of Quadrats (out of 10) per Field in which Taxa Present (Level 2)

Field No.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Taxa Code																				
RIDOSEG	9	5	1										2							
RUMEPUL																		1		1
SALVPAL																				
SALVSYR																				
SCANPAL			1						1											
SCANPEC			5				4			2	3		1			1	4		2	
SCOLMAC	1		4	2			1		2				3					4		
SCORMUR	8	3	6		1			6	9											
SENEVER										1										1
SHERARV							4												2	
SILECON			1	3	7	3	1	1	1	3	8	9		1	8	7	4			
SILECRA				2	6	1	5			2	3	3			10		3		4	8
SILEDAM		1			2	6	5		5	3			1					6	7	
SILETRI																				
SILEVUL																	1			
SINAARV			2	8		4	1	8	3	9		9			10		3	6	1	1
SORGHAL			2																	
STACARA				2			1		7	1								4		1
TETRPAL	10	9	8				3			7	1						2	4	8	8
THESHUM			3					10	2									1		
THYMPAS																				
TORDAEG																				
TORIARV				2	1	7	5				1			2	4			2	3	
TRACDIS																				
TRAGBUP																3				
TRAGCOE																				
TRIFCAM	1	1				1													1	
TRIFCLU			1									2			1				1	
TRIFDAS			1			1														
TRIFPUR																				
TRIFSTE																				
TRIGCAE				3		2		2	1									2		
TURGLAT			3														5			
UROSPIC			2															4		
VACCPYR	1	1	2	8	2	7	7	10	10	2	4	8	1	2	7		5	2	5	3
VELERIG																				
VEROSYR							4							1	3					
VICIHYB																				
VICIPER			1				1				5	9		1			2			
VICISAT							1					8							1	2
VULPCIL																				

Appendix 7.2a Taxa Occurring in Three Fields or More.

Level 1	Level 2
Ainsworthia trachycarpia	*Ainsworthia trachycarpia*
Alcea acaulis	*Alcea acaulis*
Anagallis arvensis	*Anagallis arvensis*
Anchusa italica	*Anchusa italica*
Anchusa strigosa	*Anchusa strigosa*
Anthemis spp.	*Anthemis palestina*
Asperula arvensis	*Anthemis pseudocotula*
Astoma sesilifolium	*Asperula arvensis*
Avena sterilis subsp. *sterilis*	*Astoma sesilifolium*
Bifora testiculata	*Avena sterilis* subsp. *sterilis*
Bongardia chrysogonum	*Bifora testiculata*
Bromus alopecuros subsp. *carolini-henrici*	*Bongardia chrysogonum*
Bromus lanceolatus	*Bromus alopecuros* subsp. *carolini-henrici*
Bromus tectorum	*Bromus lanceolatus*
Bunium elegans	*Bromus tectorum*
Bupleurum lancifolium	*Bunium elegans*
Bupleurum nodiflorum	*Bupleurum lancifolium*
Campanula strigosa	*Bupleurum nodiflorum*
Cardaria draba	*Campanula strigosa*
Catapodium rigidum	*Cardaria draba*
Carthamus tenuis	*Catapodium rigidum*
Centaurea hyalolepis	*Carthamus tenuis*
Centaurea verutum	*Centaurea hyalolepis*
Cephalaria syriaca	*Centaurea verutum*
Cerastium dichotomum	*Cephalaria syriaca*
Cichorium pumilum	*Cerastium dichotomum*
Cynodon dactylon	*Cichorium pumilum*
Convolvulus althaeoides	*Cynodon dactylon*
Convolvulus arvensis	*Convolvulus althaeoides*
Convolvulus betoncifolius	*Convolvulus arvensis*
Coronilla scorpioides	*Convolvulus betoncifolius*
Crepis aspera	*Coronilla scorpioides*
Daucus bicolor	*Crepis aspera*
Daucus carota	*Daucus bicolor*
Diplotaxis erucoides	*Daucus carota*
Erucaria hispanica	*Diplotaxis erucoides*
Eryngium creticum	*Erucaria hispanica*
Euphorbia aleppica	*Eryngium creticum*
Euphorbia reuteriana or *E. falcata*	*Euphorbia aleppica*
Falcaria vulgaris	*Euphorbia reuteriana*
Filago pyramidata	*Falcaria vulgaris*
Fumaria parviflora	*Filago pyramidata*
Galium tricornutum	*Fumaria parviflora*
Geranium rotundiflorium	*Galium tricornutum*
Geropogon hybridus	*Geranium rotundiflorium*
Gladiolus italica	*Geropogon hybridus*
Hirschfeldia incana	*Gladiolus italica*
Hypericum triquetrifolium	*Hirschfeldia incana*
Lagoecia cuminoides	*Hypericum triquetrifolium*
Lamium amplexicaule	*Lagoecia cuminoides*
Lallemantia iberica	*Lamium amplexicaule*
Lathyrus aphaca	*Lallemantia iberica*
Lathyrus gorgonei	*Lathyrus aphaca*
Lathyrus inconspicuus	*Lathyrus gorgonei*

Appendix 7.2a (cont.) Taxa Occurring in Three Fields or More.

Level 1	Level 2
Legousia speculum-veneris	*Lathyrus inconspicuus*
Linaria chalepensis	*Legousia speculum-veneris*
Linum pubescens	*Linaria chalepensis*
Lolium spp.	*Linum pubescens*
Lophlochloa cristata	*Lolium subulatum*
Medicago orbicularis	*Lophlochloa cristata*
Medicago rotata	*Medicago orbicularis*
Medicago scutellata	*Medicago rotata*
Medicago turbinata	*Medicago rotata*
Minutaria hybrida	*Medicago turbinata*
Neslia apiculata	*Minuartia hybrida*
Notobasis syriaca	*Neslia apiculata*
Onobrychis squarrosa	*Notobasis syriaca*
Ononis antiquorum	*Onobrychis squarrosa*
Ononis natrix	*Ononis antiquorum*
Papaver argemone	*Ononis natrix*
Papaver rhoeas	*Papaver argemone*
Phalaris brachystachys	*Papaver rhoeas*
Phalaris paradoxa	*Phalaris brachystachys*
Picnomon acarna	*Phalaris paradoxa*
Picris sprengariana	*Picnomon acarna*
Plantago afra	*Picris sprengariana*
Polygonum patulum	*Plantago afra*
Ranunculus arvensis	*Polygonum patulum*
Rapistrum rugosum	*Ranunculus arvensis*
Reseda lutea	*Rapistrum rugosum*
Rhagadiolus stellatus	*Reseda lutea*
Ridolfia segetum	*Rhagadiolus stellatus*
Rumex pulcher	*Ridolfia segetum*
Salvia syriaca	*Rumex pulcher*
Scandix pecten-veneris	*Salvia syriaca*
Scolymus maculatus	*Scandix pecten-veneris*
Scorpiurus muricatus	*Scolymus maculatus*
Senecio vernalis	*Scorpiurus muricatus*
Silene conoidea	*Senecio vernalis*
Silene crassipes	*Silene conoidea*
Silene damascena	*Silene crassipes*
Silene vulgaris	*Silene damascena*
Sinapis arvensis	*Silene vulgaris*
Stachys arabica	*Sinapis arvensis*
Tetragonolobus palaestinus	*Stachys arabica*
Thesium humile	*Tetragonolobus palaestinus*
Torilis arvensis	*Thesium humile*
Trifolium campestre	*Torilis arvensis*
Trifolium clusii	*Trifolium campestre*
Trifolium dasyurum	*Trifolium clusii*
Trifolium stellatum	*Trifolium dasyurum*
Trigonella caelesyriaca	*Trifolium stellatum*
Turgenia latifolia	*Trigonella caelesyriaca*
Urospermum picroides	*Turgenia latifolia*
Vaccaria pyramidata	*Urospermum picroides*
Veronica syriaca	*Vaccaria pyramidata*
Vicia peregrina	*Veronica syriaca*
Vicia sativa subsp. *angustifolia*	*Vicia peregrina*
	Vicia sativa subsp. *angustifolia*

Appendix 7.2b Taxa Omitted from the Analyses when Fields 6, 19, 20, 22, 25 and 40 are Eliminated - Level 1 and Level 2.

Alcea acaulis
Bromus alopecuros subsp. *carolini-henrici*
Bromus tectorum
Daucus carota
Onobrychis squarrosa
Filago pyramidata
Picris sprengariana
Trifolium stellatum

Appendix 7.2c Taxa Omitted from the Analyses when the Hills Fields are Examined Alone (excluding fields 6, 19, 20, 22, 15, 40).

Alcea acaulis
Bromus alopecuros subsp. *carolini-henrici*
Bromus tectorum
Bunium elegans
Convolvulus althaeoides
Daucus bicolor
Daucus carota
Diplotaxis erucoides
Filago pyramidata
Linum pubescens
Lolium temulentum (Level 2 only)
Medicago orbicularis
Onobrychis squarrosa
Ononis natrix
Picris sprengariana
Reseda lutea
Scorpiurus muricatus
Trifolium stellatum

Appendix 7.3 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	1	2	3	4	5	6	7	8	9	10
Variables/Categories										
Rotation Regime										
Cereal/Cereal										
Cereal/Legume			X							
Cereal/Fallow		X		X			X	X		
3 Year Crop Rotation	X				X	X			X	X
5 Years Weedy Fallow										
10 Years Summer Crops										
Previous Year's Crop										
Bare Fallow		X					X			
Fallow with Summer Crops				X		X		X	X	X
Legume Crop	X		X		X					
Cereal Crop										
Weedy Fallow										
Tillage										
Tractor										X
Animal	X	X	X	X	X	X	X	X	X	
Sowing Rate (kg/dunum)	10	20	17	17	10	10	10	12	15	12
Sowing Date										
Before Rains										
After Rains	X	X	X	X	X	X	X	X	X	X
Manuring										
Grazing Stubble Only		X	X	X	X	X	X	X	X	X
Manure Applied	X									
? Chemical Fertiliser										
Weeding										
None	X	X		X	X					X
Hand-weeded			X			X	X	X	X	

Appendix 7.3 (cont.) 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	11	12	13	14	15	16	17	18	19	20
Variables/Categories										
Rotation Regime										
Cereal/Cereal					X					
Cereal/Legume			X	X		X	X	X		
Cereal/Fallow	X	X								
3 Year Crop Rotation									X	X
5 Years Weedy Fallow										
10 Years Summer Crops										
Previous Year's Crop										
Bare Fallow		X					X	X		
Fallow with Summer Crops	X		X	X						
Legume Crop					X	X				
Cereal Crop										
Weedy Fallow									X	X
Tillage										
Tractor	X	X					X	X		
Animal			X	X	X	X			X	X
Sowing Rate (kg/dunum)	12	10	10	10	15	17	20	20	10	10
Sowing Date										
Before Rains										
After Rains	X	X	X	X	X	X	X	X	X	X
Manuring										
Grazing Stubble Only	X	X	X	X	X	X	X	X	X	X
Manure Applied										
? Chemical Fertiliser										
Weeding										
None	X	X				X	X	X	X	X
Hand-weeded			X	X	X					

Appendix 7.3 (cont.) 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	21	22	23	24	25	26	27	28	29	30
Variables/Categories										
Rotation Regime										
Cereal/Cereal										
Cereal/Legume							X			
Cereal/Fallow	X					X		X		
3 Year Crop Rotation			X	X					X	X
5 Years Weedy Fallow					X					
10 Years Summer Crops		X								
Previous Year's Crop										
Bare Fallow										
Fallow with Summer Crops	X	X	X	X		X		X		X
Legume Crop							X		X	
Cereal Crop										
Weedy Fallow					X					
Tillage										
Tractor	X		X	X		X			X	X
Animal		X			X		X	X		
Sowing Rate (kg/dunum)	10	10	10	12	10	17	17	20	12	17
Sowing Date										
Before Rains										
After Rains	X	X	X	X	X	X	X	X	X	X
Manuring										
Grazing Stubble Only	X	X		X	X		X	X	X	X
Manure Applied						X				
? Chemical Fertiliser			X							
Weeding										
None	X	X		X	X	X	X	X	X	X
Hand-weeded			X							

Appendix 7.3 (cont.) 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	31	32	33	34	35	36	37	38	39	40	
Variables/Categories											
Rotation Regime											
Cereal/Cereal											X
Cereal/Legume											
Cereal/Fallow		X	X			X	X		X		
3 Year Crop Rotation	X			X	X			X			
5 Years Weedy Fallow											
10 Years Summer Crops											
Previous Year's Crop											
Bare Fallow											
Fallow with Summer Crops	X	X	X	X	X	X	X		X		
Legume Crop								X			
Cereal Crop										X	
Weedy Fallow											
Tillage											
Tractor	X			X	X	X	X	X	X	X	
Animal		X	X								
Sowing Rate (kg/dunum)	17	20	10	15	15	14	20	15	15	12	
Sowing Date											
Before Rains											
After Rains	X	X	X	X	X	X	X	X	X	X	
Manuring											
Grazing Stubble Only	X	X		X	X	X	X	X		X	
Manure Applied			X								
? Chemical Fertiliser									X		
Weeding											
None	X	X	X	X	X	X	X	X	X	X	
Hand-weeded											

Appendix 7.3 (cont.) 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	41	42	43	44	45	46	47	48	49	50
Variables/Categories										
Rotation Regime										
Cereal/Cereal										
Cereal/Legume							X			
Cereal/Fallow			X		X					
3 Year Crop Rotation	X	X		X		X		X	X	X
5 Years Weedy Fallow										
10 Years Summer Crops										
Previous Year's Crop										
Bare Fallow										X
Fallow with Summer Crops	X	X	X	X	X	X		X	X	
Legume Crop							X			
Cereal Crop										
Weedy Fallow										
Tillage										
Tractor	X	X	X	X	X	X		X	X	X
Animal							X			
Sowing Rate (kg/dunum)	20	20	14	17	17	17	12	15	18	18
Sowing Date										
Before Rains										
After Rains	X	X	X	X	X	X	X	X	X	X
Manuring										
Grazing Stubble Only	X	X	X	X	X	X	X	X	X	X
Manure Applied										
? Chemical Fertiliser										
Weeding										
None	X	X	X	X	X	X	X	X	X	X
Hand-weeded										

Appendix 7.3 (cont.) 'Cultural' Variables - Details of the Fields' Crop Management Practices.

FIELD	51	52	53	54	55	56	57	58	59	60
Variables/Categories										
Rotation Regime										
Cereal/Cereal										
Cereal/Legume				X		X			X	
Cereal/Fallow		X			X		X			X
3 Year Crop Rotation	X		X					X		
5 Years Weedy Fallow										
10 Years Summer Crops										
Previous Year's Crop										
Bare Fallow							X			
Fallow with Summer Crops		X	X		X			X		X
Legume Crop	X			X		X			X	
Cereal Crop										
Weedy Fallow										
Tillage										
Tractor	X	X	X	X	X	X	X	X	X	X
Animal										
Sowing Rate (kg/dunum)	10	12	10	10	10	10	20	20	20	20
Sowing Date										
Before Rains					X	X			X	X
After Rains	X	X	X	X			X	X		
Manuring										
Grazing Stubble Only	X	X		X	X	X	X	X	X	X
Manure Applied										
? Chemical Fertiliser			X							
Weeding										
None	X	X	X	X	X	X	X	X	X	X
Hand-weeded										

Appendix 7.4 The 'Environmental' Variables - Field Details.

FIELD	1	2	3	4	5	6	7	8	9	10
Variable/Categories										
Location										
Hills/Plains										
Hills	X	X	X	X	X	X	X	X	X	
Plains										X
Vegetation Zone										
Plains Vegetation										X
Degraded Deciduous Forest						X	X	X	X	
Mixed Degraded Forest			X	X						
Degraded Evergreen Forest										
Evergreen Forest	X	X			X					
Altitude (m above sea level)	740	700	500	500	800	400	380	400	400	580
Soil Properties										
Stoniness (%)	70	60	70	65	60	30	35	55	60	40
Organic Content (%)	1.48	0.99	2.17	1.47	1.84	1.19	1.13	1.75	1.02	0.55
pH	7.65	7.45	7.60	7.95	7.75	7.75	7.85	7.65	7.77	7.85
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.195	.198	.275	.267	.260	.429	.050	.166	.479	.155
Situation of the Field										
Position of Slope										
Upper Third					X		X		X	
Mid-Slope	X	X						X		
Lower Third			X	X						
Basin Bottom						X				X
Degree of Slope										
Flat		X				X		X		X
Gentle/Flat					X					
Gentle	X		X	X					X	
Steep							X			
Aspect										
North			X	X					X	
South		X			X			X		
East	X						X			
West										
Flat/Undifferentiated						X				X
The Crop										
Crop Cover (%)	62.5	67.5	60.5	61.0	29.0	74.0	51.5	55.0	77.5	58.0
Height of Crop (cm)	118	134	110	110	79	116	91	91	96	69

Appendix 7.4 (cont.) The 'Environmental' Variables - Field Details.

FIELD	11	12	13	14	15	16	17	18	19	20
Variable/Categories										
Location										
Hills/Plains										
Hills			X	X	X	X	X	X	X	X
Plains	X	X								
Vegetation Zone										
Plains Vegetation	X	X								
Degraded Deciduous Forest										
Mixed Degraded Forest			X	X	X	X	X	X		
Degraded Evergreen Forest										
Evergreen Forest									X	X
Altitude (m above sea level)	580	580	600	600	560	500	980	980	900	900
Soil Properties										
Stoniness (%)	40	40	90	90	95	70	30	30	70	70
Organic Content (%)	0.63	0.65	1.67	1.32	1.37	1.41	1.42	1.31	1.18	1.23
pH	7.85	7.90	7.55	7.20	7.35	7.80	7.60	7.60	7.75	7.60
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.154	.148	.208	.203	.205	.270	.226	.087	.118	.139
Situation of the Field										
Position of Slope										
Upper Third			X	X	X					
Mid-Slope									X	X
Lower Third						X				
Basin Bottom	X	X					X	X		
Degree of Slope										
Flat	X	X					X	X		
Gentle/Flat									X	X
Gentle			X	X	X	X				
Steep										
Aspect										
North			X	X	X	X				
South										
East										
West									X	X
Flat/Undifferentiated	X	X					X	X		
The Crop										
Crop Cover (%)	60.5	44.5	67.9	68.6	62.5	73.0	60.0	49.5	53.5	37.7
Height of Crop (cm)	73	56	76	91	83	88	79	66	62	53

Appendix 7.4 (cont.) The 'Environmental' Variables - Field Details.

FIELD	21	22	23	24	25	26	27	28	29	30
Variable/Categories										
Location										
Hills/Plains										
Hills	X	X	X		X		X	X		
Plains				X		X			X	X
Vegetation Zone										
Plains Vegetation				X		X			X	X
Degraded Deciduous Forest										
Mixed Degraded Forest										
Degraded Evergreen Forest			X				X	X		
Evergreen Forest	X	X			X					
Altitude (m above sea level)	1080	1100	900	800	900	540	700	700	490	380
Soil Properties										
Stoniness (%)	45	45	30	15	70	20	40	40	10	15
Organic Content (%)	1.29	1.19	1.44	1.00	1.18	1.08	1.36	0.90	0.90	0.78
pH	7.85	7.20	7.65	7.75	7.85	7.65	7.20	7.15	7.65	7.65
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.257	.253	.181	.175	.208	.213	.097	.208	.180	.199
Situation of the Field										
Position of Slope										
Upper Third					X					
Mid-Slope		X					X	X		
Lower Third										
Basin Bottom	X		X	X		X			X	X
Degree of Slope										
Flat	X	X		X						X
Gentle/Flat			X			X			X	
Gentle					X		X	X		
Steep										
Aspect										
North						X	X	X		
South		X								
East										
West					X				X	
Flat/Undifferentiated	X		X	X						X
The Crop										
Crop Cover (%)	50.0	53.5	59.5	25.5	43.0	61.0	39.4	41.7	36.0	60.5
Height of Crop (cm)	50	79	46	27	71	82	50	52	45	80

Appendix 7.4 (cont.) The 'Environmental' Variables - Field Details.

FIELD	31	32	33	34	35	36	37	38	39	40
Variable/Categories										
Location										
Hills/Plains										
Hills		X	X			X	X	X	X	X
Plains	X			X	X					
Vegetation Zone										
Plains Vegetation	X			X	X					
Degraded Deciduous Forest								X	X	
Mixed Degraded Forest							X			
Degraded Evergreen Forest		X								X
Evergreen Forest			X			X				
Altitude (m above sea level)	370	760	740	540	550	960	620	600	580	800
Soil Properties										
Stoniness (%)	15	85	70	10	5	70	10	15	30	20
Organic Content (%)	0.96	1.08	1.62	1.26	0.72	1.18	0.95	0.84	0.83	1.26
pH	7.65	7.55	7.65	7.65	7.60	7.30	7.15	7.70	7.65	7.75
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.220	.142	.190	.180	.311	.195	.087	.106	.098	.178
Situation of the Field										
Position of Slope										
Upper Third						X				
Mid-Slope		X	X							
Lower Third									X	X
Basin Bottom	X			X	X		X	X		
Degree of Slope										
Flat	X			X			X	X		
Gentle/Flat									X	
Gentle			X		X	X				X
Steep		X								
Aspect										
North										
South					X					
East		X	X			X				
West									X	X
Flat/Undifferentiated	X			X			X	X		
The Crop										
Crop Cover (%)	64.0	66.0	81.5	80.5	73.0	53.5	64.0	64.5	56.5	35.6
Height of Crop (cm)	77	88	116	101	100	81	98	90	88	47

Appendix 7.4 (cont.) The 'Environmental' Variables - Field Details.

FIELD	41	42	43	44	45	46	47	48	49	50
Variable/Categories										
Location										
Hills/Plains										
Hills			X				X			X
Plains	X	X		X	X	X		X	X	
Vegetation Zone										
Plains Vegetation	X	X		X	X	X		X	X	
Degraded Deciduous Forest			X							
Mixed Degraded Forest										
Degraded Evergreen Forest							X			X
Evergreen Forest										
Altitude (m above sea level)	420	400	420	480	460	460	480	440	450	820
Soil Properties										
Stoniness (%)	20	20	20	5	45	30	60	5	5	30
Organic Content (%)	0.84	1.12	0.51	0.78	0.90	0.72	0.84	0.54	0.84	0.95
pH	7.85	8.0	7.75	7.80	7.75	7.75	7.55	7.80	7.55	7.70
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.096	.092	.289	.202	.221	.237	.078	.208	.196	.211
Situation of the Field										
Position of Slope										
Upper Third							X			X
Mid-Slope										
Lower Third										
Basin Bottom	X	X	X	X	X	X		X	X	
Degree of Slope										
Flat	X		X	X	X		X	X	X	
Gentle/Flat		X				X				
Gentle										X
Steep										
Aspect										
North										X
South										
East										
West		X				X				
Flat/Undifferentiated	X		X	X	X		X	X	X	
The Crop										
Crop Cover (%)	50.5	80.5	49.0	79.5	70.6	59.4	50.0	58.9	53.0	74.5
Height of Crop (cm)	64	94	76	100	90	75	64	72	81	83

Appendix 7.4 The 'Environmental' Variables - Field Details.

FIELD	51	52	53	54	55	56	57	58	59	60
Variable/Categories										
Location										
Hills/Plains										
Hills	X	X	X	X	X	X	X		X	X
Plains								X		
Vegetation Zone										
Plains Vegetation										
Degraded Deciduous Forest			X	X				X		
Mixed Degraded Forest										
Degraded Evergreen Forest					X		X		X	X
Evergreen Forest	X	X				X				
Altitude (m above sea level)	860	1000	560	500	1080	1100	840	400	500	800
Soil Properties										
Stoniness (%)	50	40	40	40	70	50	30	30	50	20
Organic Content (%)	1.12	1.44	1.49	1.49	1.58	1.56	1.10	1.10	0.90	1.40
pH	7.65	7.60	7.65	7.80	7.50	7.60	7.65	7.25	7.25	7.10
Magnetic Susceptibility ($10^{-8}m^3kg^{-1}$)	.197	.253	.273	.213	.056	.176	.246	.106	.064	.151
Situation of the Field										
Position of Slope										
Upper Third			X	X			X			
Mid-Slope		X				X		X		
Lower Third					X				X	X
Basin Bottom	X									
Degree of Slope										
Flat	X	X				X	X			X
Gentle/Flat								X		
Gentle			X	X	X				X	
Steep										
Aspect										
North				X				X		
South										X
East			X		X	X			X	
West	X	X								
Flat/Undifferentiated							X			
The Crop										
Crop Cover (%)	49.0	52.2	54.4	47.5	49.5	27.5	60.5	64.0	56.5	68.1
Height of Crop (cm)	54	81	59	53	79	52	69	79	70	79

Appendix 7.5 The Ten Most Common Taxa.

Taxa	Number of Occurrences
Vaccaria pyramidata	53
Asperula arvensis	49
Sinapis arvensis	45
Avena sterilis	43
Silene conoidea	41
Galium tricornutum	41
Convolvulus arvensis	41
Phalaris brachystachys	40
Cynodon dactylon	38
Rhagadiolus stellatus	37

Appendix 7.6a Life Cycle of Taxa Occurring in 3 Fields or More (after Zohary & Fienbrun-Dothan 1966-86).

Annuals

AINSTRA	*Ainsworthia trachycarpia*
ANAGARV	*Anagallis arvensis*
ANTHPAL	*Anthemis palestina*
ANTHPSE	*Anthemis pseudocotula*
ANTHSPP	*Anthemis* spp.
ASPEARV	*Asperula arvensis*
AVENSTE	*Avenis sterilis*
BIFOTES	*Bifora testiculata*
BROMALO	*Bromus alopecuros* subsp. *carolini-henrici*
BROMLAN	*Bromus lanceolatus*
BROMTEC	*Bromus tectorum*
BUPLLAN	*Bupleurum lancifolium*
BUPLNOD	*Bupleurum nodiflorum*
CAMPSTR	*Campanula strigosa*
CARTTEN	*Carthamus tenuis* subsp. *foliosus*
CATARIG	*Catapodium rigidum*
CENTVER	*Centaurea verutum*
CEPHSYR	*Cephalaria syriaca*
CERADIC	*Cerastium dichotomum*
CICHPUM	*Cichorum pumilum*
COROSCO	*Coronilla scorpioides*
CREPASP	*Crepis aspera*
DAUCBIC	*Daucus bicolor*
DIPLERU	*Diplotaxis erucoides*
ERUCHIS	*Erucaria hispanica*
EUPHALE	*Euphorbia aleppica*
EUPHFAL	*Euphorbia falcata*
EUPHREU	*Euphorbia reuteriana*
FILAPYR	*Filago pyramidata*
FUMAPAR	*Fumaria parviflora*
GALITRI	*Galium tricornutum*
GERAROT	*Geranium rotundifolium*
GEROHYB	*Geropogon hybridus*
GLADITA	*Gladiolus italica*
LAGOCUM	*Lagoecia cuminoides*
LALLIBE	*Lallemantia iberica*
LAMIAMP	*Lamium amplexicaule*
LATHAPH	*Lathyrus aphaca*
LATHGOR	*Lathyrus gorgonei*
LATHINC	*Lathyrus inconspicuus*
LEGOSPE	*Legousia speculum-veneris*
LINACHA	*Linaria chalepensis*
LINUPUB	*Linum pubescens*
LOLIRIG	*Lolium rigidum*
LOLISPP	*Lolium* spp.
LOLITEM	*Lolium temulentum*
LOPHCRI	*Lophlochloa cristata*
MEDIORB	*Medicago orbicularis*
MEDIROT	*Medicago rotata*
MEDISCU	*Medicago scutellata*
MEDITUR	*Medicago turbinata*
MINUHYB	*Minuartia hybrida*

Appendix 7.6a (cont.) Life Cycle of Taxa Occurring in 3 Fields or More (after Zohary & Fienbrun-Dothan 1966-86).

Annuals (cont.)

NESLAPI	*Neslia apiculata*
NOTOSYR	*Notobasis syriaca*
ONOBSQU	*Onobrychis squarrosa*
PAPAARG	*Papaver argemone*
PAPRHO	*Papaver rhoeas*
PHALBRA	*Phalaris brachystachys*
PHALPAR	*Phalaris paradoxa*
PICNACA	*Picnomon acarna*
PICRSPR	*Picris sprengariana*
PLANAFR	*Plantago afra*
POLYPAT	*Polygonum patulum*
RANUARV	*Ranunculus arvensis*
RAPIRUG	*Rapistrum rugosum*
RHAGSTE	*Rhagadioluis stellatus*
RIDOSEG	*Ridolfia segetum*
SCANPEC	*Scandix pecten-veneris*
SCOLMAC	*Scolymus maculatus*
SCORMUR	*Scorpiurus muricatus*
SENEVER	*Senecio vernalis*
SILECON	*Silene conoidea*
SILECRA	*Silene crassipes*
SILEDAM	*Silene damascena*
SINAARV	*Sinapis arvensis*
STACARA	*Stachys arabica*
TETRPAL	*Tetragonolobus palaestinus*
THESHUM	*Thesium humile*
TORIARV	*Torilis arvensis*
TRIFCAM	*Trifolium campestre*
TRIFCLU	*Trifolium clusii*
TRIFDAS	*Trifolium dasyurum*
TRIFSTE	*Trifolium stellatum*
TRIGCAE	*Trigonella caelesyriaca*
TURGLAT	*Turgenia latifolia*
UROSPIC	*Urospermum picroides*
VACCPYR	*Vaccaria pyramidata*
VEROSYR	*Veronica syriaca*
VICIPER	*Vicia peregrina*
VICISAT	*Vicia sativa* subsp. *angustifolia*

Annual or Biennial

CENTHYA	*Centaurea hyalolepis*
DAUCCAR	*Daucus carota*
HIRSINC	*Hirschfeldia incana*
RESELUT	*Reseda lutea*

Appendix 7.6a (cont.) Life Cycle of Taxa Occurring in 3 Fields or More (after Zohary & Fienbrun-Dothan 1966-86).

Biennial or Perennial

ERYNCRE	*Eryngium creticum*
FALCVUL	*Falcaria vulgaris*

Annual or Perennial

RUMEPUL	*Rumex pulcher*
ONONNAT	*Ononis natrix*

Perennial

ALCEACA	*Alcea acaulis*
ANCHITA	*Anchusa italica*
ANCHSTR	*Anchusa strigosa*
ASTOSES	*Astoma sesilifolium*
BONGCHR	*Bongardia chrysogonum*
BUNIELE	*Bunium elegans*
CARDDRA	*Cardaria draba*
CONVALT	*Convolvulus althaeoides*
CONVARV	*Convolvulus arvensis*
CONVBET	*Convolvulus betoncifolius*
CYNODAC	*Cynodon dactylon*
HYPETRI	*Hypericum triquetrifolium*
ONONANT	*Ononis antiquorum*
SALVSYR	*Salvia syriaca*

Appendix 7.6b Germinating Times of Taxa Found in 3 Fields or More (after Zohary 1949-50; 1973; Zohary & Fienbrun-Dothan 1966-86).

Spring

CARTTEN	*Carthamus tenuis*
CENTVER	*Centaurea verutum*
DAUCBIC	*Daucus bicolor*
ERYNCRE	*Eryngium creticum*
HYPETRI	*Hypericum triquetrifolium*
ONONANT	*Ononis antiquorum*
SALVSYR	*Salvia syriaca*
PICNACA	*Picnomon acarna*

Autumn

AINSTRA	*Ainsworthia trachycarpia*
ALCEAE	*Alcea acaulis*
ANAGARV	*Anagallis arvensis*
ANCHITA	*Anchusa italica*
ANCHSTR	*Anchusa strigosa*
ANTHPAL	*Anthemis palestina*
ANTHPSE	*Anthemis pseudocotula*
ANTHSPP	*Anthemis* spp.
ASPEARV	*Asperula arvensis*
ASTOSES	*Astoma sesilifolium*
AVENSTE	*Avena sterilis*
BIFOTES	*Bifora testiculata*
BONGCHR	*Bongardia chrysogonum*
BROMALO	*Bromus alopecuros* subsp. *carolini-henrici*
BROMLAN	*Bromus lanceolatus*
BROMTEC	*Bromus tectorum*
BUNIELE	*Bunium elegans*
BUPLLAN	*Bupleurum lancifolium*
BUPLNOD	*Bupleurum nodiflorum*
CAMPSTR	*Campanula strigosa*
CARDDRA	*Cardaria draba*
CATARIG	*Catapodium rigidum*
CENTHYA	*Centaurea hyalolepis*
CEPHSYR	*Cephalaria syriaca*
CERADIC	*Cerastium dichotomum*
CICHPUM	*Cichorium pumilum*
CONVALT	*Convolvulus althaeoides*
COROSCO	*Coronilla scorpiodes*
CREPASP	*Crepis aspera*
DAUCCAR	*Daucus carota*
DIPLERU	*Diplotaxis erucoides*
ERUCHIS	*Erucaria hispanica*
EUPHREU	*Euphorbia reuteriana*
FALCVUL	*Falcaria vulgaris*
FILAPYR	*Filago pyramidata*
FUMAPAR	*Fumaria parviflora*
GALITRI	*Galium tricornutum*
GEROROT	*Geranium rotundifolium*
GEROHYB	*Gerapogon hybridus*

Appendix 7.6b (cont.) Germinating Times of Taxa Found in 3 Fields or More (after Zohary 1949-50; 1973; Zohary & Fienbrun-Dothan 1966-86).

Autumn (cont.)

GLADITA	*Gladiolus italicus*
HIRSINC	*Hirschfeldia incana*
LAGOCUM	*Lagoecia cuminoides*
LALLIBE	*Lallemantia iberica*
LAMIAMP	*Lamium amplexicaule*
LATHAPH	*Lathyrus aphaca*
LATHGOR	*Lathyrus gorgonei*
LATHINC	*Lathyrus inconspicuus*
LEGOSPE	*Legousia speculum-veneris*
LINACHA	*Linaria chalepensis*
LINUPUB	*Linum pubescens*
LOLIRIG	*Lolium rigidum*
LOLITEM	*Lolium temulentum*
LOLISPP	*Lolium* spp.
LOPHCRI	*Lophochloa cristata*
MEDIORB	*Medicago orbicularis*
MEDIROT	*Medicago rotata*
MEDISCU	*Medicago scutellata*
MEDITUR	*Medicago turbinata*
MINUHYB	*Minuartia hybrida*
NESLAPI	*Neslia apiculata*
NOTOSYR	*Notobasis syriaca*
ONOBSQU	*Onobrychis squarrosa*
PAPAARG	*Papaver argemone*
PAPARHO	*Papaver rhoeas*
PHALBRA	*Phalaris brachystachys*
PHALPAR	*Phalaris paradoxa*
PICRSPR	*Picris sprengariana*
PLANAFR	*Plantago afra*
POLYPAT	*Polygonum patulum*
RANUARV	*Ranunculus arvensis*
RAPIRUG	*Rapistrum rugosum*
RESELUT	*Reseda lutea*
RHAGSTE	*Rhagadiolus stellatus*
RIDOSEG	*Ridolfia segetum*
RUMEPUL	*Rumex pulcher*
SCANPEC	*Scanix pecten-veneris*
SCORMUR	*Scorpiurus muricatus*
SENEVER	*Senecio vernalis*
SILECON	*Silene conoidea*
SILECRA	*Silene crassipes*
SILEDAM	*Silene damascena*
SILEVUL	*Silene vulgaris*
SINAARV	*Sinapis arvensis*
STACARA	*Stachys arabica*
TETRPAL	*Tetragonolobus palaestinus*
THESHUM	*Thesium humile*
TORIARV	*Torilis arvensis*
TRIFDAS	*Trifolium dasyurum*
TRIFCAM	*Trifolium campestre*
TRIFCLU	*Trifolium clusii*

Appendix 7.6b (cont.) Germinating Times of Taxa Found in 3 Fields or More (after Zohary 1949-50; 1973; Zohary & Fienbrun-Dothan 1966-86).

Autumn (cont.)

TRIFSTE	*Trifolium stellatum*
TRIGCAE	*Trigonella caelesyriaca*
TURGLAT	*Turgenia latifolia*
UROSPIC	*Urospermum picroides*
VACCPYR	*Vaccaria pyramidata*
VEROSYR	*Vernica syriaca*
VICIPER	*Vicia peregrina*
VICISAT	*Vicia sativa*

Biseasonal

CONVARV	*Convolvulus arvensis*
CONVBET	*Convolvulus betoncifolius*
CYNODAC	*Cynodon dactylon*
EUPHALE	*Euphorbia aleppica*
EUPHFAL	*Euphorbia falcata*
ONONNAT	*Ononis natrix*
SCOLMAC	*Scolymus maculatus*

Biseasonal/Autumn

EUPHFOR	*Euphorbia falcata* or *E. reuteriana*

Plates

Plate 1. Evergreen Oak Forest near 'Ajlun.

Plate 2. Cultivation in the Hills.

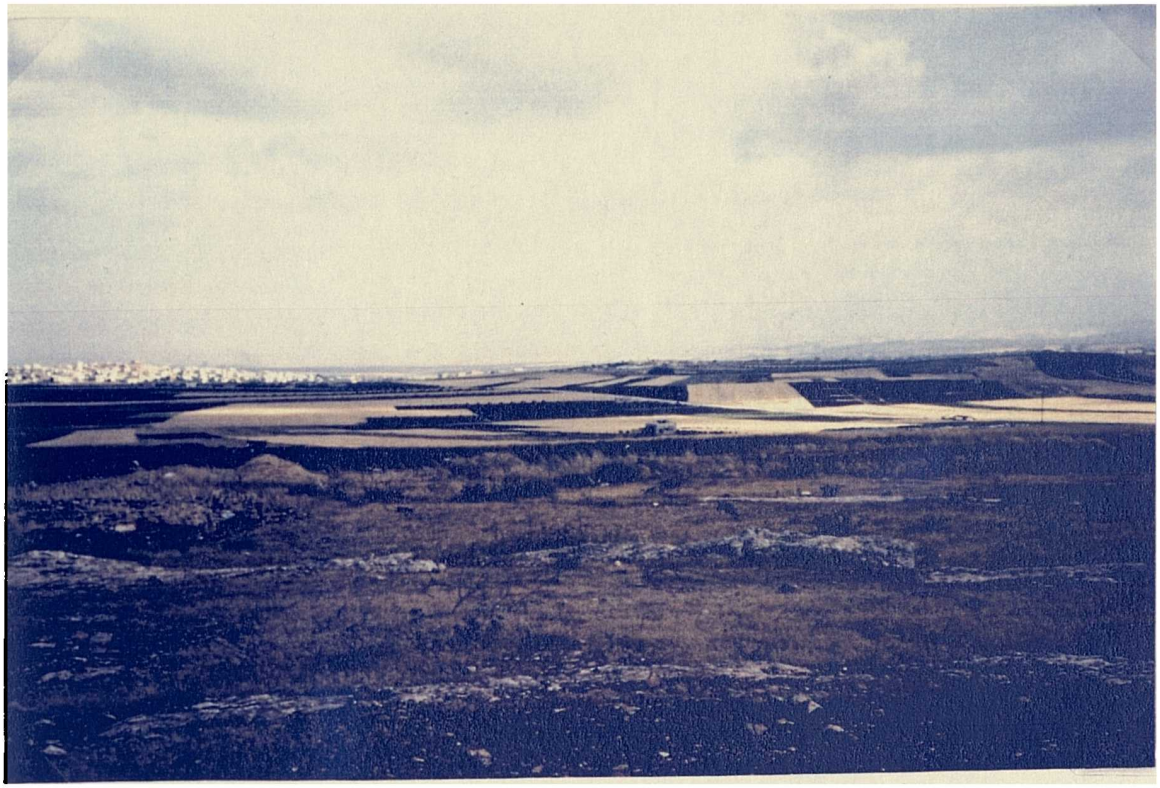


Plate 3. Cultivation on the Plains.

Plate 4. Sampling a Wheat Field for Weeds. Recording taxa within a quadrat in field 34.

Plate 5. Dual Animal Tillage (2 cows) with Traditional Wooden Ard in the Hills. Note the extreme stoniness of the soil.

Plate 6. Traditional Ard Manufacture in el-Mazar.

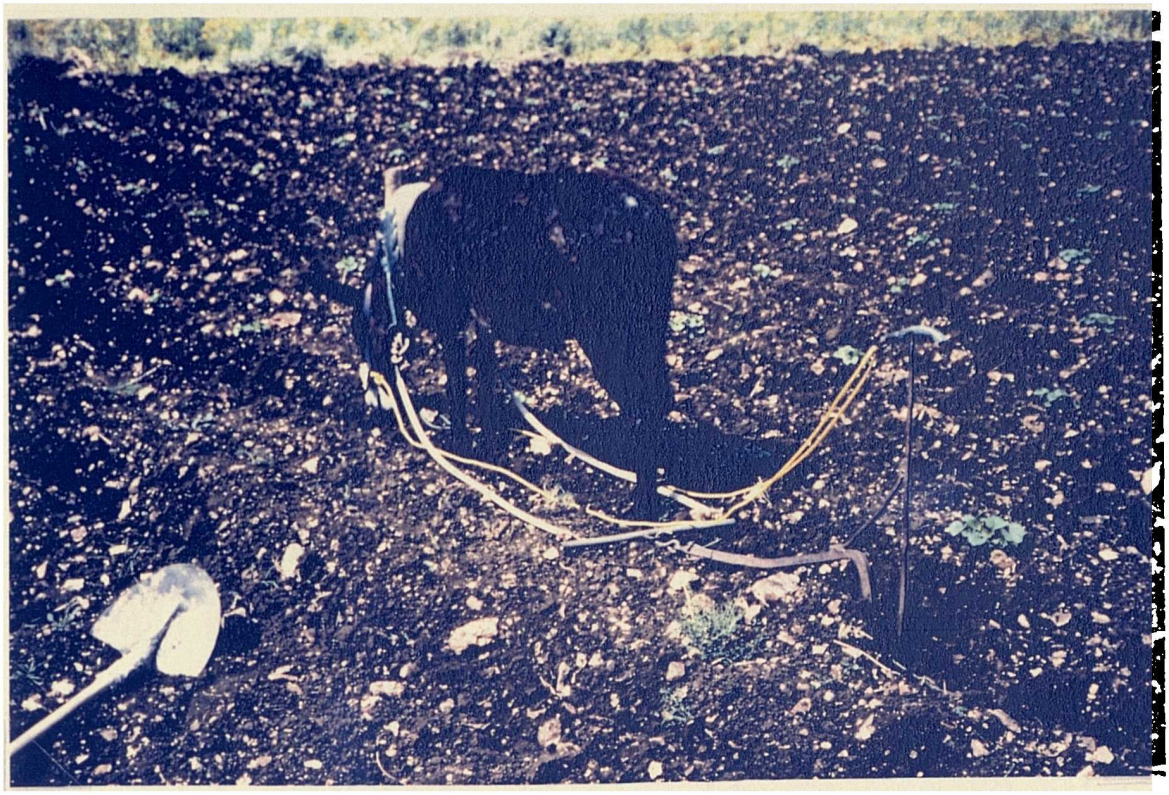


Plate 7. Single Donkey Tillage with Iron Ard. Tilling between young summer crops on the Plains.

Plate 8. Tractor Tillage on the Plains. Note the large stone weighing down the plough.

Plate 9. Broadcast Sowing Wheat in December. The ard in the background is harnessed to two donkeys.

Plate 10. Weeds Growing along Field Edge.

Plate 11. Spring Tillage with a Traditional Ard. The hand in the top right-hand corner is trickling chick-peas into the furrow. The main weed (yellow flower) is *Chrysanthemum segetum*.

Plate 12. Planting Summer Crops (April).

Plate 13. Developing Summer Crops. Note the spacing between individual plants. The main crop in the foreground is sesame.

Plate 14. Hand-harvesting (pulling) Bitter-vetch (May).

Plate 15. Heaps of Harvested Legumes Drying in the Sun.

Plate 16. Hand-Harvesting Wheat (June). The man to the right-hand side of the frame is using a local sickle (minjal). The field is roughly terraced and there are also field cairns.

Plate 17. Uprooted Barley in the Process of Drying.

Plate 18. Gathering Barley for Transportation.

Plate 19. Donkey Transporting Bitter-Vetch to the Threshing Floor.

Plate 20. Preparing Frika. Scorching milk-ripe wheat.

Plate 21. Threshing Lentils by Machine.

Plate 22. Threshing Lentils by Trampling. The woman is turning-over the trampled crop using a three-pronged fork (sha'ub).

Plate 23. Traditional Threshing Sledge (lawh ed darasa). The sledge is constructed from two oak boards and has on its underside (facing upwards in this photo) basalt pieces wedged into small square holes. The woman in the background is dehusking chick-peas using a small beating stick.

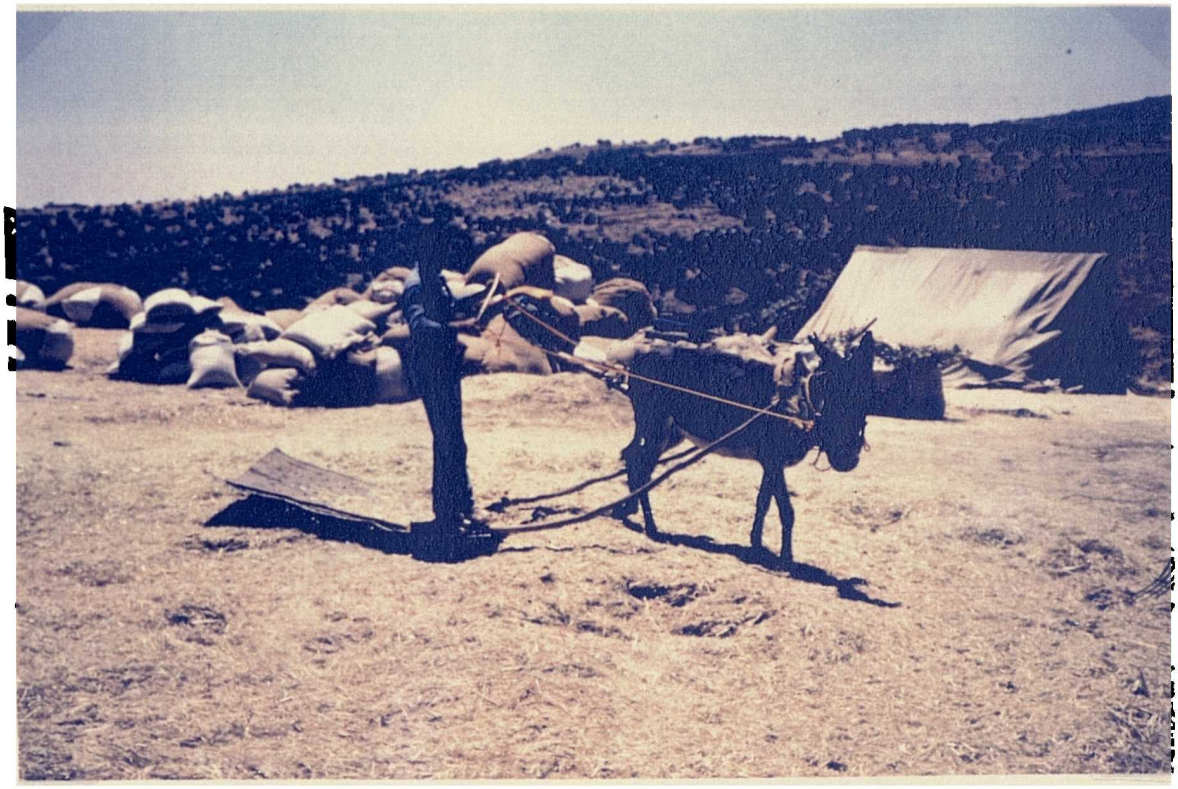


Plate 24. Threshing Wheat with a Sledge Made from a Sheet of Corrugated Iron with Holes Punched Through.

Plate 25. Sieving Wheat with a Coarse Sieve (kirbal).

Plate 26. Winnowing Bitter-Vetch with a Winnowing Fork (midhrāt).

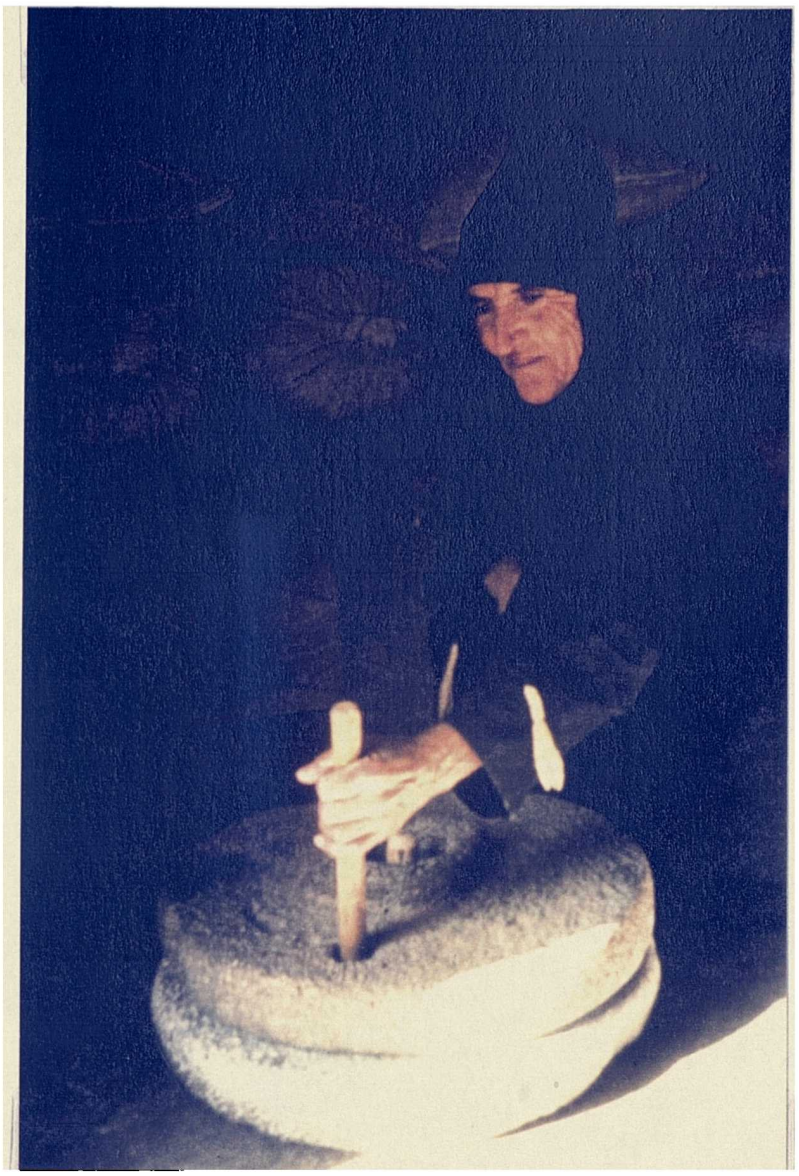


Plate 27. Basalt Hand Rotary Quern (jarusha). Sacks of wheat are stacked in the background.

Plate 28. Harvesting Olives (October). Olives are shaken or beaten off the tree and collected from sheets placed under its boughs.

Plate 29. Irrigated Orchard in the Wadi el-Yabis. The water is fed into different sections of the orchard by an intricate system of channels and each section is irrigated once every 10 days.

Plate 30. Young Olive Orchard with Trailing Vines near 'Ajlun.

Plate 31. Irrigated Orchard near the Wadi Yarmouk. Most of the trees are pomegranate but fig and prickly-pear line the perimeter.

Plate 32. Goats in Brushwood Pen. A mixture of introduced and local breeds.

Plate 33. Spreading Wild Grass on Roof for Drying before Storage.

Plate 34. Milking Sheep.

Plate 35. Shaking a Hide Bag (shiqwa) Held on a Tripod Stand. Traditional method used to separate curds and whey.