FARSYMABI PROJECT

"A farming system approach to mainstream biodiversity in the agriculture and planning sectors: bridging between the national and local levels"

RESEARCH REPORT
ASSESSMENT OF TREE SPECIES COMPOSITION AND DIVERSITY ACROSS DISTURBANCE GRADIENTS IN MIOMBO WOODLANDS OF CHIPANJE CHETU COMMUNITY CONSERVATION AREA

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1. BACKGROUND

Forest ecosystems are currently, exposed to multiple threats, including degradation and deforestation (Hosonuma et al., 2012; Olsson et al., 2019). The degradation process occurs as a consequence of natural anthropogenic disturbances (FAO, 2009), assuming different forms and intensities. Forest degradation affects the quality and quantity of critical services that ecosystems can provide. Consequently, the ability of these ecosystems to supply goods and services to human and wildlife life can be negatively impacted. Deforestation results in the loss of forest cover, which can affect the global carbon cycles, loss or changes of goods and services provided by the ecosystems (Allen and Barnes, 1985).

Forest degradation and deforestation may be linked to increasing human needs for food, biomass fuels and urban expansion (CEAGRE, 2016). It is estimated that by 2050, the world population will reach 9.1 billion and this increase will occur mainly in developing countries (FAO, 2009). This increase represents a challenge to provide food and accommodate the growing population. The highest rates of deforestation occur in the tropics and agricultural land expansion, intensive forest harvesting for firewood and timber, are the main drivers of deforestation and forest degradation (Hosonuma et al. 2012; Allen and Barnes 1985).

The annual rate of forest loss in sub-Saharan Africa has increased over time. For the Miombo woodlands, the total area covered in 1996, was estimated to be approximately 2.7 million km2 (Frost, 1996). Therefore, in the recent decades, the covered forest area has been reducing at an accelerated rate, currently estimated at 2 million km2 (Ribeiro et al., 2020).
MW are the predominant type of forests in Southern Africa, important for the subsistence of many rural populations that depend on the resources provided by the forest. The loss of miombo forest has a direct impact on biodiversity conservation and maintenance, as well as the uncertainties and risks to food supply due to the loss of critical ecosystem services and shifting climate patterns. The need to ensure food production from the perspective of sustainable agricultural systems that promote the conservation of biodiversity is essential.

The present study assesses the ecological condition of the vegetation component in different habitats of the Miombo of the Chipanje Chetu community conservation area, northern Mozambique, related to the existing farming systems. The findings of this study are critical to understanding the ecological processes and dynamics induced by human interventions in the miombo environment of the Chipanje Chetu conservation area. This study is critical for incorporating biodiversity attributes into national agricultural policies.

2. METHODOLOGY

2.1 Sampling strategy

Data were obtained in extensive miombo woodlands of Chipanje Chetu community conservation area in the northern district of Sanga, Niassa province, central Mozambique. The vegetation data were collected in three habitats, namely forest, fallows and croplands, of Nova Madeira (NM) and Segundo Congresso (SC) communities. The average annual temperatures of Sanga district range from 20-23°C in the southern zone, while in the lowland areas of the district along the Rovuma River, the temperatures reach 23 to 26°C.

Fallows were divided into three age strata namely, young fallows (1-4), young-adult fallows (5-10) and old fallows (11-25), for both communities (Table 1). Validation of habitats and strata was carried out in 2023 through ground observations. The age of the fallows was established based on field observations and information from local communities.

For data collection, stratified sampling was established and the corresponding number of plots per strata was defined as showed in the Table 1. Our sampling plots were 50 x 20 m in size, where we collected the following vegetation parameters: number of adult (diameter at breast height, dbh > 5cm) and regenerating (dbh <=5 cm) tree individuals and their scientific names (when possible), herbaceous and grass species. The scientific names of the trees and herbaceous species were identified by a botanist from Eduardo Mondlane University, and the species with ambiguous identification were confirmed in the Herbarium of the Faculty of Sciences, Eduardo Mondlane University and other relevant sources. Species were categorized according to their level of endemism, invasiveness, and indicators of soil degradation.

Tabela 1. Description of the habitat areas and the respective strata

Habitat	Strata	Description	Nº plots
Forest	NM_Forest	Nova Madeira miombo woodlands	25
	SC_Forest	Segundo Congresso miombo woodlands	25
Fallow	NM_Fallow_1_4	Nova Madeira young age fallows, 1-4 years	5
	NM_Fallow_5_10	Nova Madeira medium age fallows, 5-10 years	12
	NM_Fallow_11_25	Nova Madeira old age fallows, 11-25 years	8
	SC_ Fallow_1_4	Segundo Congresso young age fallows, 1-4 years	8
	SC_ Fallow_5_10	Segundo Congresso medium age fallows, 5-10 years	12
	SC_ Fallow_11_25	Segundo Congresso old age fallows, 11-25 years	5
Cropland	NM_Cropland	Nova Madeira croplands	25
	SC_Cropland	Segundo Congresso croplands	25

2.2. Data analysis

The following parameters were calculated per strata at the species level:

1) Frequency (absolute and relative): the number of plots where a particular species occur
2) Abundance (absolute and relative): number of individuals per hectare

We conducted multivariate analyses to determine species diversity and composition differences among the different strata. We generated rarefaction curves for each strata to evaluate the representativeness of the sampling effort and to compare specie richness and diversity among the strata. The rarefaction curves were constructed using the iNEXT package (Chao et al., 2014).

Biodiversity indices (Shannon-Weiner's H′ and Pielou's J′ evenness) were calculated for the strata. The Kruskal–Wallis test (for non-normally distributed data), followed by Dunn's test at the 5% significance level, were used to assess Shannon index diversity differences between strata.

A non-metric multidimensional scaling (NMDS) analysis was used to determine the dissimilarity of species composition for each stratum, using the Bray-Curtis similarity indexes. The similarity test (ANOSIM, 9999 permutations) was used to assess differences in the species composition of the strata. To evaluate the differences between the groups in ANOSIM, the R-value was used:

$0.75 < R < 1$: Highly different
$0.5 < R < 0.75$: Different
$0.25 < R < 0.5$: Different with some overlap
$0.1 < R < 0.25$: Similar with some differences (or high overlap)
$R < 0.1$: Similar

Additionally, Similarity analysis (SIMPER) was employed to determine the species contribution to the overall dissimilarity. The SIMPER multivariate analysis attempts to find the species that contribute the most to the differentiation of sample groups (Clarke, 1993). The statistical analyzes were performed using the R statistical software (R Core Team, 2021) and Paleontological Statistics Software Package for Education and Data Analysis (Hammer et al., 2001).

3. RESULTS

3.1. Rarefaction curves for adult trees and regeneration in NM and SC

Our results revealed no significant differences in species diversity for adult trees among the three habitats in both communities (Figure 1A). For the regeneration, highest species diversity was reported in croplands of Nova Madeira (Figure 1B). The lowest species diversity occurred in forest and fallow areas of SC (Figure 2B).

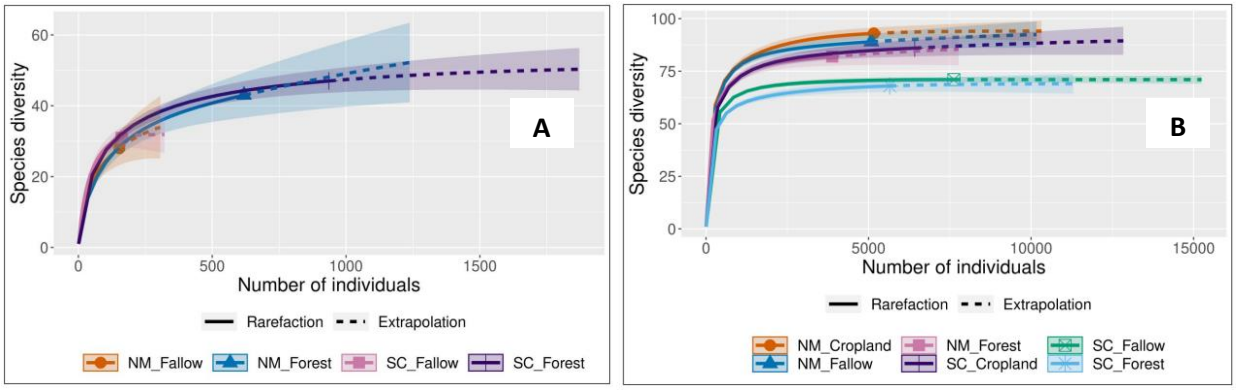

Figure 1. Rarefaction curves showing adult tree (A) and regeneration (B) species diversity among the three habitatss in NM and SC. (95% confidence intervals).

Forests showed high species richness (NM = 43; SC = 47) and abundance (NM =245 n/ha; SC = 375 n/ha) of adult trees, whereas the lowest values were observed in fallows (Table 2). The Shannon diversity index was significantly high in forests and fallows of SC, according to the Kruskal-walls test (chi-squared = 99.88, df = 3 , p-value = 0.000). Acording to the J', all habitats presented an equitable distribution of adult species.

Table 2. Diversity indices (adult trees) for all habitats in the NM and SC. Values that do not share a letter are significantly different (Kruskal–Wallis test; α = 5%).

	NM_Fallow	NM_Forest	SC_Fallow	SC_Forest
Richness (S)	28	43	31	47
Abundance (N/ha)	62	248	65	375
Total Shannon (H')	2.72[b]	2.67[b]	3.06[a]	3.08[a]
Equitability (J')	0.82	0.71	0.89	0.79

For the regeneration, according to the Kuskal-Walls test, significant differences for Shannon diversity indices were observed (chi-squared = 18.04, df = 3, p-value = 0.000). The highest values were observed in croplands and forest of SC and NM respectively (Table 3). The

fallows of the SC had a tendency of high abundance of regeneration. All strata showed a good equitability in distribution of individuals among strata.

Table 3. Diversity indices of regeneration for all habitats in the NM and SC. Values that do not share a letter are significantly different (Kruskal–Wallis test; α = 5%).

	NM_Cropland	NM_Fallow	NM_Forest	SC_Cropland	SC_Fallow	SC_Forest
Richness (S)	93	89	82	86	71	68
Abundance (N/ha)	2064	2034	1554	2568	3050	2260
Total Shannon (H')	3.61b	3.56c	3.62ab	3.65a	3.51cd	3.36de
Equitability (J')	0.80	0.79	0.82	0.82	0.82	0.80

3.2. Forest adult trees and regeneration

The rarefaction curves showed that species diversity for adult trees did not show any significant differences, between both forest areas (Figure 2A). However, for regeneration, species diversity was significantly high in Nova Madeira (Figure 2B).

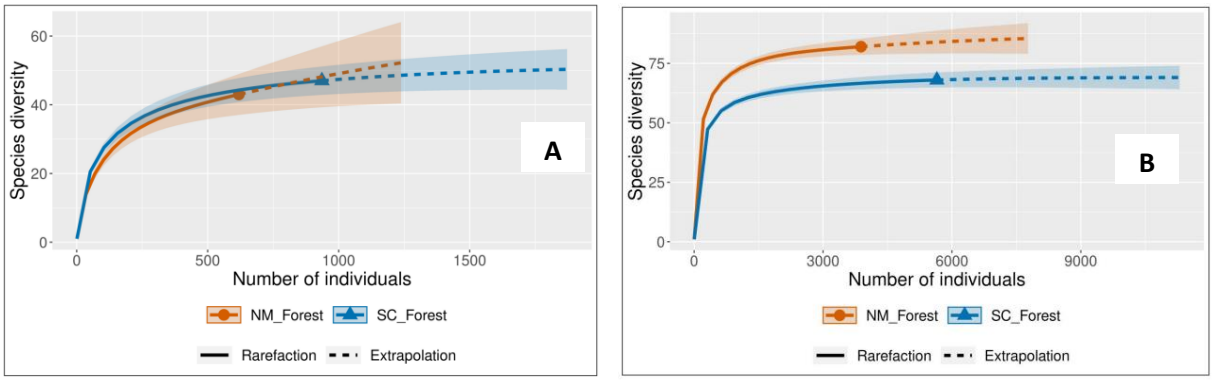

Figure 2. Rarefaction curves showing adult tree (A) and regeneration (B) species diversity for forest habit in NM and SC. (95% confidence intervals).

The study found that mature trees had the highest species richness and abundance in SC (Richness = 47; abundance = 374 n/ha), whereas for regeneration the highest species richness were found in NM (Richness = 82), but the tree density was highest in SC (2260 n/ha).

The highest Shannon diversity index for mature trees occurred in SC (H' = 3.08), according to nonparametric Wilcoxon Signed Rank test for adult trees (Z = -5.43, p-value = 0.000). For regeneration, the highest Shannon index value was observed in NM (H' = 3.63) (Z = 5.43, p-value = 0.000).

Table 4. Diversity indices of adult trees and regeneration for NM and SC. Values that do not share a letter are significantly different (Wilcoxon signed-rank test test; α = 5%).

	Adult trees		Regeneration	
	NM_Forest	SC_Forest	NM_Forest	SC_Forest
Richness (S)	43	47	82	68
Abundance (N/ha)	248	374	1554	2260
Total Shannon (H')	2.67[b]	3.08[a]	3.63[a]	3.36[b]
Equitability (J')	0.71	0.80	0.82	0.80

3.3. Cropland regeneration

Regeneration species diversity showed a tendency to high values in croplands of NM (Figure 3). The SC cropland areas showed high tree density (2568 n/ha), but species richness was high in NM (Richness = 93) (Table 5). Highest Shannon diversity index were observed in SC (H' = 3.65), according to nonparametric Wilcoxon Signed Rank test (Z = -5.43, p-value = 0.000). For the adult trees, there were insufficient data to perform the rarefaction curves.

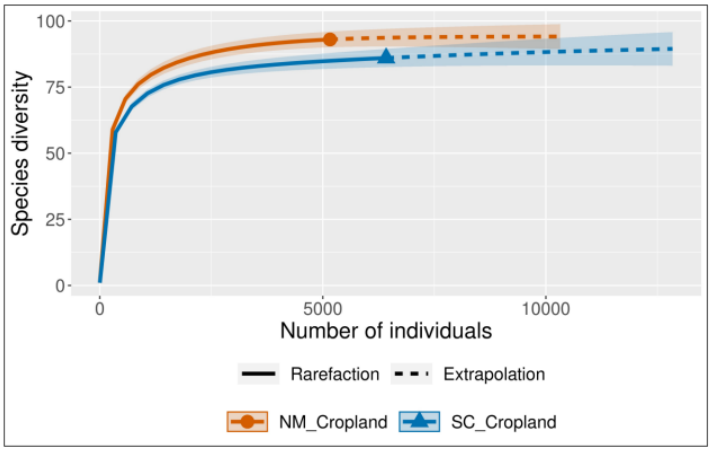

Figure 3. Rarefaction curves for regeneration species diversity. (95% confidence intervals).

Table 5. Diversity indices regeneration for NM and SC.Values that do not share a letter are significantly different (Wilcoxon signed-rank test test; α = 5%).

	NM_Cropland	SC_Cropland
Richness (S)	93	86
Abundance (N/ha)	2064	2568
Total Shannon (H')	3.61[a]	3.65[b]
Equitability (J')	0.80	0.82

3.4. Fallow adult trees and regeneration

Rarefaction curves for adult trees revealed a significant difference in species diversity only among median (5-10 years) and older (11-25 years) fallows in SC, but the median fallows showed higher values (Figure 4A). For regeneration, the highest species diversity were also observed in medium age fallow (5-10 years) in NM, fallowed by medium age fallows (5-10 years) of SC (Figure 4B). The lowest species diversity were found in fallows (1-4 years) for NM and older fallows (11-25 year) in SC.

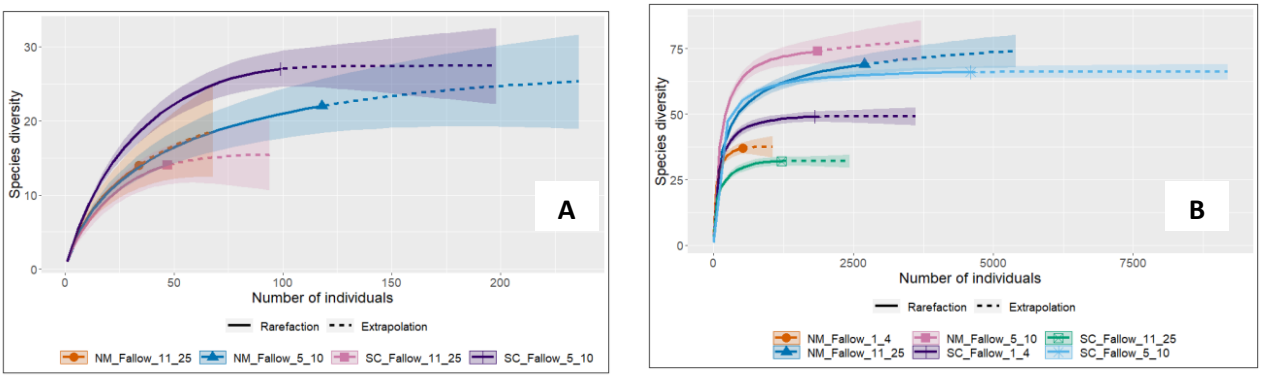

Figure 4. Rarefaction curves for fallow areas (A) Adult trees and B) Regeneration trees B). (95% confidence intervals)

In older fallows the adult trees, had lower and similar species richness for both areas (Table 6). The highest Shannon diversity index among median fallows, were observed in SC (H'= 3.2), according to the Kruskal_Wallis test (chi-squared = 102.56, df = 3, p-value = 0.000). In general, all fallow areas showed high J' values, revealing a more balanced species distribution.

Table 6. Diversity indices for fallows adult trees in NM and SC. Values that do not share a letter are significantly different (Kruska-Wallis test; α = 5%).

	NM_Fallow_5_10	NM_Fallow_11_25	SC_Fallow_5_10	SC_Fallow_11_25
Richness (S)	22	14	27	14
Abundance (N/ha)	91	160	90	78
Total Shannon (H')	2.67^{b}	2.52^{c}	3.20^{a}	2.27^{c}
Equitability (J')	0.86	0.96	0.97	0.86

The fallow regeneration showed significant differences in Shannon diversity index (Kruskal-Wallis chi-squared = 199.07, df = 3, p-value = 0.000). The medium fallows presented a higher Shannon diversity index, while the younger and older fallows tended to present lower values

(Table 7). In general, the median fallows of SC showed higher density of regenerated individuals. Older fallows had a less balanced species distribution.

Table 7. Diversity indices for fallows regeneratiom trees in NM and SC. Values that do not share a letter are significantly different (Kruska-Wallis test; α = 5%).

	NM_Fallow _1_4	NM_Fallow _11_25	NM_Fallow _5_10	SC_Fallow _1_4	SC_Fallow _11_25	SC_Fallow _5_10
Richness (S)	37	69	74	49	32	66
Abundance (N/ha)	1056	3374	1548	2261	2438	3830
Total Shannon (H')	3.09ef	3.15de	3.62a	3.24cd	2.75f	3.46ab
Equitability (J')	0.86	0.74	0.84	0.83	0.79	0.83

4. SPECIES COMPOSITION

4.1 Adult trees in forest and fallows

The results of Non-metric multidimensional scaling (NMDS) showed that tree species comp osition for adult individuals were similar with some differences in forest and fallows (Stress = 0.20; ANOSIM: R = 0.24; P = 0.000; permutations = 9999).

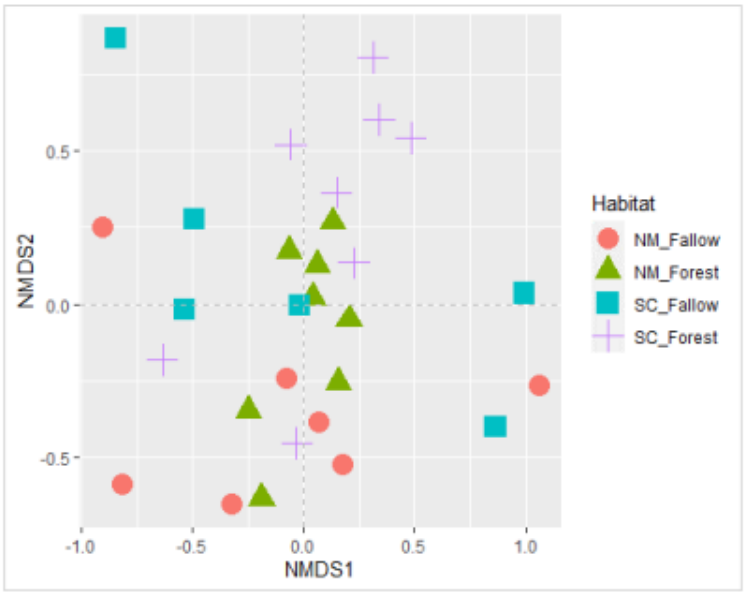

Figure 5. Non-metric multidimensional scaling (NMDS) based on species composition for adult trees in forest and fallow areas, using the Bray–Curtis index.

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The similarity percentage analysis (SIMPER) revealed high contribution in species composition of the main miombo adult tree species namely, *Brachystegia boehmii*,

Julbernardia globiflora, *Brachystegia spiciformis*, *Diplorhynchus condylocarpon* (Table 8). Forests of SC had high average occurrence all species. No exclusive species occurrence were detected.

Table 8. Percentage (%) contribution of species to dissimilarities for adult trees between NM and SC forest, fallow and cropland. Only species with a contribution to average dissimilarity of >3% are included. (Overall average dissimilarity: 69.59).

Taxon	Contrib. %	NM_Fallow	NM_Forest	SC_Fallow	SC_Forest
Brachystegia boehmii	6.33	0.857	2.5	1.33	3.0
Julbernardia globiflora	6.21	0.571	2.13	0.833	3.38
Brachystegia spiciformis	5.70	1.43	2.75	1.33	3.63
Diplorhynchus condylocarpon	5.15	1.43	2.25	1	2.25
Burkea africana	4.94	0.57	1.25	1.17	2.38
P. maprouneifolia	4.31	0.43	1.13	0.5	2.38
Pterocarpus angolensis	3.79	0.29	0.63	1	1.5

4.2. Forest fallow cropland regeneration

The NMDS ordination of species composition for forest, fallow and croplands, showed a distinct separation of strata between NM and SC, with some overlap (Stress = 0.20; ANOSIM: R = 0.34; P = 0.000; permutations = 9999; Figure 5).

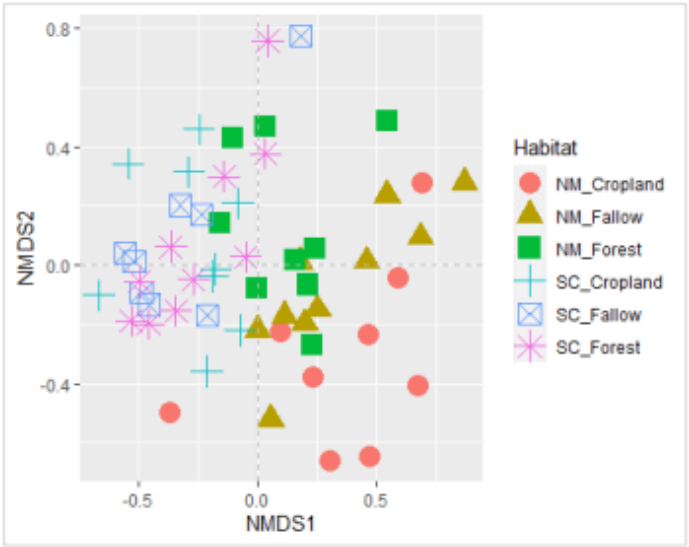

Figure 6. Non-metric multidimensional scaling (NMDS) based on species composition for regeneration in forest and fallow areas, using the Bray–Curtis index.

The SIMPER analysis showed that the main miombo species such as *Brachystegia boehmii*, *Catunaregam, spinosa*, *Julbernardia globiflora* had significant contribution to group formation (Table 9). These species had a notable mean occurrence in SC fallows and croplands.

Table 9. Percentage (%) contribution of species to dissimilarities for regeneration between NM and SC forest, fallow and cropland. Only species with a contribution to average dissimilarity of >2% are included. (Overall average dissimilarity: 63.02).

Taxon	Contrib. %	NM_ Cropland	NM_ Fallow	NM_ Forest	SC_ Cropland	SC_ Fallow	SC_ Forest
Brachystegia boehmii	2.50	1.22	2	1.56	3.33	4	2.9
Catunaregam spinosa	2.35	0.89	0.6	1.56	2.56	2.13	2.1
Julbernardia globiflora	2.34	0.56	1.7	1.67	2.56	3.38	3.4
Strychnos madagascariensis	2.28	0.78	0.3	1	1.78	2.5	2.6
Flacourtia indica	2.28	1.89	1.3	1	1.89	3.25	1.6
Albizia sp	2.23	1.11	1.4	1.11	1.44	3	2.5
Hugonia orientalis	2.15	1.56	1.4	1.11	2.67	2.38	1.9
Olax dissitiflora	2.04	0.11	0.1	1	0.78	2.13	2.5

4.3. Forest adult trees

The species composition of adult tree in NM and SC was similar with some notable differe nces, as observed in Figure 7 (Stress = 0.22; ANOSIM: R = 0.16; P = 0.000; permutations = 9999; Figure 5).

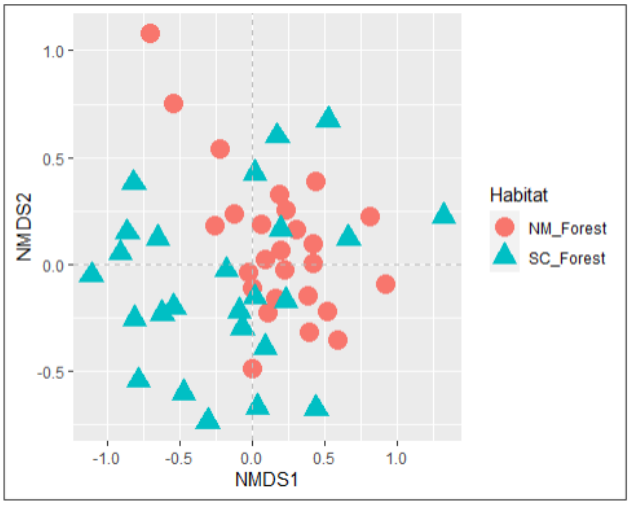

Figure 7. Non-metric multidimensional scaling (NMDS) based on species composition for adult trees in forest, using the Bray–Curtis index.

Table 10 shows that seven species, including *Brachystegia spiciformis, Julbernardia globiflora, Burkea Africana, and Diplorhynchus condylocarpon,* contributed more to the similarities between the sites. The high mean occurrence of these species, were found in SC forests.

Table 10. Percentage (%) contribution of species to dissimilarities for adult trees between NM and SC forests. Only species with a contribution to average dissimilarity of >4% are included. (Overall average dissimilarity: 68.09).

Taxon	Contrib. %	NM_Forest	SC_Forest
Brachystegia spiciformis	5.48	0.92	1.16
Julbernardia globiflora	5.19	0.69	1.08
Burkea africana	5.17	0.42	0.76
Diplorhynchus condylocarpon	5.01	0.77	0.72
Pseudolachnostylis maprouneifolia	4.92	0.42	0.76
Albizia sp	4.76	0.19	0.72
Strychnos madagascariensis	4.248	0.231	0.52

4.4. Forest regeneration trees

The Figure 8 shows the NMDS results. The regeneration species in forest had a similar composition in both areas, however with some differences detected (Stress = 0.21; ANOSIM: R = 0.19; P = 0.000; permutations = 9999; Figure 8).

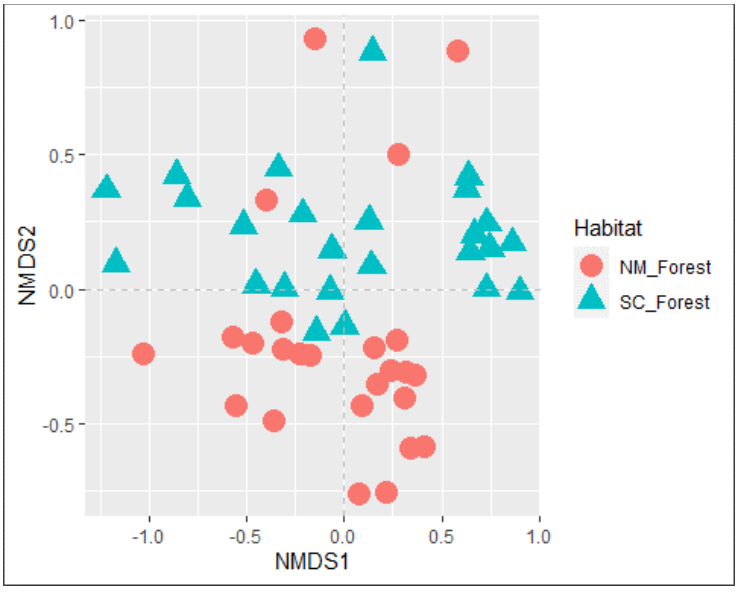

Figure 8. Non-metric multidimensional scaling (NMDS) based on species composition for regeneration in forest, using the Bray–Curtis index

Table 11 presents the species that most contributed to the similarity between groups. However, no exclusive species occurrence were observed in both areas. Overall, these species had, a mean higher occurrence in SC forests, but *Brachystegia spiciformis* was the most prominent specie occurring in SC.

Table 11. Percentage (%) contribution of species to dissimilarities for regeneration between NM and SC forests. Only species with a contribution to average dissimilarity of >2% are included. (Overall average dissimilarity: 72.30).

Taxon	**Contrib. %**	**NM_Forest**	**SC_Forest**
Olax dissitiflora	2.77	0.36	1.00
Strychnos madagascariensis	2.76	0.36	1.04
Albizia sp	2.72	0.44	1.00
Brachystegia spiciformis	2.60	0.88	11.00
Catunaregam spinosa	2.58	0.64	0.84
Hugonia orientalis	2.34	0.48	0.76
Julbernardia globiflora	2.33	0.64	1.36
Elaeodendron matabelicum	2.28	0.44	0.6
Rourea orientalis	2.27	0.60	0.36
Flacourtia indica	2.12	0.40	0.64

4.5. Cropland regeneration

Figure 9 shows the NMDS ordination of species composition for cropland regeneration, showing similarities in species composition, with some differences (Stress = 0.16; ANOSIM: R = 0.20; P = 0.000; permutations = 9999). For the adult trees, there were insufficient data to perform the NMDS.

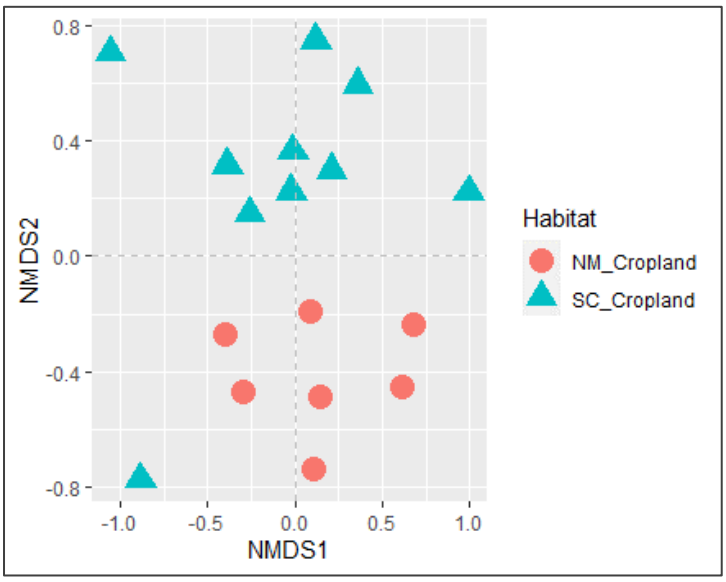

Figure 9. Non-metric multidimensional scaling (NMDS) based on species composition for regeneration in croplands, using the Bray–Curtis index.

Table 12 shows the species that most contributed to the composition of the groups in both areas, among them, *Brachystegia spiciformis, Burkea Africana, Flacourtia indica* and *Combretum zeyheri*. These species had, a mean higher occurrence in NM, *while Diplorhynchus condylocarpon, Julbernardia globiflora, Brachystegia boehmii* and *Catunaregam spinosa* had a higher occurrence in SC. No species with an exclusive occurrence were detected.

Table 12. Percentage (%) contribution of species to dissimilarities for regeneration between NM and SC croplands.

Percentage (%) contribution of species to dissimilarities for regeneration between NM and SC croplands. Only species with a contribution to average dissimilarity of >2% are included. (Overall average dissimilarity: 70.22).

Taxon	Contrib. %	NM_Cropland	SC_Cropland
Brachystegia spiciformis	2.58	2.57	2.50
Burkea africana	2.55	2.14	2.00
Flacourtia indica	2.39	2.43	1.70
Combretum zeyheri	2.38	1.86	0.70
Dichrostachys cinerea	2.34	0.14	2.00
Diplorhynchus condylocarpon	2.22	3.29	2.90
Julbernardia globiflora	2.22	0.71	2.20
Brachystegia boehmii	2.21	1.57	2.80
Catunaregam spinosa	2.19	1.14	2.20

4.6. Fallows adult trees

The NMDS ordination of species composition for adult trees in fallows, showed similarities in, with some differences (Stress = 0.16; ANOSIM: R = 0.07; permutations = 9999); but the differences detected between fallow strata were not significant (p = 0.20).

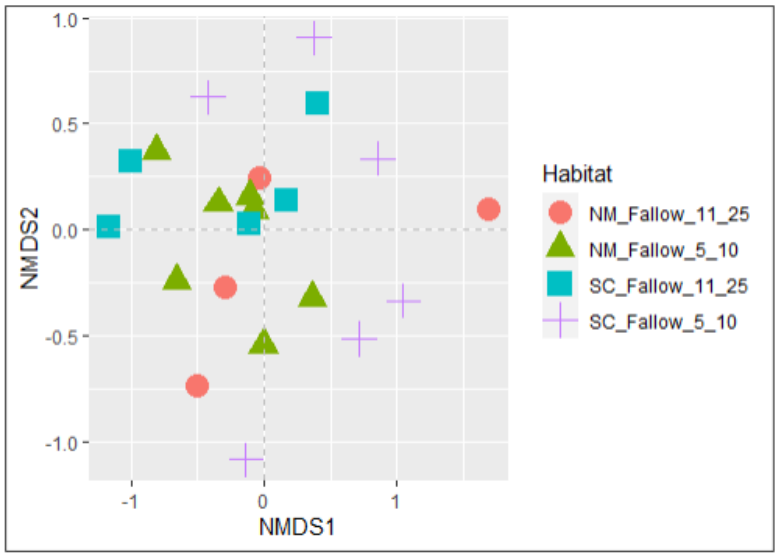

Figure 10. Non-metric multidimensional scaling (NMDS) based on species composition for adult trees in fallows, using the Bray–Curtis index

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The SIMPER analysis revealed that in fallows adult trees, six species had higher contribution in the formation of groups (Table 13). The results indicates that *Burkea Africana and Pteleopsis myrtifolia did not* occurred in NM old fallows and *Pterocarpus angolensis* in the medium age fallows. Two species was absent in old fallows of SC (*Combretum zeyheri* and *Pteleopsis myrtifolia).* Therefore, no species with exclusive occurrence were found.

Table 13. Percentage (%) contribution of species to dissimilarities for adult trees between NM and SC fallows. Only species with a contribution to average dissimilarity of >2% are included. (Overall average dissimilarity: 82.30).

Taxon	Contrib. %	NM_Fallow_ 11_25	NM_Fallow _5_10	SC_Fallow _11_25	SC_Fallow _5_10
Brachystegia spiciformis	7.69	0.50	0.86	1.00	0.33
Brachystegia boehmii	7.21	0.25	0.57	0.60	0.83
Diplorhynchus condylocarpon	7.14	0.75	0.71	0.40	0.50
Pterocarpus angolensis	6.19	0.25	0.00	0.20	0.83
Julbernardia globiflora	5.09	0.25	0.29	0.20	0.67
Burkea africana	4.93	0.00	0.29	0.60	0.33
Combretum zeyheri	4.76	0.50	0.43	0.00	0.33
Pteleopsis myrtifolia	4.61	0.00	0.29	0.00	0.83

4.7. Fallows regeneration trees

The NMDS ordination showed differences in species composition for regeneration between fallow strat with some overlap (Stress = 0.17; ANOSIM: R = 0.26; P = 0.000; permutations = 9999), as observed in Figure 11.

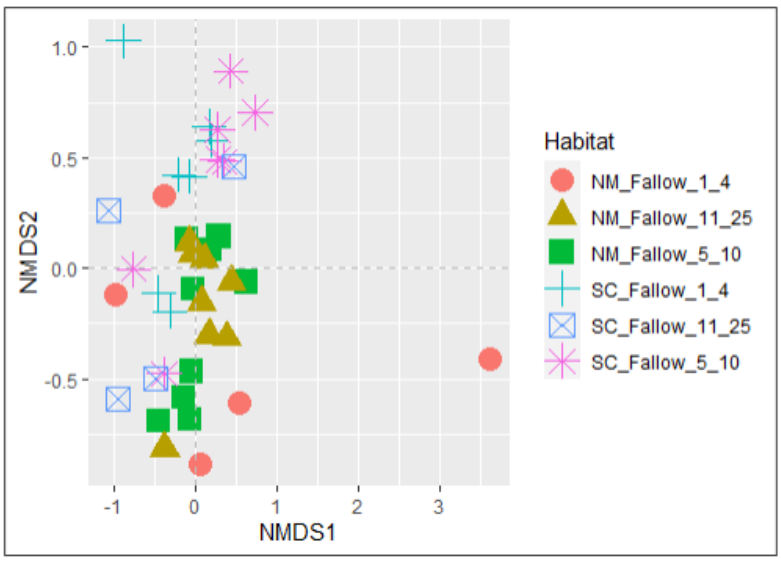

Figure 11. Non-metric multidimensional scaling (NMDS) based on species composition for regeneration in fallows, using the Bray–Curtis index.

The SIMPER analysis revealed that for fallow, nine regenerating species had high contribution to the formation of groups. *Flacourtia indica, Albizia s, Burkea Africana, Margaritaria discoidea e Brachystegia spiciformis*, were among the most important species

that most contributed to the composition in the strata (Tabela 14). Overall all species had high mean distribution in medium age fallows of SC.

Table 14. Percentage (%) contribution of species to dissimilarities for adult trees between NM and SC fallows. Only species with a contribution to average dissimilarity of >2% are included. (Overall average dissimilarity: 74.14).

Taxon	Contrib. %	NM_Fallow_ 1_4	NM_Fallow_ 5_10	NM_Fallow _11_25	SC_Fallow_ 1_4	SC_Fallow_ 5_10	SC_Fallow_ 11_25
Flacourtia indica	2.76	0.20	0.78	0.63	1.29	1.86	0.40
Albizia sp	2.75	0.40	0.89	0.50	0.57	2.43	0.60
Burkea africana	2.74	0.40	1.11	0.63	1.29	0.86	0.40
Margaritaria discoidea	2.65	0.20	0.89	0.75	0.71	1.71	0.40
Brachystegia spiciformis	2.63	0.40	1.00	1.00	0.86	1.86	0.60
Julbernardia globiflora	2.59	0.20	1.00	0.88	1.14	2.14	0.80
Hugonia orientalis	2.55	0.20	0.78	0.75	1.14	1.29	0.40
Brachystegia boehmii	2.54	1.00	1.00	0.75	1.14	2.86	0.80
D. condylocarpon	2.49	0.40	0.67	0.75	1.14	2.00	0.80

5. DISCUSSION NOTES

This study investigated species diversity, richness and abundance in three different habitats (forests, fallows and croplands) in miombo areas impacted by agriculture, in Chipanje Chetu community conservation area. We found different tendency in terms of species diversity in the three habitats.

Overall, species diversity was similar or had limited variation across adult trees in the different strata. We found that the NM fallows and forest presented low Shannon diversity index (H'=2.72 for fallow and H' = 2.67 for forest). In contrast, Shannon's diversity indices in SC were significantly high (H' = 3.06 and H' = 3.08, for fallows and forests respectively). However, species distribution was well balanced in the fallows (J' = 0.82 for NM and J' = 0.89 for SC).

Regeneration showed the opposite pattern, with significant differences in species diversity across the three habitats. Cropland areas showed a tendency towards high species diversity in NM (Richness = 93) and SC (Richness = 86). The lowest species diversity values occurred in SC for forest and fallows, showing also lower Shannon diversity indices (H' = 3.51 for fallow; H'= 3.36 for forest). Areas of SC had high abundance of regeneration and had a more balanced species distribution.

Forest areas of NM and SC were similar in terms of adult tree species diversity but significant variation was observed for regeneration. SC adult trees had higher Shannon diversity indices

(H'=3.08) but for regeneration the highest values were reported in NM (H'= 3.63). All areas had a more balanced species distribution, except for NM forest, which had the lowest equitability index value reported (J' = 0.71).

Cropland regeneration showed higher species diversity in NM (Richness = 93) but lower Shannon's diversity index (H' = 3.61) and the highest value were found in SC (H'= 3.65). However, data from adults were insufficient to conduct analysis. This finding reflects the type of agriculture practiced in the area, slash-and-burn, in which almost all trees in agricultural areas are removed, severely impacting the local biodiversity.

In terms of fallow regeneration, we found only significanty differences in species divert for adult trees between medium age fallows of SC and old fallow of the SC. The highest species diversity were observed in the medium age fallows for NM. For the regeneration, the high species diversity are also found in the medium age fallows and old fallows of NM , followed by medium fallows of SC. The lowest values occurred in the NM young fallows and SC old fallows.

This results shows that in general, the medium fallows recovered better than younger and older fallows. Older Fallows exhibited lower J' indices (NM = 0.74, SC = 0.79). The older fallows in SC had the lowest H' value (H' = 2.75), as well as the lowest species richness value (Richness = 32). The oldest fallows had low J' values (NM = 0.74; SC = 0.79), indicating an imbalanced distribution of tree species, with a few species dominating the community. In adult trees, medium fallows had the highest species diversity, whereas older fallows had the lowest values for H' (NM = 2.52; SC = 2.27) and abundance (14 n/ha).

Overall, species composition was similar, with some differences between strata (ANOSIM, $0.1 < R < 0.25$). Significant differences in species composition between strata were observed in regeneration fallow areas. We found also differences in regeneration species composition involving forest, fallow and cropland habitats. No exclusive species were found occurring in any habitat, but many species had a high average occurrence in SC.

This finding may indicate that the two miombo areas are similar in terms of species composition but also are subject to the same disturbance factors, and that the ecological gradients do not differ enough to affect species composition in the both areas.

The main miombo species, *Brachystegia boehmii, Brachystegia spiciformis, Diplorhynchus condylocarpon, Pseudolachnostylis maprouneifolia,* and *Diplorhynchus condylocarpon*, have been found in all areas, indicating their importance for miombo miombo maintenance in terms of its structure and composition.

There were no recorded endemic species in the study area. In the croplands were found only three weed species namely, *Ageratum conyzoides, Bidens pilosa and Commelina benghalensis* and *Trichodesma zeylanicum.* Some species that are common in NM and SC such as *Brachystegia boehmii, Diplorhynchus condylocarpon, Strychnos spinosa, Syzygium*

chordatum, and *Vangueria infausta* are considered of local relevance for food, medicine, and building. *Dichrostachys cinerea and Melinis repens* are the main soil indicador condition in terms of disturbance and soil fertility. The invasive species namely, *Indigofera astragalina*, *Melhania forbesii* and *Senna petersiana* were found in croplands and fallows of NM and fallows and forest of SC. The main weeds that occur in both areas are *Bidens pilosa*, *Ageratum conyzoides* and *Commelina benghalensis.*

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APPENDIX

1. Kruskal-Wallis Pairwise comparisons of Shannon diversity index (H')

Table 1. Dunn's test for Shannon diversity index (H'): All adult tree species in forest, fallow and croplands

		Mean Rank Diff	Z	Prob	Sig
1	NM_Fallow - NM_Forest	18.05128	1.76443	0.46596	0
2	NM_Fallow - SC_Fallow	-58.5641	-5.72436	6.23E-08	1
3	NM_Fallow - SC_Forest	-65.38462	-6.39104	9.89E-10	1
4	NM_Forest - SC_Fallow	-76.61538	-7.48879	4.17E-13	1
5	NM_Forest - SC_Forest	-83.4359	-8.15547	2.09E-15	1
6	SC_Fallow - SC_Forest	-6.82051	-0.66667	1	0

Table 2. Dunn's test for Shannon diversity index (H'): All regeneration tree species in forest fallow and croplands

		Mean Rank Diff	Z	Prob	Sig
1	NM_Cropland - NM_Fallow	41.46154	2.97069	0.04457	1
2	NM_Cropland - NM_Forest	-24.64103	-1.76551	1	0
3	NM_Cropland - SC_Cropland	-65.41026	-4.68659	4.17E-05	1
4	NM_Cropland - SC_Fallow	70.70085	4.02578	8.52E-04	1
5	NM_Cropland - SC_Forest	102.92308	7.37435	2.48E-12	1
6	NM_Fallow - NM_Forest	-66.10256	-4.73619	3.27E-05	1
7	NM_Fallow - SC_Cropland	-106.87179	-7.65728	2.85E-13	1
8	NM_Fallow - SC_Fallow	29.23932	1.66492	1	0
9	NM_Fallow - SC_Forest	61.46154	4.40367	1.60E-04	1
10	NM_Forest - SC_Cropland	-40.76923	-2.92108	0.05232	0
11	NM_Forest - SC_Fallow	95.34188	5.42886	8.51E-07	1
12	NM_Forest - SC_Forest	127.5641	9.13986	9.38E-19	1
13	SC_Cropland - SC_Fallow	136.11111	7.7503	1.38E-13	1
14	SC_Cropland - SC_Forest	168.33333	12.06095	2.55E-32	1
15	SC_Fallow - SC_Forest	32.22222	1.83477	0.99811	0

Table 3. Dunn's test for Shannon diversity index (H'): Adult tree species in fallows

		Mean Rank Diff	Z	Prob	Sig
1	NM_Fallow_11_25 - NM_Fallow_5_10	-36.71795	-3.59	0.00	1
2	NM_Fallow_11_25 - SC_Fallow_11_25	23.48718	2.29576	0.13014	0
3	NM_Fallow_11_25 - SC_Fallow_5_10	-72.97436	-7.1329	5.90E-12	1
4	NM_Fallow_5_10 - SC_Fallow_11_25	60.20513	5.88477	2.39E-08	1
5	NM_Fallow_5_10 - SC_Fallow_5_10	-36.25641	-3.54389	0.00237	1

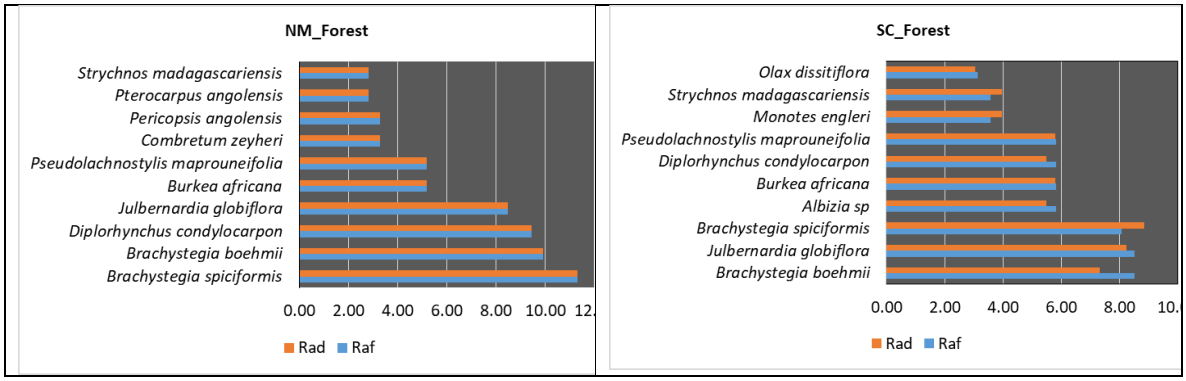
6	SC_Fallow_11_25 - SC_Fallow_5_10	-96.46154	-9.42866	2.49E-20	1

Table 4. Dunn's test for Shannon diversity index (H'): Regeneration tree species in fallows

		Mean Rank Diff	Z	Prob	Sig
1	NM_Fallow_1_4 - NM_Fallow_11_25	-35.23077	-2.52426	0.17392	0
2	NM_Fallow_1_4 - NM_Fallow_5_10	-151.25641	-10.8374	3.43E-26	1
3	NM_Fallow_1_4 - SC_Fallow_1_4	-72.33333	-5.18262	3.28E-06	1
4	NM_Fallow_1_4 - SC_Fallow_11_25	30.55556	1.73986	1	0
5	NM_Fallow_1_4 - SC_Fallow_5_10	-115.74359	-8.29293	1.66E-15	1
6	NM_Fallow_11_25 - NM_Fallow_5_10	-116.02564	-8.31314	1.40E-15	1
7	NM_Fallow_11_25 - SC_Fallow_1_4	-37.10256	-2.65837	0.11778	0
8	NM_Fallow_11_25 - SC_Fallow_11_25	65.78632	3.74594	0.0027	1
9	NM_Fallow_11_25 - SC_Fallow_5_10	-80.51282	-5.76868	1.20E-07	1
10	NM_Fallow_5_10 - SC_Fallow_1_4	78.92308	5.65477	2.34E-07	1
11	NM_Fallow_5_10 - SC_Fallow_11_25	181.81197	10.35255	6.11E-24	1
12	NM_Fallow_5_10 - SC_Fallow_5_10	35.51282	2.54446	0.16417	0
13	SC_Fallow_1_4 - SC_Fallow_11_25	102.88889	5.8586	7.00E-08	1
14	SC_Fallow_1_4 - SC_Fallow_5_10	-43.41026	-3.11031	0.02803	1
15	SC_Fallow_11_25 - SC_Fallow_5_10	-146.29915	-8.33042	1.21E-15	1

2. The most 10 frequent and abundant species

All habitats: Adult tree **(**Forest, fallow and cropland)



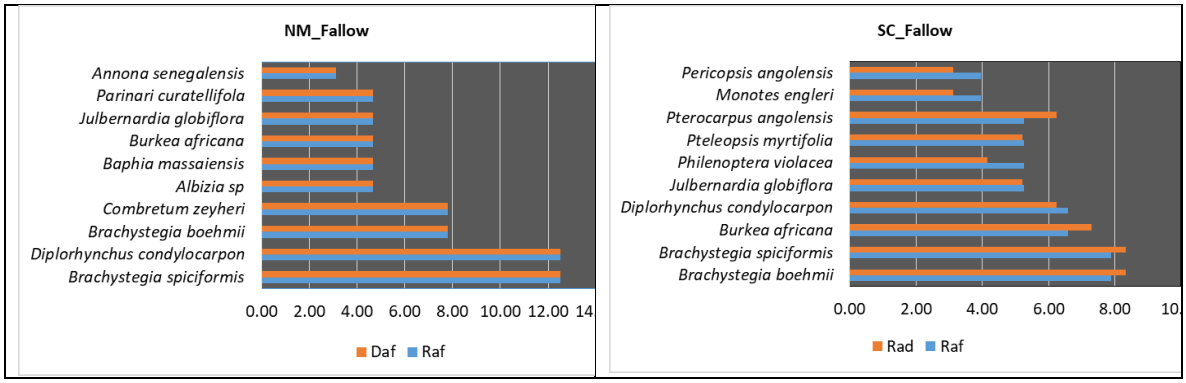
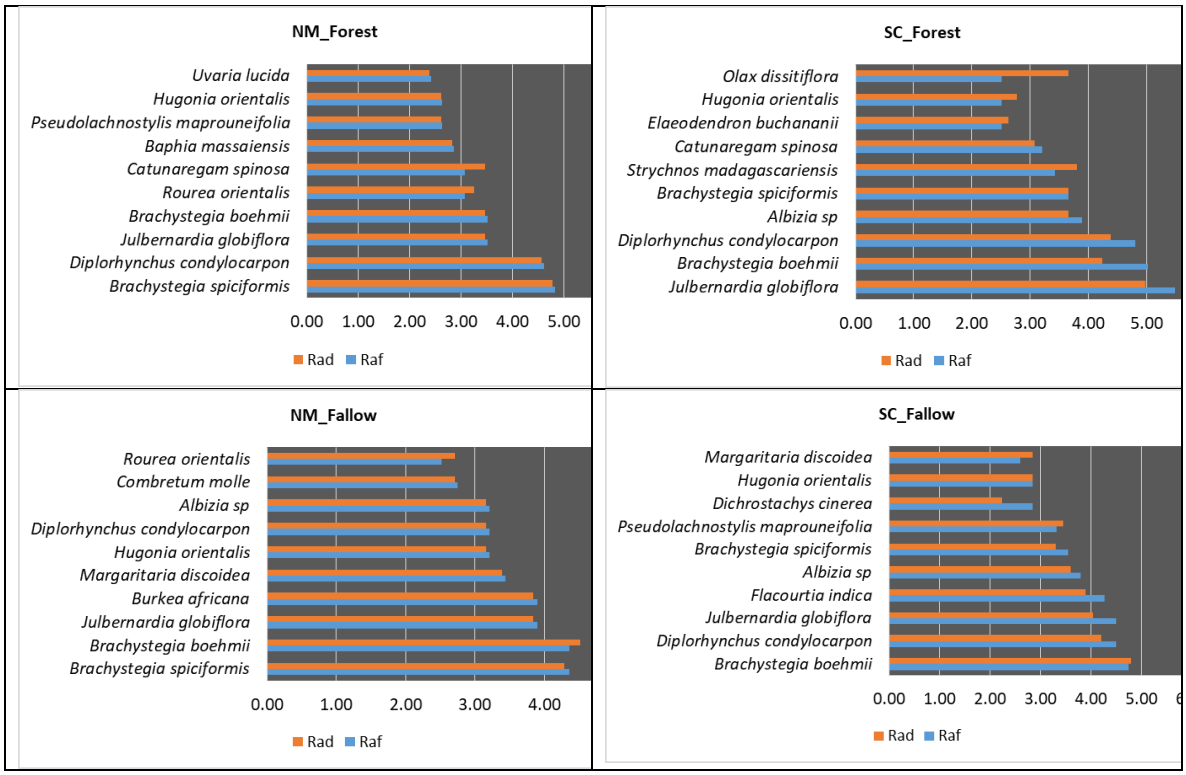


Figure 1. Specific species composition for adult trees in all habitats (forest, fallow and cropland) (Rad = Relative absolute density; Raf = Relative absolute frequency)

All habitats: Regeneration **(**forest, fallow and cropland)



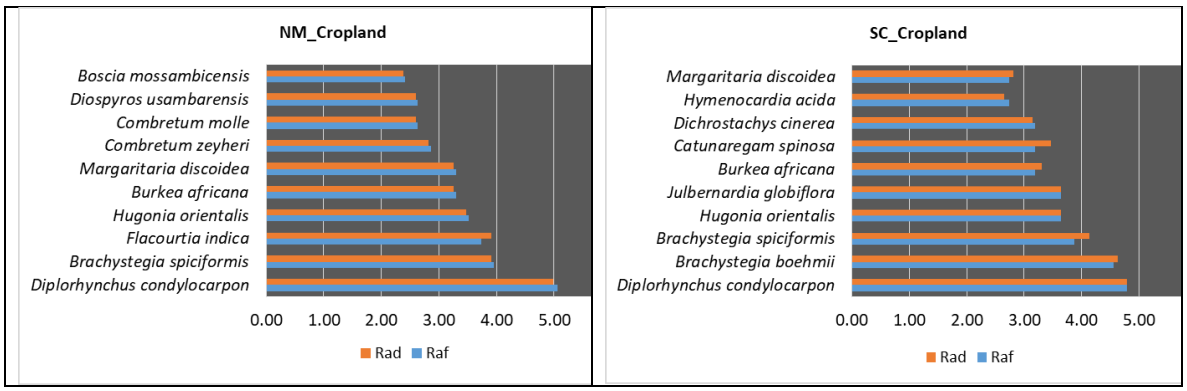


Figure 2. Specific species composition for regeneration in all habitats (forest, fallow and cropland) (Rad = Relative absolute density; Raf = Relative absolute frequency)

Forest: Adult tree

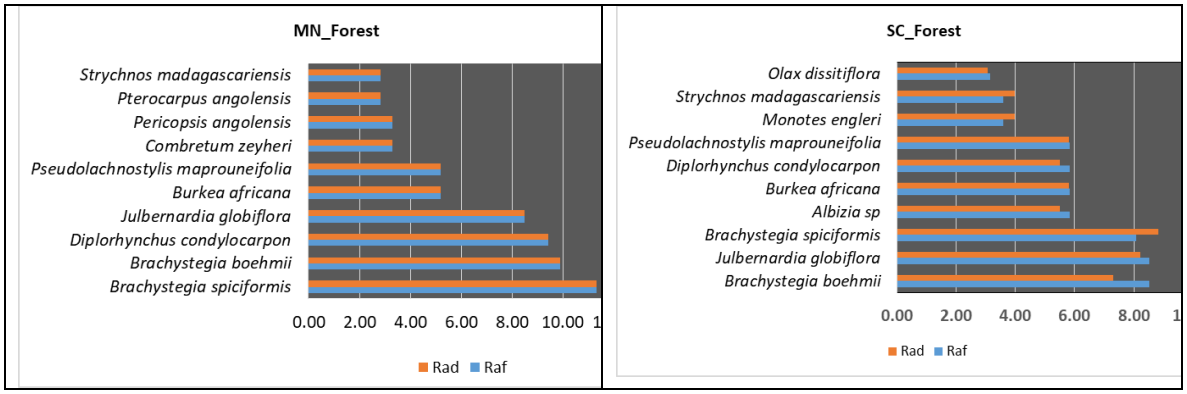


Figure 3. Specific species composition for adult trees in forest (Rad = Relative absolute density; Raf = Relative absolute frequency)

Forest: Regeneration

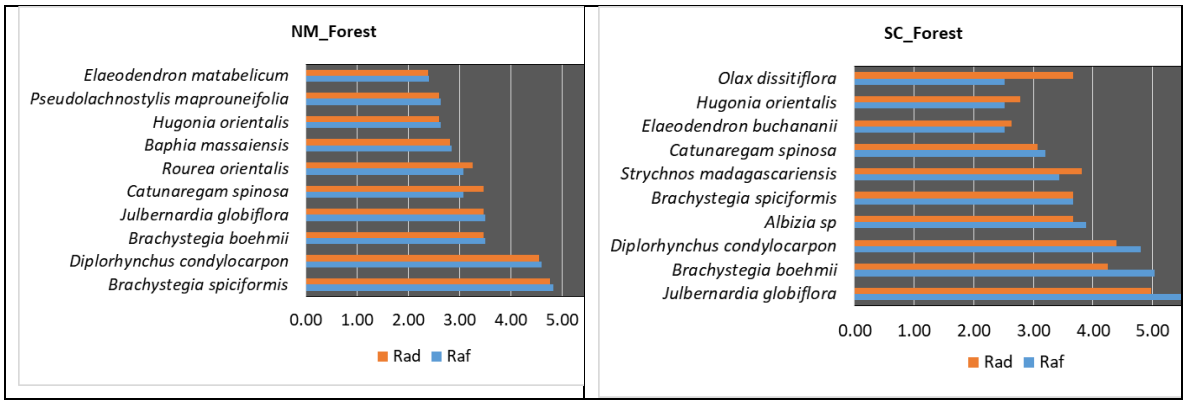


Figure 4. Specific species composition for regeneration in forest (Rad = Relative absolute density; Raf = Relative absolute frequency)

Croplands: Regeneration

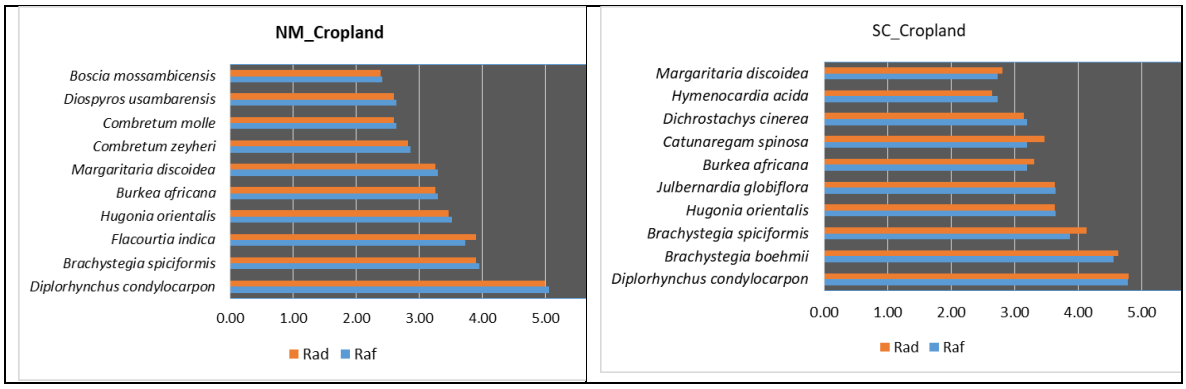


Figure 5. Specific species composition for regeneration trees in cropland (Rad = Relative absolute density; Raf = Relative absolute frequency)

Fallow: Adult tree

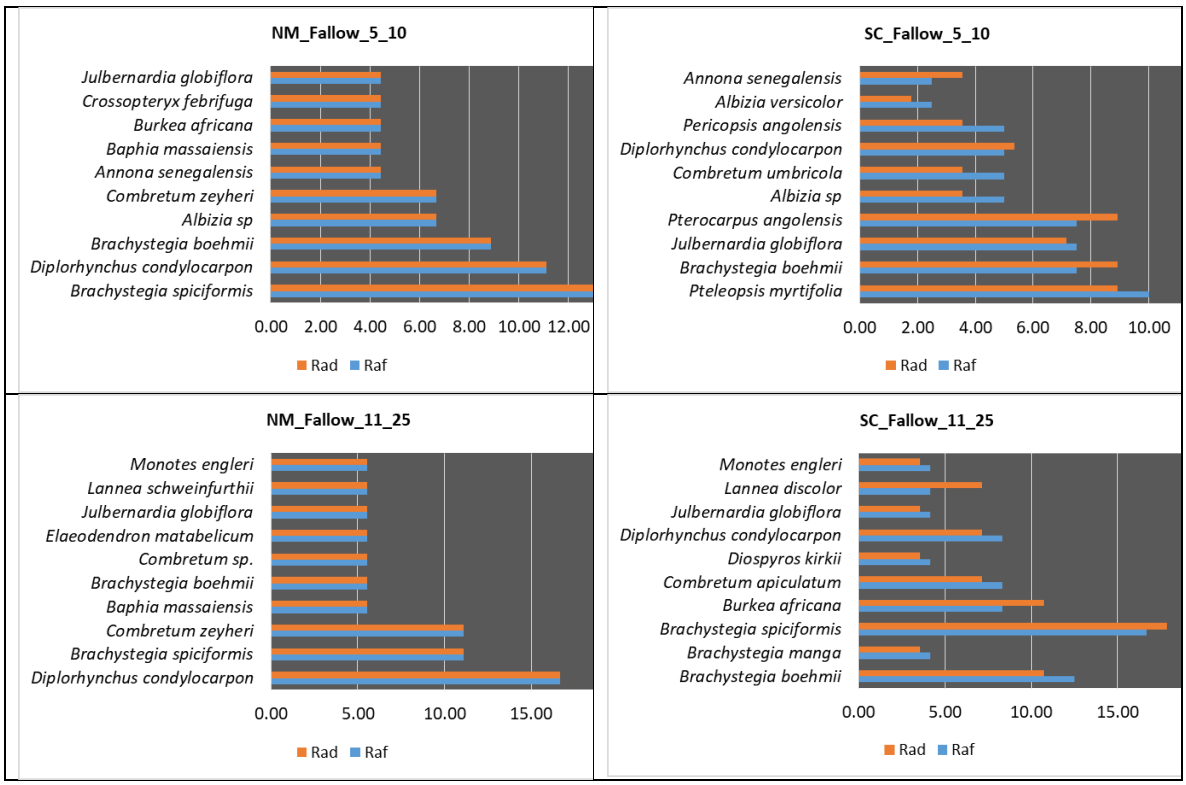
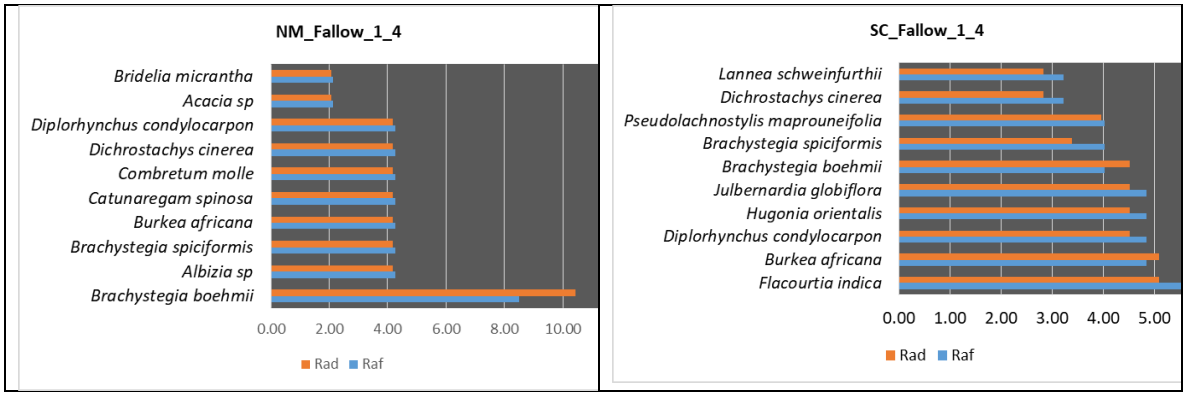


Figure 6. Specific species composition for adult trees in fallows (Rad = Relative absolute density; Raf = Relative absolute frequency)

Fallow: Regeneration



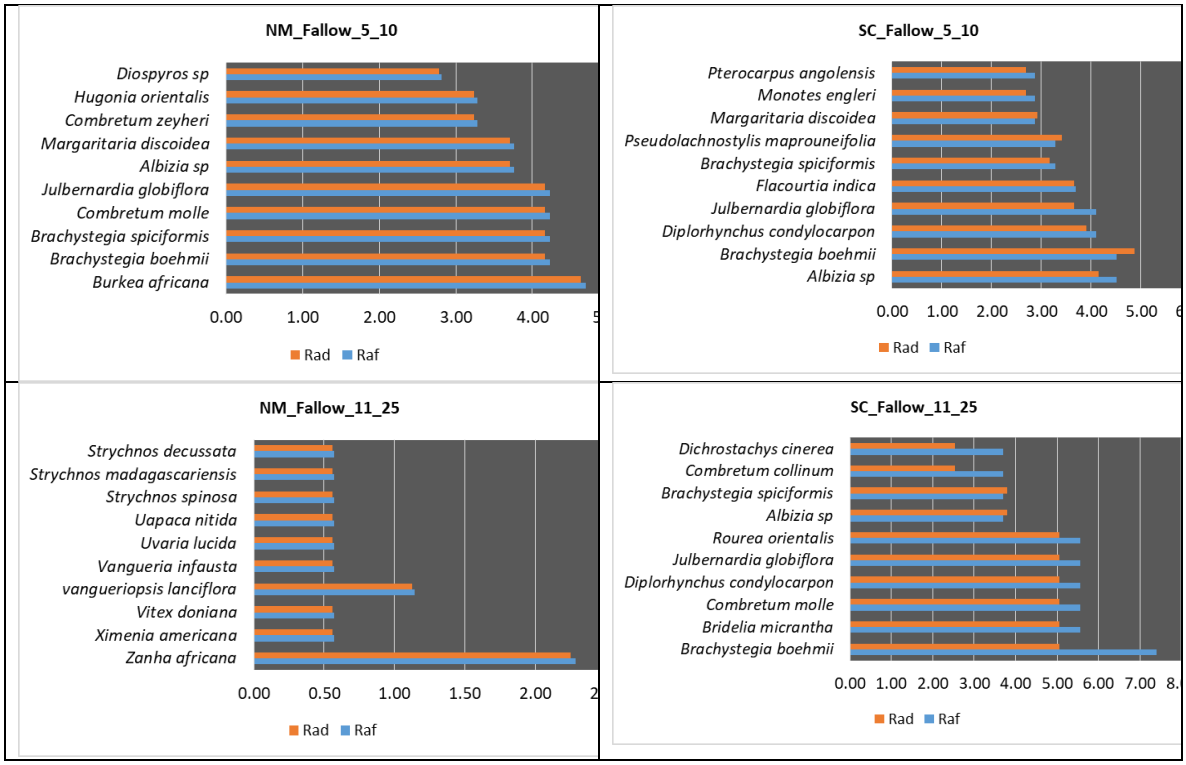


Figure 7. Specific species composition for regeneration in fallows (Rad = Relative absolute density; Raf = Relative absolute frequency)

Table 5. Soil-condition indicator species

Species	**NM _Cropland**	**NM _Fallow**	**NM _Forest**	**SC _Cropland**	**SC _Fallow**	**SC _Forest**	**Description**
Dichrostachys cinerea	■	■	■	■	■	■	Nutrient poor soils indicator / disturbed
Melinis repens	■			■			Nutrient poor soils indicator / disturbed

Table 6. Species with local use found in forest and fallows of NM and SC

Species	Uses
Brachystegia boehmii	Used as a rope and building material
Diplorhynchus condylocarpon	Used as medicinal
Strychnos spinosa	Edible fruit and medicinal
Syzygium cordatum	Edible fruit
Vangueria infausta	Edible fruit

Table 7. Invasive species

Species	NM_Cropland	NM_Fallow	SC_Fallow	SC_Forest
Indigofera astragalina				
Melhania forbesii			4	
Senna petersiana				

3. List of species (FAR = Relative absolute frequency; DAR =Relative absolute density)

a. Adult trees in all habitats (Forest and fallow)

NM_Fallow				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.17	4.69	1.67	4.69
Annona senegalensis	0.11	3.13	1.11	3.13
Baphia massaiensis	0.17	4.69	1.67	4.69
Brachystegia boehmii	0.28	7.81	2.78	7.81
Brachystegia manga	0.06	1.56	0.56	1.56
Brachystegia spiciformis	0.44	12.50	4.44	12.50
Bridelia micrantha	0.06	1.56	0.56	1.56
Burkea africana	0.17	4.69	1.67	4.69
Combretum apiculatum	0.06	1.56	0.56	1.56
Combretum molle	0.06	1.56	0.56	1.56
Combretum sp.	0.06	1.56	0.56	1.56
Combretum umbricola	0.06	1.56	0.56	1.56
Combretum zeyheri	0.28	7.81	2.78	7.81
Crossopteryx febrifuga	0.11	3.13	1.11	3.13
Diplorhynchus condylocarpon	0.44	12.50	4.44	12.50
Elaeodendron matabelicum	0.06	1.56	0.56	1.56

Julbernardia globiflora	0.17	4.69	1.67	4.69
Lannea schweinfurthii	0.11	3.13	1.11	3.13
Mangifera indica	0.06	1.56	0.56	1.56
Margaritaria discoidea	0.06	1.56	0.56	1.56
Monotes engleri	0.06	1.56	0.56	1.56
Ochna natalitia	0.06	1.56	0.56	1.56
Parinari curatellifola	0.17	4.69	1.67	4.69
Pseudolachnostylis maprouneifolia	0.06	1.56	0.56	1.56
Pteleopsis myrtifolia	0.11	3.13	1.11	3.13
Pterocarpus angolensis	0.06	1.56	0.56	1.56
Securidaca longepedunculata	0.06	1.56	0.56	1.56
Uapaca nitida	0.06	1.56	0.56	1.56

NM_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.19	2.36	1.92	2.36
Albizia sp	0.19	2.36	1.92	2.36
Baphia massaiensis	0.04	0.47	0.38	0.47
Boscia mossambicensis	0.04	0.47	0.38	0.47
Brachystegia boehmii	0.81	9.91	8.08	9.91
Brachystegia bussei	0.08	0.94	0.77	0.94
Brachystegia spiciformis	0.92	11.32	9.23	11.32
Bridelia micrantha	0.08	0.94	0.77	0.94
Burkea africana	0.42	5.19	4.23	5.19
Cassia abbreviata	0.04	0.47	0.38	0.47
Cassine aethiopicum	0.04	0.47	0.38	0.47
Combretum apiculatum	0.04	0.47	0.38	0.47
Combretum molle	0.19	2.36	1.92	2.36
Combretum sp.	0.04	0.47	0.38	0.47
Combretum umbricola	0.04	0.47	0.38	0.47
Combretum zeyheri	0.27	3.30	2.69	3.30
Diospyros kirkii	0.04	0.47	0.38	0.47
Diospyros mespiliformis	0.08	0.94	0.77	0.94
Diospyros sp	0.04	0.47	0.38	0.47
Diplorhynchus condylocarpon	0.77	9.43	7.69	9.43
Elaeodendron matabelicum	0.12	1.42	1.15	1.42
Eugenia cf. natalitia	0.04	0.47	0.38	0.47
Faurea rochetiana	0.15	1.89	1.54	1.89
Gardenia sp	0.04	0.47	0.38	0.47
Hymenocardia acida	0.04	0.47	0.38	0.47
Julbernardia globiflora	0.69	8.49	6.92	8.49

Lannea schweinfurthii	0.12	1.42	1.15	1.42
Monotes engleri	0.19	2.36	1.92	2.36
Ochna leptoclada	0.04	0.47	0.38	0.47
Olax dissitiflora	0.04	0.47	0.38	0.47
Parinari curatellifola	0.15	1.89	1.54	1.89
Pericopsis angolensis	0.27	3.30	2.69	3.30
Philenoptera violacea	0.04	0.47	0.38	0.47
Pseudolachnostylis maprouneifolia	0.42	5.19	4.23	5.19
Pteleopsis myrtifolia	0.12	1.42	1.15	1.42
Pterocarpus angolensis	0.23	2.83	2.31	2.83
Rourea orientalis	0.15	1.89	1.54	1.89
Strychnos madagascariensis	0.23	2.83	2.31	2.83
Syzygium cordatum	0.12	1.42	1.15	1.42
Terminalia brachystemma	0.19	2.36	1.92	2.36
Uapaca kirkiana	0.12	1.42	1.15	1.42
Uapaca nitida	0.23	2.83	2.31	2.83
Ximenia americana	0.08	0.94	0.77	0.94

SC_Cropland				
Species	**Af**	**Raf**	**Ad**	**Rad**
Afzelia quanzensis	0.25	12.50	5.00	14.29
Brachystegia boehmii	0.25	12.50	5.00	14.29
Burkea africana	0.50	25.00	10.00	28.57
Diplorhynchus condylocarpon	0.25	12.50	2.50	7.14
Hugonia orientalis	0.25	12.50	5.00	14.29
Julbernardia globiflora	0.25	12.50	2.50	7.14
Olax dissitiflora	0.25	12.50	5.00	14.29

SC_Fallow				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.10	2.63	0.95	2.08
Albizia versicolor	0.05	1.32	0.48	1.04
Annona senegalensis	0.05	1.32	0.95	2.08
Boscia mossambicensis	0.05	1.32	0.48	1.04
Brachystegia boehmii	0.29	7.89	3.81	8.33
Brachystegia manga	0.10	2.63	0.95	2.08
Brachystegia spiciformis	0.29	7.89	3.81	8.33
Burkea africana	0.24	6.58	3.33	7.29
Combretum apiculatum	0.10	2.63	0.95	2.08
Combretum collinum	0.05	1.32	0.95	2.08
Combretum molle	0.05	1.32	0.48	1.04

Combretum umbricola	0.10	2.63	0.95	2.08
Combretum zeyheri	0.05	1.32	0.95	2.08
Diospyros kirkii	0.10	2.63	0.95	2.08
Diplorhynchus condylocarpon	0.24	6.58	2.86	6.25
Julbernardia globiflora	0.19	5.26	2.38	5.21
Lannea discolor	0.10	2.63	1.90	4.17
Lannea schweinfurthii	0.05	1.32	0.48	1.04
Monotes engleri	0.14	3.95	1.43	3.13
Ozoroa obovata	0.05	1.32	0.95	2.08
Parinari curatellifola	0.05	1.32	0.48	1.04
Pericopsis angolensis	0.14	3.95	1.43	3.13
Philenoptera violacea	0.19	5.26	1.90	4.17
Piliostigma thonningii	0.05	1.32	0.48	1.04
Pseudolachnostylis maprouneifolia	0.14	3.95	1.43	3.13
Pteleopsis myrtifolia	0.19	5.26	2.38	5.21
Pterocarpus angolensis	0.19	5.26	2.86	6.25
Strychnos madagascariensis	0.05	1.32	0.48	1.04
Terminalia brachystemma	0.10	2.63	1.43	3.13
Terminalia sericea	0.05	1.32	0.95	2.08
Vitex payos	0.14	3.95	1.90	4.17

SC_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.52	5.83	7.20	5.49
Bauhinia tomentosa	0.04	0.45	0.40	0.30
Brachystegia boehmii	0.76	8.52	9.60	7.32
Brachystegia bussei	0.04	0.45	0.80	0.61
Brachystegia manga	0.12	1.35	1.60	1.22
Brachystegia spiciformis	0.72	8.07	11.60	8.84
Bridelia micrantha	0.04	0.45	0.80	0.61
Burkea africana	0.52	5.83	7.60	5.79
Cassine aethiopicum	0.04	0.45	0.40	0.30
Catunaregam spinosa	0.04	0.45	0.40	0.30
Combretum apiculatum	0.20	2.24	3.20	2.44
Combretum molle	0.16	1.79	2.80	2.13
Combretum umbricola	0.08	0.90	1.20	0.91
Combretum zeyheri	0.16	1.79	2.00	1.52
Dichrostachys cinerea	0.04	0.45	0.40	0.30
Diospyros kirkii	0.20	2.24	2.00	1.52
Diplorhynchus condylocarpon	0.52	5.83	7.20	5.49
Elaeodendron buchananii	0.04	0.45	0.40	0.30

Elaeodendron matabelicum	0.12	1.35	2.40	1.83
Eugenia cf. natalitia	0.12	1.35	2.40	1.83
Faurea rochetiana	0.08	0.90	1.20	0.91
Hymenocardia acida	0.16	1.79	2.80	2.13
Julbernardia globiflora	0.76	8.52	10.80	8.23
Lannea schweinfurthii	0.08	0.90	0.80	0.61
Monotes engleri	0.32	3.59	5.20	3.96
Ochna leptoclada	0.08	0.90	1.20	0.91
Olax dissitiflora	0.28	3.14	4.00	3.05
Parinari curatellifola	0.28	3.14	5.20	3.96
Pericopsis angolensis	0.28	3.14	4.00	3.05
Philenoptera violacea	0.04	0.45	0.40	0.30
Phyllanthus muellerianus	0.04	0.45	0.80	0.61
Piliostigma thonningii	0.08	0.90	1.20	0.91
Pseudolachnostylis maprouneifolia	0.52	5.83	7.60	5.79
Pteleopsis myrtifolia	0.16	1.79	2.40	1.83
Pterocarpus angolensis	0.28	3.14	4.80	3.66
Rourea orientalis	0.04	0.45	0.80	0.61
Strychnos madagascariensis	0.32	3.59	5.20	3.96
Swartzia madagascariensis	0.08	0.90	0.80	0.61
Syzygium cordatum	0.04	0.45	0.80	0.61
Tamarindus indica	0.04	0.45	0.40	0.30
Terminalia brachystemma	0.04	0.45	0.80	0.61
Terminalia sericea	0.08	0.90	1.20	0.91
Uapaca nitida	0.12	1.35	2.00	1.52
Vachellia sp	0.12	1.35	1.20	0.91
Vitex doniana	0.04	0.45	0.40	0.30
Vitex payos	0.04	0.45	0.40	0.30
Ximenia americana	0.04	0.45	0.40	0.30

b. Regeneration trees in all habitats (forest and fallow and cropland)

NM_Cropland				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.07	0.44	0.74	0.43
Afrocanthium racemulosum	0.11	0.66	1.11	0.65
Afzelia quanzensis	0.04	0.22	0.37	0.22
Albizia adiantifolia	0.04	0.22	0.37	0.22
Albizia sp	0.37	2.20	3.70	2.17
Annona senegalensis	0.15	0.88	1.48	0.87
Baphia massaiensis	0.11	0.66	1.11	0.65

Bauhinia petersiana	0.04	0.22	0.37	0.22
Bauhinia tomentosa	0.04	0.22	0.37	0.22
Boscia mossambicensis	0.41	2.42	4.07	2.39
Boscia salicifolia	0.07	0.44	0.74	0.43
Brachystegia boehmii	0.41	2.42	4.07	2.39
Brachystegia manga	0.04	0.22	0.37	0.22
Brachystegia spiciformis	0.67	3.96	6.67	3.90
Bridelia micrantha	0.26	1.54	2.59	1.52
Burkea africana	0.56	3.30	5.56	3.25
Catunaregam spinosa	0.33	1.98	3.33	1.95
Combretum apiculatum	0.11	0.66	1.11	0.65
Combretum molle	0.44	2.64	4.44	2.60
Combretum psidioides	0.04	0.22	0.37	0.22
Combretum zeyheri	0.48	2.86	4.81	2.82
Crossopteryx febrifuga	0.15	0.88	1.48	0.87
Cussonia sp	0.22	1.32	2.22	1.30
Dichrostachys cinerea	0.07	0.44	0.74	0.43
Dicliptera sp	0.04	0.22	0.37	0.22
Diospirus cf kirkii	0.07	0.44	0.74	0.43
Diospyros galpinii	0.26	1.54	2.59	1.52
Diospyros loureiriana	0.04	0.22	0.37	0.22
Diospyros sp	0.07	0.44	0.74	0.43
Diospyros usambarensis	0.44	2.64	4.44	2.60
Diplorhynchus condylocarpon	0.85	5.05	8.52	4.99
Ehretia amoena	0.07	0.44	0.74	0.43
Elaeodendron buchananii	0.11	0.66	1.11	0.65
Elaeodendron matabelicum	0.33	1.98	3.70	2.17
Eliadendro sp	0.37	2.20	3.70	2.17
Euclea natalensis	0.11	0.66	1.11	0.65
Euclea schimperi	0.04	0.22	0.37	0.22
Eugenia cf. natalitia	0.19	1.10	1.85	1.08
Fabaceae	0.26	1.54	2.59	1.52
Ficus sp	0.04	0.22	0.37	0.22
Flacourtia indica	0.63	3.74	6.67	3.90
Flacourtiaceae	0.15	0.88	1.48	0.87
Garcinia livingstonei	0.33	1.98	3.33	1.95
Gardenia sp	0.04	0.22	0.37	0.22
Gardenia volkensii	0.11	0.66	1.11	0.65
Hugonia orientalis	0.59	3.52	5.93	3.47
Hymenocardia acida	0.11	0.66	1.11	0.65
Julbernardia globiflora	0.19	1.10	1.85	1.08

Landolphia parvifolia	0.33	1.98	3.70	2.17
Lannea discolor	0.04	0.22	0.37	0.22
Margaritaria discoidea	0.56	3.30	5.56	3.25
Markhamia zanzibarica	0.11	0.66	1.48	0.87
Myrtaceae	0.07	0.44	0.74	0.43
Ochna leptoclada	0.30	1.76	2.96	1.74
Ochna natalitia	0.30	1.76	3.33	1.95
Olax dissitiflora	0.04	0.22	0.37	0.22
Ormocarpum kirkii	0.04	0.22	0.37	0.22
Oxnimatera sp	0.04	0.22	0.37	0.22
Ozoroa obovata	0.15	0.88	1.48	0.87
Parinari curatellifola	0.19	1.10	1.85	1.08
Protea sp	0.04	0.22	0.37	0.22
Pericopsis angolensis	0.19	1.10	1.85	1.08
Philenoptera violacea	0.04	0.22	0.37	0.22
Phyllanthus muellerianus	0.22	1.32	2.22	1.30
Phyllanthus reticulatus	0.04	0.22	0.37	0.22
phyllanthus sp	0.19	1.10	1.85	1.08
Piliostigma thonningii	0.04	0.22	0.37	0.22
Prespermum febrifuga	0.30	1.76	2.96	1.74
Pseudolachnostylis maprouneifolia	0.19	1.10	1.85	1.08
Pteleopsis myrtifolia	0.15	0.88	1.48	0.87
Pterocarpus angolensis	0.26	1.54	2.59	1.52
Rhus dentata	0.07	0.44	0.74	0.43
Rothmannia engleriana	0.04	0.22	0.37	0.22
Rourea orientalis	0.26	1.54	2.59	1.52
Rubiaceae	0.11	0.66	1.11	0.65
Securidaca longepedunculata	0.04	0.22	0.37	0.22
Senna petersiana	0.15	0.88	1.48	0.87
Steganotaenia araliacea	0.04	0.22	0.37	0.22
Strychnos decussata	0.07	0.44	0.74	0.43
Strychnos madagascariensis	0.26	1.54	2.59	1.52
Strychnos spinosa	0.11	0.66	1.11	0.65
Terminalia brachystemma	0.04	0.22	0.37	0.22
Terminalia sericea	0.07	0.44	0.74	0.43
Trycalisca sp	0.04	0.22	0.37	0.22
Uapaca nitida	0.19	1.10	1.85	1.08
Uvaria lucida	0.30	1.76	2.96	1.74
Vangueira sp	0.04	0.22	0.37	0.22
Vangueria infausta	0.15	0.88	1.85	1.08
vangueriopsis lanciflora	0.04	0.22	0.37	0.22

Vitex doniana	0.04	0.22	0.37	0.22
Ximenia americana	0.15	0.88	1.48	0.87
Zanha africana	0.19	1.10	1.85	1.08
Ziziphus abyssinica	0.04	0.22	0.37	0.22

NM_Fallow				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.04	0.23	0.38	0.23
Afrocanthium racemulosum	0.15	0.92	1.54	0.90
Albizia sp	0.54	3.21	5.38	3.16
Allophylus africanus	0.12	0.69	1.54	0.90
Annona senegalensis	0.08	0.46	0.77	0.45
Balanites maughamii	0.04	0.23	0.38	0.23
Baphia massaiensis	0.12	0.69	1.15	0.68
Boscia mossambicensis	0.35	2.06	3.46	2.03
Brachystegia boehmii	0.73	4.36	7.69	4.51
Brachystegia manga	0.23	1.38	2.31	1.35
Brachystegia spiciformis	0.73	4.36	7.31	4.29
Bredelia sp	0.08	0.46	0.77	0.45
Bridelia micrantha	0.19	1.15	1.92	1.13
Burkea africana	0.65	3.90	6.54	3.84
Cassine aethiopicum	0.08	0.46	0.77	0.45
Catunaregam spinosa	0.23	1.38	2.31	1.35
Combretum apiculatum	0.12	0.69	1.15	0.68
Combretum molle	0.46	2.75	4.62	2.71
Combretum paniculatum	0.04	0.23	0.38	0.23
Combretum psidioides	0.08	0.46	0.77	0.45
Combretum sp	0.04	0.23	0.38	0.23
Combretum zeyheri	0.42	2.52	4.23	2.48
Cussonia sp	0.08	0.46	0.77	0.45
Dichrostachys cinerea	0.15	0.92	1.54	0.90
Dicliptera sp	0.15	0.92	1.54	0.90
Diospirus cf kirkii	0.04	0.23	0.38	0.23
Diospyros galpinii	0.12	0.69	1.15	0.68
Diospyros loureiriana	0.12	0.69	1.15	0.68
Diospyros sp	0.35	2.06	3.46	2.03
Diospyros squarrosa	0.12	0.69	1.15	0.68
Diospyros usambarensis	0.15	0.92	1.54	0.90
Diplorhynchus condylocarpon	0.54	3.21	5.38	3.16
Dirichletia sp	0.12	0.69	1.15	0.68
Ehretia sp	0.04	0.23	0.38	0.23

Elaeodendron buchananii	0.15	0.92	1.54	0.90
Elaeodendron matabelicum	0.38	2.29	4.62	2.71
Eliadendro sp	0.27	1.61	2.69	1.58
Euclea schimperi	0.04	0.23	0.38	0.23
Eugenia cf. natalitia	0.23	1.38	2.31	1.35
Euphorbiaceae	0.04	0.23	0.38	0.23
Fabaceae	0.04	0.23	0.38	0.23
Faurea rochetiana	0.04	0.23	0.38	0.23
Ficus sycomorus	0.04	0.23	0.38	0.23
Flacourtia indica	0.42	2.52	5.00	2.93
Flacourtiaceae	0.15	0.92	1.54	0.90
Garcinia livingstonei	0.23	1.38	2.31	1.35
Gardenia sp	0.08	0.46	0.77	0.45
Gardenia volkensii	0.08	0.46	0.77	0.45
Hugonia orientalis	0.54	3.21	5.38	3.16
Hymenocardia acida	0.08	0.46	0.77	0.45
Julbernardia globiflora	0.65	3.90	6.54	3.84
Landolphia parvifolia	0.38	2.29	3.85	2.26
Lannea schweinfurthii	0.23	1.38	2.31	1.35
Margaritaria discoidea	0.58	3.44	5.77	3.39
Markhamia zanzibarica	0.04	0.23	0.38	0.23
Monotes engleri	0.19	1.15	1.92	1.13
Ochna leptoclada	0.08	0.46	0.77	0.45
Ochna natalitia	0.12	0.69	1.15	0.68
Olax dissitiflora	0.04	0.23	0.38	0.23
Ormocarpum kirkii	0.04	0.23	0.38	0.23
Ozoroa obovata	0.12	0.69	1.15	0.68
Parinari curatellifola	0.15	0.92	1.54	0.90
Pericopsis angolensis	0.27	1.61	2.69	1.58
Philenoptera violacea	0.04	0.23	0.38	0.23
Phyllanthus muellerianus	0.23	1.38	2.31	1.35
phyllanthus sp	0.08	0.46	0.77	0.45
Prespermum febrifuga	0.15	0.92	1.54	0.90
Pseudolachnostylis maprouneifolia	0.27	1.61	2.69	1.58
Psorospermum febrifugum	0.08	0.46	0.77	0.45
Pteleopsis myrtifolia	0.12	0.69	1.15	0.68
Pterocarpus angolensis	0.19	1.15	1.92	1.13
Rhus dentata	0.04	0.23	0.38	0.23
Rothmannia engleriana	0.04	0.23	0.38	0.23
Rourea orientalis	0.42	2.52	4.62	2.71
Securidaca longepedunculata	0.27	1.61	2.69	1.58

Senna petersiana	0.19	1.15	1.92	1.13
Steganotaenia araliacea	0.12	0.69	1.15	0.68
Strychnos decussata	0.12	0.69	1.15	0.68
Strychnos madagascariensis	0.12	0.69	1.15	0.68
Strychnos spinosa	0.12	0.69	1.15	0.68
Swartzia madagascariensis	0.04	0.23	0.38	0.23
Terminalia sericea	0.08	0.46	0.77	0.45
Uapaca nitida	0.04	0.23	0.38	0.23
Uvaria lucida	0.27	1.61	2.69	1.58
Vangueria infausta	0.12	0.69	1.15	0.68
vangueriopsis lanciflora	0.23	1.38	2.31	1.35
Vitex doniana	0.04	0.23	0.38	0.23
Ximenia americana	0.08	0.46	0.77	0.45
Zanha africana	0.15	0.92	1.54	0.90

NM_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.16	0.88	1.60	0.87
Afrocanthium racemulosum	0.08	0.44	0.80	0.43
Albizia sp	0.40	2.19	4.40	2.39
Balanites maughamii	0.12	0.66	1.20	0.65
Baphia massaiensis	0.52	2.85	5.20	2.82
Bauhinia tomentosa	0.08	0.44	0.80	0.43
Brachystegia boehmii	0.64	3.51	6.40	3.47
Brachystegia manga	0.16	0.88	1.60	0.87
Brachystegia spiciformis	0.88	4.82	8.80	4.77
Bredelia sp	0.04	0.22	0.40	0.22
Bridelia micrantha	0.36	1.97	3.60	1.95
Burkea africana	0.40	2.19	4.00	2.17
Cassine aethiopicum	0.16	0.88	1.60	0.87
Catunaregam spinosa	0.56	3.07	6.40	3.47
Combretum apiculatum	0.20	1.10	2.00	1.08
Combretum molle	0.40	2.19	4.00	2.17
Combretum psidioides	0.08	0.44	0.80	0.43
Combretum sp	0.08	0.44	0.80	0.43
Combretum umbricola	0.04	0.22	0.40	0.22
Combretum zeyheri	0.32	1.75	3.20	1.74
Crossopteryx febrifuga	0.08	0.44	0.80	0.43
Cussonia sp	0.04	0.22	0.40	0.22
Dichrostachys cinerea	0.04	0.22	0.40	0.22
Dicliptera sp	0.04	0.22	0.40	0.22

Diospirus cf kirkii	0.32	1.75	3.20	1.74
Diospyros galpinii	0.20	1.10	2.00	1.08
Diospyros loureiriana	0.08	0.44	0.80	0.43
Diospyros sp	0.20	1.10	2.00	1.08
Diplorhynchus condylocarpon	0.84	4.61	8.40	4.56
Dirichletia sp	0.12	0.66	1.20	0.65
Drypetes sp	0.04	0.22	0.40	0.22
Ehretia amoena	0.04	0.22	0.40	0.22
Elaeodendron buchananii	0.24	1.32	2.40	1.30
Elaeodendron matabelicum	0.44	2.41	4.40	2.39
Eliadendro sp	0.24	1.32	2.80	1.52
Euclea schimperi	0.04	0.22	0.40	0.22
Eugenia cf. natalitia	0.16	0.88	1.60	0.87
Fabaceae	0.12	0.66	1.20	0.65
Faurea rochetiana	0.08	0.44	0.80	0.43
Flacourtia indica	0.40	2.19	4.00	2.17
Garcinia livingstonei	0.32	1.75	3.20	1.74
Gardenia sp	0.08	0.44	0.80	0.43
Gardenia volkensii	0.12	0.66	1.20	0.65
Gymnosporia heterophylla	0.04	0.22	0.40	0.22
Hugonia orientalis	0.48	2.63	4.80	2.60
Hymenocardia acida	0.20	1.10	2.00	1.08
Julbernardia globiflora	0.64	3.51	6.40	3.47
Landolphia parvifolia	0.44	2.41	4.40	2.39
Lannea schweinfurthii	0.44	2.41	4.40	2.39
Margaritaria discoidea	0.24	1.32	2.40	1.30
Monotes engleri	0.28	1.54	2.80	1.52
Mundulea sericea	0.08	0.44	0.80	0.43
Ochna leptoclada	0.12	0.66	1.20	0.65
Ochna natalitia	0.24	1.32	2.40	1.30
Olax dissitiflora	0.36	1.97	3.60	1.95
Ormocarpum kirkii	0.08	0.44	0.80	0.43
Parinari curatellifola	0.20	1.10	2.00	1.08
Pericopsis angolensis	0.12	0.66	1.20	0.65
Philenoptera violacea	0.04	0.22	0.40	0.22
Phyllanthus muellerianus	0.08	0.44	0.80	0.43
phyllanthus sp	0.04	0.22	0.40	0.22
Protea angolensis	0.20	1.10	2.00	1.08
protea sp	0.04	0.22	0.40	0.22
Pseudolachnostylis maprouneifolia	0.48	2.63	4.80	2.60
Pteleopsis myrtifolia	0.24	1.32	2.40	1.30

Pterocarpus angolensis	0.28	1.54	2.80	1.52
Rhus dentata	0.04	0.22	0.40	0.22
Rothmannia engleriana	0.08	0.44	0.80	0.43
Rourea orientalis	0.56	3.07	6.00	3.25
Steganotaenia araliacea	0.16	0.88	1.60	0.87
Strychnos madagascariensis	0.36	1.97	3.60	1.95
Strychnos spinosa	0.04	0.22	0.40	0.22
Syzygium cordatum	0.12	0.66	1.20	0.65
Terminalia brachystemma	0.24	1.32	2.40	1.30
Terminalia sericea	0.04	0.22	0.40	0.22
Uapaca kirkiana	0.08	0.44	0.80	0.43
Uapaca nitida	0.12	0.66	1.20	0.65
Uvaria lucida	0.44	2.41	4.40	2.39
Vangueria infausta	0.08	0.44	0.80	0.43
vangueriopsis lanciflora	0.08	0.44	0.80	0.43
Vitex doniana	0.08	0.44	0.80	0.43
Ximenia americana	0.40	2.19	4.00	2.17

SC_Cropland

Species	Af	Raf	Ad	Rad
Acacia nilotica	0.03	0.23	0.29	0.17
Acacia sp	0.03	0.23	0.29	0.17
Afrocanthium racemulosum	0.03	0.23	0.29	0.17
Albizia sp	0.29	2.28	3.53	1.98
Albizia versicolor	0.06	0.46	0.59	0.33
Allophylus africanus	0.09	0.68	0.88	0.50
Annona senegalensis	0.06	0.46	0.59	0.33
Antidesma venosum	0.06	0.46	0.88	0.50
Bauhinia petersiana	0.03	0.23	0.29	0.17
Boscia mossambicensis	0.09	0.68	0.88	0.50
Brachystegia boehmii	0.59	4.56	8.24	4.63
Brachystegia bussei	0.06	0.46	0.88	0.50
Brachystegia manga	0.03	0.23	0.29	0.17
Brachystegia spiciformis	0.50	3.87	7.35	4.13
Bridelia micrantha	0.12	0.91	1.18	0.66
Burkea africana	0.41	3.19	5.88	3.31
Cassine aethiopicum	0.06	0.46	0.88	0.50
Catunaregam spinosa	0.41	3.19	6.18	3.47
Combretum apiculatum	0.03	0.23	0.29	0.17
Combretum molle	0.12	0.91	1.47	0.83
Combretum paniculatum	0.06	0.46	0.59	0.33

Combretum psidioides	0.15	1.14	1.76	0.99
Combretum sp	0.06	0.46	0.59	0.33
Combretum umbricola	0.15	1.14	2.06	1.16
Combretum zeyheri	0.12	0.91	2.06	1.16
Crossopteryx febrifuga	0.06	0.46	0.88	0.50
Dalbergia melanoxylon	0.03	0.23	0.29	0.17
Dichrostachys cinerea	0.41	3.19	5.59	3.14
Diospirus cf kirkii	0.24	1.82	2.94	1.65
Diospyros loureiriana	0.21	1.59	3.53	1.98
Diospyros usambarensis	0.09	0.68	0.88	0.50
Diplorhynchus condylocarpon	0.62	4.78	8.53	4.79
Dirichletia sp	0.03	0.23	0.29	0.17
Elaeodendron buchananii	0.15	1.14	2.35	1.32
Elaeodendron matabelicum	0.12	0.91	2.35	1.32
Eugenia cf. natalitia	0.21	1.59	2.94	1.65
Flacourtia indica	0.32	2.51	4.71	2.64
Flacourtiaceae	0.03	0.23	0.29	0.17
Garcinia livingstonei	0.15	1.14	2.06	1.16
Gardenia volkensii	0.03	0.23	0.29	0.17
Gymnosporia heterophylla	0.09	0.68	1.18	0.66
Hugonia orientalis	0.47	3.64	6.47	3.64
Hymenocardia acida	0.35	2.73	4.71	2.64
jatropha sp	0.03	0.23	0.29	0.17
Julbernardia globiflora	0.47	3.64	6.47	3.64
Kigelia africana	0.03	0.23	0.29	0.17
Lannea discolor	0.03	0.23	0.29	0.17
Lannea schweinfurthii	0.15	1.14	2.06	1.16
Margaritaria discoidea	0.35	2.73	5.00	2.81
Markhamia zanzibarica	0.09	0.68	1.47	0.83
Monotes engleri	0.18	1.37	2.94	1.65
Mundulea sericea	0.03	0.23	0.29	0.17
Myrtaceae	0.03	0.23	0.29	0.17
Ochna leptoclada	0.06	0.46	0.88	0.50
Ochna natalitia	0.21	1.59	2.94	1.65
Olax dissitiflora	0.12	0.91	2.06	1.16
Ozoroa obovata	0.03	0.23	0.59	0.33
Parinari curatellifola	0.09	0.68	1.18	0.66
Pericopsis angolensis	0.12	0.91	1.18	0.66
Philenoptera violacea	0.12	0.91	1.47	0.83
Phyllanthus muellerianus	0.06	0.46	0.88	0.50
Phyllanthus reticulatus	0.18	1.37	2.65	1.49

Piliostigma thonningii	0.06	0.46	0.88	0.50
Protea angolensis	0.06	0.46	0.59	0.33
Pseudolachnostylis maprouneifolia	0.21	1.59	3.24	1.82
Psorospermum febrifugum	0.15	1.14	2.06	1.16
Pteleopsis myrtifolia	0.24	1.82	3.24	1.82
Pterocarpus angolensis	0.35	2.73	4.71	2.64
Rourea orientalis	0.32	2.51	5.00	2.81
Securidaca longepedunculata	0.03	0.23	0.29	0.17
Senna petersiana	0.03	0.23	0.29	0.17
Steganotaenia araliacea	0.09	0.68	1.18	0.66
Strychnos decussata	0.03	0.23	0.59	0.33
Strychnos madagascariensis	0.32	2.51	4.71	2.64
Strychnos spinosa	0.12	0.91	1.76	0.99
Swartzia madagascariensis	0.09	0.68	0.88	0.50
Terminalia brachystemma	0.21	1.59	2.35	1.32
Terminalia sericea	0.18	1.37	2.35	1.32
Uapaca nitida	0.06	0.46	0.88	0.50
Vachellia sp	0.06	0.46	1.18	0.66
Vangueria infausta	0.21	1.59	2.94	1.65
vangueriopsis lanciflora	0.24	1.82	2.94	1.65
Vitex doniana	0.15	1.14	1.76	0.99
Vitex payos	0.06	0.46	0.88	0.50
Ximenia americana	0.03	0.23	0.29	0.17
Zanha africana	0.09	0.68	1.18	0.66

SC_Fallow				
Species	**Af**	**Raf**	**Ad**	**Rad**
Afrocanthium racemulosum	0.08	0.48	0.83	0.30
Albizia sp	0.67	3.80	10.00	3.60
Allophylus africanus	0.04	0.24	0.42	0.15
Annona senegalensis	0.08	0.48	1.67	0.60
Antidesma venosum	0.04	0.24	0.83	0.30
Bauhinia tomentosa	0.08	0.48	0.83	0.30
Brachystegia boehmii	0.83	4.75	13.33	4.80
Brachystegia spiciformis	0.63	3.56	9.17	3.30
Bridelia micrantha	0.25	1.43	3.75	1.35
Burkea africana	0.42	2.38	7.08	2.55
Cassine aethiopicum	0.08	0.48	1.67	0.60
Catunaregam spinosa	0.38	2.14	7.08	2.55
Combretum apiculatum	0.04	0.24	0.83	0.30
Combretum collinum	0.13	0.71	1.67	0.60

Combretum molle	0.33	1.90	5.42	1.95
Combretum psidioides	0.33	1.90	5.83	2.10
Combretum umbricola	0.13	0.71	1.67	0.60
Combretum zeyheri	0.17	0.95	2.50	0.90
Crossopteryx febrifuga	0.08	0.48	1.67	0.60
Dichrostachys cinerea	0.50	2.85	6.25	2.25
Diospirus cf kirkii	0.29	1.66	5.00	1.80
Diospyros loureiriana	0.08	0.48	1.67	0.60
Diplorhynchus condylocarpon	0.79	4.51	11.67	4.20
Dirichletia sp	0.13	0.71	2.08	0.75
Elaeodendron buchananii	0.25	1.43	3.75	1.35
Elaeodendron matabelicum	0.17	0.95	2.92	1.05
Eugenia cf. natalitia	0.13	0.71	2.50	0.90
Faurea rochetiana	0.04	0.24	0.83	0.30
Flacourtia indica	0.75	4.28	10.83	3.90
Garcinia livingstonei	0.25	1.43	4.17	1.50
Gardenia volkensii	0.04	0.24	0.83	0.30
Hugonia orientalis	0.50	2.85	7.92	2.85
Hymenocardia acida	0.25	1.43	5.00	1.80
Julbernardia globiflora	0.79	4.51	11.25	4.05
Lannea discolor	0.13	0.71	2.50	0.90
Lannea schweinfurthii	0.42	2.38	5.83	2.10
Margaritaria discoidea	0.46	2.61	7.92	2.85
Monotes engleri	0.42	2.38	6.25	2.25
Mundulea sericea	0.21	1.19	2.50	0.90
Ochna leptoclada	0.13	0.71	2.50	0.90
Ochna natalitia	0.13	0.71	1.67	0.60
Olax dissitiflora	0.42	2.38	7.08	2.55
Ozoroa obovata	0.08	0.48	1.67	0.60
Parinari curatellifola	0.13	0.71	2.08	0.75
Pericopsis angolensis	0.17	0.95	2.92	1.05
Phyllanthus muellerianus	0.29	1.66	4.17	1.50
Piliostigma thonningii	0.13	0.71	1.67	0.60
Pseudolachnostylis maprouneifolia	0.58	3.33	9.58	3.45
Psorospermum febrifugum	0.08	0.48	1.25	0.45
Pteleopsis myrtifolia	0.38	2.14	6.25	2.25
Pterocarpus angolensis	0.42	2.38	6.25	2.25
Rothmannia engleriana	0.17	0.95	3.33	1.20
Rourea orientalis	0.46	2.61	7.50	2.70
Senna petersiana	0.13	0.71	2.08	0.75
Strychnos decussata	0.04	0.24	0.83	0.30

Strychnos madagascariensis	0.42	2.38	8.33	3.00
Strychnos sp	0.04	0.24	0.83	0.30
Strychnos spinosa	0.04	0.24	0.83	0.30
Swartzia madagascariensis	0.17	0.95	2.50	0.90
Syzygium cordatum	0.08	0.48	1.67	0.60
Terminalia brachystemma	0.13	0.71	2.50	0.90
Terminalia sericea	0.33	1.90	5.42	1.95
Uapaca nitida	0.13	0.71	2.08	0.75
Vachellia nilotica	0.13	0.71	1.25	0.45
Vachellia sp	0.33	1.90	3.75	1.35
Vangueria infausta	0.08	0.48	1.25	0.45
vangueriopsis lanciflora	0.25	1.43	3.33	1.20
Vitex doniana	0.13	0.71	2.08	0.75
Vitex payos	0.13	0.71	1.67	0.60
Ximenia americana	0.04	0.24	0.83	0.30
Zanha africana	0.04	0.24	0.42	0.15

SC_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Afrocanthium racemulosum	0.12	0.69	3.20	1.17
Albizia sp	0.68	3.89	10.00	3.66
Annona senegalensis	0.04	0.23	0.40	0.15
Bauhinia tomentosa	0.12	0.69	1.20	0.44
Brachystegia boehmii	0.88	5.03	11.60	4.25
Brachystegia manga	0.04	0.23	0.40	0.15
Brachystegia spiciformis	0.64	3.66	10.00	3.66
Bridelia micrantha	0.12	0.69	2.00	0.73
Burkea africana	0.40	2.29	5.60	2.05
Cassine aethiopicum	0.32	1.83	4.80	1.76
Catunaregam spinosa	0.56	3.20	8.40	3.07
Combretum apiculatum	0.16	0.92	2.40	0.88
Combretum collinum	0.04	0.23	0.40	0.15
Combretum molle	0.32	1.83	5.20	1.90
Combretum psidioides	0.24	1.37	3.60	1.32
Combretum umbricola	0.08	0.46	1.60	0.59
Combretum zeyheri	0.40	2.29	6.00	2.20
Dichrostachys cinerea	0.28	1.60	4.40	1.61
Diospirus cf kirkii	0.36	2.06	4.40	1.61
Diplorhynchus condylocarpon	0.84	4.81	12.00	4.39
Dirichletia sp	0.08	0.46	1.20	0.44
Elaeodendron buchananii	0.44	2.52	7.20	2.64

Elaeodendron matabelicum	0.32	1.83	6.00	2.20
Eugenia cf. natalitia	0.32	1.83	5.20	1.90
Flacourtia indica	0.40	2.29	6.40	2.34
Garcinia livingstonei	0.28	1.60	4.80	1.76
Gardenia sp	0.04	0.23	0.80	0.29
Gardenia volkensii	0.12	0.69	2.00	0.73
Gymnosporia heterophylla	0.12	0.69	2.40	0.88
Hugonia orientalis	0.44	2.52	7.60	2.78
Hymenocardia acida	0.40	2.29	5.60	2.05
Julbernardia globiflora	0.96	5.49	13.60	4.98
Lannea discolor	0.08	0.46	1.20	0.44
Lannea schweinfurthii	0.32	1.83	5.20	1.90
Margaritaria discoidea	0.20	1.14	4.00	1.46
Monotes engleri	0.32	1.83	4.80	1.76
Mundulea sericea	0.12	0.69	1.60	0.59
Ochna leptoclada	0.20	1.14	3.60	1.32
Ochna natalitia	0.12	0.69	2.40	0.88
Olax dissitiflora	0.44	2.52	10.00	3.66
Ozoroa obovata	0.12	0.69	2.40	0.88
Parinari curatellifola	0.40	2.29	7.20	2.64
Pericopsis angolensis	0.04	0.23	0.40	0.15
Phyllanthus muellerianus	0.16	0.92	2.40	0.88
Piliostigma thonningii	0.08	0.46	1.20	0.44
Protea angolensis	0.12	0.69	1.60	0.59
Pseudolachnostylis maprouneifolia	0.36	2.06	5.20	1.90
Psorospermum febrifugum	0.20	1.14	3.60	1.32
Pteleopsis myrtifolia	0.24	1.37	4.00	1.46
Pterocarpus angolensis	0.32	1.83	4.40	1.61
Rothmannia engleriana	0.16	0.92	3.20	1.17
Rourea orientalis	0.24	1.37	3.60	1.32
Securidaca longepedunculata	0.08	0.46	1.60	0.59
Steganotaenia araliacea	0.16	0.92	2.40	0.88
Strychnos decussata	0.04	0.23	0.80	0.29
Strychnos madagascariensis	0.60	3.43	10.40	3.81
Strychnos spinosa	0.20	1.14	3.60	1.32
Syzygium cordatum	0.04	0.23	0.80	0.29
Terminalia brachystemma	0.16	0.92	1.60	0.59
Terminalia sericea	0.28	1.60	4.00	1.46
Uapaca nitida	0.12	0.69	2.40	0.88
Vachellia sp	0.12	0.69	1.20	0.44
Vangueria infausta	0.12	0.69	2.00	0.73

vangueriopsis lanciflora	0.08	0.46	0.80	0.29
Vitex doniana	0.24	1.37	3.20	1.17
Vitex payos	0.04	0.23	0.40	0.15
Ximenia americana	0.36	2.06	4.80	1.76
Zanha africana	0.04	0.23	0.80	0.29

c. Forest

Forest adult trees

NM_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.20	2.36	2.00	2.36
Albizia sp	0.20	2.36	2.00	2.36
Baphia massaiensis	0.04	0.47	0.40	0.47
Boscia mossambicensis	0.04	0.47	0.40	0.47
Brachystegia boehmii	0.84	9.91	8.40	9.91
Brachystegia bussei	0.08	0.94	0.80	0.94
Brachystegia spiciformis	0.96	11.32	9.60	11.32
Bridelia micrantha	0.08	0.94	0.80	0.94
Burkea africana	0.44	5.19	4.40	5.19
Cassia abbreviata	0.04	0.47	0.40	0.47
Cassine aethiopicum	0.04	0.47	0.40	0.47
Combretum apiculatum	0.04	0.47	0.40	0.47
Combretum molle	0.20	2.36	2.00	2.36
Combretum sp.	0.04	0.47	0.40	0.47
Combretum umbricola	0.04	0.47	0.40	0.47
Combretum zeyheri	0.28	3.30	2.80	3.30
Diospyros kirkii	0.04	0.47	0.40	0.47
Diospyros mespiliformis	0.08	0.94	0.80	0.94
Diospyros sp	0.04	0.47	0.40	0.47
Diplorhynchus condylocarpon	0.80	9.43	8.00	9.43
Elaeodendron matabelicum	0.12	1.42	1.20	1.42
Eugenia cf. natalitia	0.04	0.47	0.40	0.47
Faurea rochetiana	0.16	1.89	1.60	1.89
Gardenia sp	0.04	0.47	0.40	0.47
Hymenocardia acida	0.04	0.47	0.40	0.47
Julbernardia globiflora	0.72	8.49	7.20	8.49
Lannea schweinfurthii	0.12	1.42	1.20	1.42
Monotes engleri	0.20	2.36	2.00	2.36
Ochna leptoclada	0.04	0.47	0.40	0.47
Olax dissitiflora	0.04	0.47	0.40	0.47

Parinari curatellifola	0.16	1.89	1.60	1.89
Pericopsis angolensis	0.28	3.30	2.80	3.30
Philenoptera violacea	0.04	0.47	0.40	0.47
Pseudolachnostylis maprouneifolia	0.44	5.19	4.40	5.19
Pteleopsis myrtifolia	0.12	1.42	1.20	1.42
Pterocarpus angolensis	0.24	2.83	2.40	2.83
Rourea orientalis	0.16	1.89	1.60	1.89
Strychnos madagascariensis	0.24	2.83	2.40	2.83
Syzygium cordatum	0.12	1.42	1.20	1.42
Terminalia brachystemma	0.20	2.36	2.00	2.36
Uapaca kirkiana	0.12	1.42	1.20	1.42
Uapaca nitida	0.24	2.83	2.40	2.83
Ximenia americana	0.08	0.94	0.80	0.94

SC_Forest				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.52	5.83	7.20	5.49
Bauhinia tomentosa	0.04	0.45	0.40	0.30
Brachystegia boehmii	0.76	8.52	9.60	7.32
Brachystegia bussei	0.04	0.45	0.80	0.61
Brachystegia manga	0.12	1.35	1.60	1.22
Brachystegia spiciformis	0.72	8.07	11.60	8.84
Bridelia micrantha	0.04	0.45	0.80	0.61
Burkea africana	0.52	5.83	7.60	5.79
Cassine aethiopicum	0.04	0.45	0.40	0.30
Catunaregam spinosa	0.04	0.45	0.40	0.30
Combretum apiculatum	0.20	2.24	3.20	2.44
Combretum molle	0.16	1.79	2.80	2.13
Combretum umbricola	0.08	0.90	1.20	0.91
Combretum zeyheri	0.16	1.79	2.00	1.52
Dichrostachys cinerea	0.04	0.45	0.40	0.30
Diospyros kirkii	0.20	2.24	2.00	1.52
Diplorhynchus condylocarpon	0.52	5.83	7.20	5.49
Elaeodendron buchananii	0.04	0.45	0.40	0.30
Elaeodendron matabelicum	0.12	1.35	2.40	1.83
Eugenia cf. natalitia	0.12	1.35	2.40	1.83
Faurea rochetiana	0.08	0.90	1.20	0.91
Hymenocardia acida	0.16	1.79	2.80	2.13
Julbernardia globiflora	0.76	8.52	10.80	8.23
Lannea schweinfurthii	0.08	0.90	0.80	0.61
Monotes engleri	0.32	3.59	5.20	3.96

Ochna leptoclada	0.08	0.90	1.20	0.91
Olax dissitiflora	0.28	3.14	4.00	3.05
Parinari curatellifola	0.28	3.14	5.20	3.96
Pericopsis angolensis	0.28	3.14	4.00	3.05
Philenoptera violacea	0.04	0.45	0.40	0.30
Phyllanthus muellerianus	0.04	0.45	0.80	0.61
Piliostigma thonningii	0.08	0.90	1.20	0.91
Pseudolachnostylis maprouneifolia	0.52	5.83	7.60	5.79
Pteleopsis myrtifolia	0.16	1.79	2.40	1.83
Pterocarpus angolensis	0.28	3.14	4.80	3.66
Rourea orientalis	0.04	0.45	0.80	0.61
Strychnos madagascariensis	0.32	3.59	5.20	3.96
Swartzia madagascariensis	0.08	0.90	0.80	0.61
Syzygium cordatum	0.04	0.45	0.80	0.61
Tamarindus indica	0.04	0.45	0.40	0.30
Terminalia brachystemma	0.04	0.45	0.80	0.61
Terminalia sericea	0.08	0.90	1.20	0.91
Uapaca nitida	0.12	1.35	2.00	1.52
Vachellia sp	0.12	1.35	1.20	0.91
Vitex doniana	0.04	0.45	0.40	0.30
Vitex payos	0.04	0.45	0.40	0.30
Ximenia americana	0.04	0.45	0.40	0.30

Forest regeneration trees

NM_Forest				
Sepecies	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.16	0.88	1.60	0.87
Afrocanthium racemulosum	0.08	0.44	0.80	0.43
Albizia sp	0.40	2.19	4.40	2.39
Balanites maughamii	0.12	0.66	1.20	0.65
Baphia massaiensis	0.52	2.85	5.20	2.82
Bauhinia tomentosa	0.08	0.44	0.80	0.43
Brachystegia boehmii	0.64	3.51	6.40	3.47
Brachystegia manga	0.16	0.88	1.60	0.87
Brachystegia spiciformis	0.88	4.82	8.80	4.77
Bredelia sp	0.04	0.22	0.40	0.22
Bridelia micrantha	0.36	1.97	3.60	1.95
Burkea africana	0.40	2.19	4.00	2.17
Cassine aethiopicum	0.16	0.88	1.60	0.87
Catunaregam spinosa	0.56	3.07	6.40	3.47

Combretum apiculatum	0.20	1.10	2.00	1.08
Combretum molle	0.40	2.19	4.00	2.17
Combretum psidioides	0.08	0.44	0.80	0.43
Combretum sp	0.08	0.44	0.80	0.43
Combretum umbricola	0.04	0.22	0.40	0.22
Combretum zeyheri	0.32	1.75	3.20	1.74
Crossopteryx febrifuga	0.08	0.44	0.80	0.43
Cussonia sp	0.04	0.22	0.40	0.22
Dichrostachys cinerea	0.04	0.22	0.40	0.22
Dicliptera sp	0.04	0.22	0.40	0.22
Diospirus cf kirkii	0.32	1.75	3.20	1.74
Diospyros galpinii	0.20	1.10	2.00	1.08
Diospyros loureiriana	0.08	0.44	0.80	0.43
Diospyros sp	0.20	1.10	2.00	1.08
Diplorhynchus condylocarpon	0.84	4.61	8.40	4.56
Dirichletia sp	0.12	0.66	1.20	0.65
Drypetes sp	0.04	0.22	0.40	0.22
Ehretia amoena	0.04	0.22	0.40	0.22
Elaeodendron buchananii	0.24	1.32	2.40	1.30
Elaeodendron matabelicum	0.44	2.41	4.40	2.39
Eliadendro sp	0.24	1.32	2.80	1.52
Euclea schimperi	0.04	0.22	0.40	0.22
Eugenia cf. natalitia	0.16	0.88	1.60	0.87
Fabaceae	0.12	0.66	1.20	0.65
Faurea rochetiana	0.08	0.44	0.80	0.43
Flacourtia indica	0.40	2.19	4.00	2.17
Garcinia livingstonei	0.32	1.75	3.20	1.74
Gardenia sp	0.08	0.44	0.80	0.43
Gardenia volkensii	0.12	0.66	1.20	0.65
Gymnosporia heterophylla	0.04	0.22	0.40	0.22
Hugonia orientalis	0.48	2.63	4.80	2.60
Hymenocardia acida	0.20	1.10	2.00	1.08
Julbernardia globiflora	0.64	3.51	6.40	3.47
Landolphia parvifolia	0.44	2.41	4.40	2.39
Lannea schweinfurthii	0.44	2.41	4.40	2.39
Margaritaria discoidea	0.24	1.32	2.40	1.30
Monotes engleri	0.28	1.54	2.80	1.52
Mundulea sericea	0.08	0.44	0.80	0.43
Ochna leptoclada	0.12	0.66	1.20	0.65
Ochna natalitia	0.24	1.32	2.40	1.30
Olax dissitiflora	0.36	1.97	3.60	1.95

Ormocarpum kirkii	0.08	0.44	0.80	0.43
Parinari curatellifola	0.20	1.10	2.00	1.08
Pericopsis angolensis	0.12	0.66	1.20	0.65
Philenoptera violacea	0.04	0.22	0.40	0.22
Phyllanthus muellerianus	0.08	0.44	0.80	0.43
phyllanthus sp	0.04	0.22	0.40	0.22
Protea angolensis	0.20	1.10	2.00	1.08
protea sp	0.04	0.22	0.40	0.22
Pseudolachnostylis maprouneifolia	0.48	2.63	4.80	2.60
Pteleopsis myrtifolia	0.24	1.32	2.40	1.30
Pterocarpus angolensis	0.28	1.54	2.80	1.52
Rhus dentata	0.04	0.22	0.40	0.22
Rothmannia engleriana	0.08	0.44	0.80	0.43
Rourea orientalis	0.56	3.07	6.00	3.25
Steganotaenia araliacea	0.16	0.88	1.60	0.87
Strychnos madagascariensis	0.36	1.97	3.60	1.95
Strychnos spinosa	0.04	0.22	0.40	0.22
Syzygium cordatum	0.12	0.66	1.20	0.65
Terminalia brachystemma	0.24	1.32	2.40	1.30
Terminalia sericea	0.04	0.22	0.40	0.22
Uapaca kirkiana	0.08	0.44	0.80	0.43
Uapaca nitida	0.12	0.66	1.20	0.65
Uvaria lucida	0.44	2.41	4.40	2.39
Vangueria infausta	0.08	0.44	0.80	0.43
Vangueriopsis lanciflora	0.08	0.44	0.80	0.43
Vitex doniana	0.08	0.44	0.80	0.43
Ximenia americana	0.40	2.19	4.00	2.17

SC_Forest				
Sepecies	**Af**	**Raf**	**Ad**	**Rad**
Afrocanthium racemulosum	0.12	0.69	3.20	1.17
Albizia sp	0.68	3.89	10.00	3.66
Annona senegalensis	0.04	0.23	0.40	0.15
Bauhinia tomentosa	0.12	0.69	1.20	0.44
Brachystegia boehmii	0.88	5.03	11.60	4.25
Brachystegia manga	0.04	0.23	0.40	0.15
Brachystegia spiciformis	0.64	3.66	10.00	3.66
Bridelia micrantha	0.12	0.69	2.00	0.73
Burkea africana	0.40	2.29	5.60	2.05
Cassine aethiopicum	0.32	1.83	4.80	1.76
Catunaregam spinosa	0.56	3.20	8.40	3.07

Combretum apiculatum	0.16	0.92	2.40	0.88
Combretum collinum	0.04	0.23	0.40	0.15
Combretum molle	0.32	1.83	5.20	1.90
Combretum psidioides	0.24	1.37	3.60	1.32
Combretum umbricola	0.08	0.46	1.60	0.59
Combretum zeyheri	0.40	2.29	6.00	2.20
Dichrostachys cinerea	0.28	1.60	4.40	1.61
Diospirus cf kirkii	0.36	2.06	4.40	1.61
Diplorhynchus condylocarpon	0.84	4.81	12.00	4.39
Dirichletia sp	0.08	0.46	1.20	0.44
Elaeodendron buchananii	0.44	2.52	7.20	2.64
Elaeodendron matabelicum	0.32	1.83	6.00	2.20
Eugenia cf. natalitia	0.32	1.83	5.20	1.90
Flacourtia indica	0.40	2.29	6.40	2.34
Garcinia livingstonei	0.28	1.60	4.80	1.76
Gardenia sp	0.04	0.23	0.80	0.29
Gardenia volkensii	0.12	0.69	2.00	0.73
Gymnosporia heterophylla	0.12	0.69	2.40	0.88
Hugonia orientalis	0.44	2.52	7.60	2.78
Hymenocardia acida	0.40	2.29	5.60	2.05
Julbernardia globiflora	0.96	5.49	13.60	4.98
Lannea discolor	0.08	0.46	1.20	0.44
Lannea schweinfurthii	0.32	1.83	5.20	1.90
Margaritaria discoidea	0.20	1.14	4.00	1.46
Monotes engleri	0.32	1.83	4.80	1.76
Mundulea sericea	0.12	0.69	1.60	0.59
Ochna leptoclada	0.20	1.14	3.60	1.32
Ochna natalitia	0.12	0.69	2.40	0.88
Olax dissitiflora	0.44	2.52	10.00	3.66
Ozoroa obovata	0.12	0.69	2.40	0.88
Parinari curatellifola	0.40	2.29	7.20	2.64
Pericopsis angolensis	0.04	0.23	0.40	0.15
Phyllanthus muellerianus	0.16	0.92	2.40	0.88
Piliostigma thonningii	0.08	0.46	1.20	0.44
Protea angolensis	0.12	0.69	1.60	0.59
Pseudolachnostylis maprouneifolia	0.36	2.06	5.20	1.90
Psorospermum febrifugum	0.20	1.14	3.60	1.32
Pteleopsis myrtifolia	0.24	1.37	4.00	1.46
Pterocarpus angolensis	0.32	1.83	4.40	1.61
Rothmannia engleriana	0.16	0.92	3.20	1.17
Rourea orientalis	0.24	1.37	3.60	1.32

Securidaca longepedunculata	0.08	0.46	1.60	0.59
Steganotaenia araliacea	0.16	0.92	2.40	0.88
Strychnos decussata	0.04	0.23	0.80	0.29
Strychnos madagascariensis	0.60	3.43	10.40	3.81
Strychnos spinosa	0.20	1.14	3.60	1.32
Syzygium cordatum	0.04	0.23	0.80	0.29
Terminalia brachystemma	0.16	0.92	1.60	0.59
Terminalia sericea	0.28	1.60	4.00	1.46
Uapaca nitida	0.12	0.69	2.40	0.88
Vachellia sp	0.12	0.69	1.20	0.44
Vangueria infausta	0.12	0.69	2.00	0.73
Vangueriopsis lanciflora	0.08	0.46	0.80	0.29
Vitex doniana	0.24	1.37	3.20	1.17
Vitex payos	0.04	0.23	0.40	0.15
Ximenia americana	0.36	2.06	4.80	1.76
Zanha africana	0.04	0.23	0.80	0.29

d. Cropland

Regeneration

NM_Cropland				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.07	0.44	0.74	0.43
Afrocanthium racemulosum	0.11	0.66	1.11	0.65
Afzelia quanzensis	0.04	0.22	0.37	0.22
Albizia adiantifolia	0.04	0.22	0.37	0.22
Albizia sp	0.37	2.20	3.70	2.17
Annona senegalensis	0.15	0.88	1.48	0.87
Baphia massaiensis	0.11	0.66	1.11	0.65
Bauhinia petersiana	0.04	0.22	0.37	0.22
Bauhinia tomentosa	0.04	0.22	0.37	0.22
Boscia mossambicensis	0.41	2.42	4.07	2.39
Boscia salicifolia	0.07	0.44	0.74	0.43
Brachystegia boehmii	0.41	2.42	4.07	2.39
Brachystegia manga	0.04	0.22	0.37	0.22
Brachystegia spiciformis	0.67	3.96	6.67	3.90
Bridelia micrantha	0.26	1.54	2.59	1.52
Burkea africana	0.56	3.30	5.56	3.25
Catunaregam spinosa	0.33	1.98	3.33	1.95
Combretum apiculatum	0.11	0.66	1.11	0.65

Combretum molle	0.44	2.64	4.44	2.60
Combretum psidioides	0.04	0.22	0.37	0.22
Combretum zeyheri	0.48	2.86	4.81	2.82
Crossopteryx febrifuga	0.15	0.88	1.48	0.87
Cussonia sp	0.22	1.32	2.22	1.30
Dichrostachys cinerea	0.07	0.44	0.74	0.43
Dicliptera sp	0.04	0.22	0.37	0.22
Diospirus cf kirkii	0.07	0.44	0.74	0.43
Diospyros galpinii	0.26	1.54	2.59	1.52
Diospyros loureiriana	0.04	0.22	0.37	0.22
Diospyros sp	0.07	0.44	0.74	0.43
Diospyros usambarensis	0.44	2.64	4.44	2.60
Diplorhynchus condylocarpon	0.85	5.05	8.52	4.99
Ehretia amoena	0.07	0.44	0.74	0.43
Elaeodendron buchananii	0.11	0.66	1.11	0.65
Elaeodendron matabelicum	0.33	1.98	3.70	2.17
Eliadendro sp	0.37	2.20	3.70	2.17
Euclea natalensis	0.11	0.66	1.11	0.65
Euclea schimperi	0.04	0.22	0.37	0.22
Eugenia cf. natalitia	0.19	1.10	1.85	1.08
Fabaceae	0.26	1.54	2.59	1.52
Ficus sp	0.04	0.22	0.37	0.22
Flacourtia indica	0.63	3.74	6.67	3.90
Flacourtiaceae	0.15	0.88	1.48	0.87
Garcinia livingstonei	0.33	1.98	3.33	1.95
Gardenia sp	0.04	0.22	0.37	0.22
Gardenia volkensii	0.11	0.66	1.11	0.65
Hugonia orientalis	0.59	3.52	5.93	3.47
Hymenocardia acida	0.11	0.66	1.11	0.65
Julbernardia globiflora	0.19	1.10	1.85	1.08
Landolphia parvifolia	0.33	1.98	3.70	2.17
Lannea discolor	0.04	0.22	0.37	0.22
Margaritaria discoidea	0.56	3.30	5.56	3.25
Markhamia zanzibarica	0.11	0.66	1.48	0.87
Myrtaceae	0.07	0.44	0.74	0.43
Ochna leptoclada	0.30	1.76	2.96	1.74
Ochna natalitia	0.30	1.76	3.33	1.95
Olax dissitiflora	0.04	0.22	0.37	0.22
Ormocarpum kirkii	0.04	0.22	0.37	0.22
Oxnimatera sp	0.04	0.22	0.37	0.22
Ozoroa obovata	0.15	0.88	1.48	0.87

Parinari curatellifola	0.19	1.10	1.85	1.08
Parqueia	0.04	0.22	0.37	0.22
Pericopsis angolensis	0.19	1.10	1.85	1.08
Philenoptera violacea	0.04	0.22	0.37	0.22
Phyllanthus muellerianus	0.22	1.32	2.22	1.30
Phyllanthus reticulatus	0.04	0.22	0.37	0.22
phyllanthus sp	0.19	1.10	1.85	1.08
Piliostigma thonningii	0.04	0.22	0.37	0.22
Prespermum febrifuga	0.30	1.76	2.96	1.74
Pseudolachnostylis maprouneifolia	0.19	1.10	1.85	1.08
Pteleopsis myrtifolia	0.15	0.88	1.48	0.87
Pterocarpus angolensis	0.26	1.54	2.59	1.52
Rhus dentata	0.07	0.44	0.74	0.43
Rothmannia engleriana	0.04	0.22	0.37	0.22
Rourea orientalis	0.26	1.54	2.59	1.52
Rubiaceae	0.11	0.66	1.11	0.65
Securidaca longepedunculata	0.04	0.22	0.37	0.22
Senna petersiana	0.15	0.88	1.48	0.87
Steganotaenia araliacea	0.04	0.22	0.37	0.22
Strychnos decussata	0.07	0.44	0.74	0.43
Strychnos madagascariensis	0.26	1.54	2.59	1.52
Strychnos spinosa	0.11	0.66	1.11	0.65
Terminalia brachystemma	0.04	0.22	0.37	0.22
Terminalia sericea	0.07	0.44	0.74	0.43
Trycalisca sp	0.04	0.22	0.37	0.22
Uapaca nitida	0.19	1.10	1.85	1.08
Uvaria lucida	0.30	1.76	2.96	1.74
Vangueira sp	0.04	0.22	0.37	0.22
Vangueria infausta	0.15	0.88	1.85	1.08
Vangueriopsis lanciflora	0.04	0.22	0.37	0.22
Vitex doniana	0.04	0.22	0.37	0.22
Ximenia americana	0.15	0.88	1.48	0.87
Zanha africana	0.19	1.10	1.85	1.08
Ziziphus abyssinica	0.04	0.22	0.37	0.22

SC_Cropland				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia nilotica	0.03	0.23	0.29	0.17
Acacia sp	0.03	0.23	0.29	0.17
Afrocanthium racemulosum	0.03	0.23	0.29	0.17
Albizia sp	0.29	2.28	3.53	1.98

Albizia versicolor	0.06	0.46	0.59	0.33
Allophylus africanus	0.09	0.68	0.88	0.50
Annona senegalensis	0.06	0.46	0.59	0.33
Antidesma venosum	0.06	0.46	0.88	0.50
Bauhinia petersiana	0.03	0.23	0.29	0.17
Boscia mossambicensis	0.09	0.68	0.88	0.50
Brachystegia boehmii	0.59	4.56	8.24	4.63
Brachystegia bussei	0.06	0.46	0.88	0.50
Brachystegia manga	0.03	0.23	0.29	0.17
Brachystegia spiciformis	0.50	3.87	7.35	4.13
Bridelia micrantha	0.12	0.91	1.18	0.66
Burkea africana	0.41	3.19	5.88	3.31
Cassine aethiopicum	0.06	0.46	0.88	0.50
Catunaregam spinosa	0.41	3.19	6.18	3.47
Combretum apiculatum	0.03	0.23	0.29	0.17
Combretum molle	0.12	0.91	1.47	0.83
Combretum paniculatum	0.06	0.46	0.59	0.33
Combretum psidioides	0.15	1.14	1.76	0.99
Combretum sp	0.06	0.46	0.59	0.33
Combretum umbricola	0.15	1.14	2.06	1.16
Combretum zeyheri	0.12	0.91	2.06	1.16
Crossopteryx febrifuga	0.06	0.46	0.88	0.50
Dalbergia melanoxylon	0.03	0.23	0.29	0.17
Dichrostachys cinerea	0.41	3.19	5.59	3.14
Diospirus cf kirkii	0.24	1.82	2.94	1.65
Diospyros loureiriana	0.21	1.59	3.53	1.98
Diospyros usambarensis	0.09	0.68	0.88	0.50
Diplorhynchus condylocarpon	0.62	4.78	8.53	4.79
Dirichletia sp	0.03	0.23	0.29	0.17
Elaeodendron buchananii	0.15	1.14	2.35	1.32
Elaeodendron matabelicum	0.12	0.91	2.35	1.32
Eugenia cf. natalitia	0.21	1.59	2.94	1.65
Flacourtia indica	0.32	2.51	4.71	2.64
Flacourtiaceae	0.03	0.23	0.29	0.17
Garcinia livingstonei	0.15	1.14	2.06	1.16
Gardenia volkensii	0.03	0.23	0.29	0.17
Gymnosporia heterophylla	0.09	0.68	1.18	0.66
Hugonia orientalis	0.47	3.64	6.47	3.64
Hymenocardia acida	0.35	2.73	4.71	2.64
jatropha sp	0.03	0.23	0.29	0.17
Julbernardia globiflora	0.47	3.64	6.47	3.64

Kigelia africana	0.03	0.23	0.29	0.17
Lannea discolor	0.03	0.23	0.29	0.17
Lannea schweinfurthii	0.15	1.14	2.06	1.16
Margaritaria discoidea	0.35	2.73	5.00	2.81
Markhamia zanzibarica	0.09	0.68	1.47	0.83
Monotes engleri	0.18	1.37	2.94	1.65
Mundulea sericea	0.03	0.23	0.29	0.17
Myrtaceae	0.03	0.23	0.29	0.17
Ochna leptoclada	0.06	0.46	0.88	0.50
Ochna natalitia	0.21	1.59	2.94	1.65
Olax dissitiflora	0.12	0.91	2.06	1.16
Ozoroa obovata	0.03	0.23	0.59	0.33
Parinari curatellifola	0.09	0.68	1.18	0.66
Pericopsis angolensis	0.12	0.91	1.18	0.66
Philenoptera violacea	0.12	0.91	1.47	0.83
Phyllanthus muellerianus	0.06	0.46	0.88	0.50
Phyllanthus reticulatus	0.18	1.37	2.65	1.49
Piliostigma thonningii	0.06	0.46	0.88	0.50
Protea angolensis	0.06	0.46	0.59	0.33
Pseudolachnostylis maprouneifolia	0.21	1.59	3.24	1.82
Psorospermum febrifugum	0.15	1.14	2.06	1.16
Pteleopsis myrtifolia	0.24	1.82	3.24	1.82
Pterocarpus angolensis	0.35	2.73	4.71	2.64
Rourea orientalis	0.32	2.51	5.00	2.81
Securidaca longepedunculata	0.03	0.23	0.29	0.17
Senna petersiana	0.03	0.23	0.29	0.17
Steganotaenia araliacea	0.09	0.68	1.18	0.66
Strychnos decussata	0.03	0.23	0.59	0.33
Strychnos madagascariensis	0.32	2.51	4.71	2.64
Strychnos spinosa	0.12	0.91	1.76	0.99
Swartzia madagascariensis	0.09	0.68	0.88	0.50
Terminalia brachystemma	0.21	1.59	2.35	1.32
Terminalia sericea	0.18	1.37	2.35	1.32
Uapaca nitida	0.06	0.46	0.88	0.50
Vachellia sp	0.06	0.46	1.18	0.66
Vangueria infausta	0.21	1.59	2.94	1.65
Vangueriopsis lanciflora	0.24	1.82	2.94	1.65
Vitex doniana	0.15	1.14	1.76	0.99
Vitex payos	0.06	0.46	0.88	0.50
Ximenia americana	0.03	0.23	0.29	0.17
Zanha africana	0.09	0.68	1.18	0.66

e. Fallow

Fallow adult trees

NM_Fallow_11_25				
Species	**Af**	**Raf**	**Ad**	**Rad**
Baphia massaiensis	0.17	5.56	1.67	5.56
Brachystegia boehmii	0.17	5.56	1.67	5.56
Brachystegia spiciformis	0.33	11.11	3.33	11.11
Combretum sp.	0.17	5.56	1.67	5.56
Combretum zeyheri	0.33	11.11	3.33	11.11
Diplorhynchus condylocarpon	0.50	16.67	5.00	16.67
Elaeodendron matabelicum	0.17	5.56	1.67	5.56
Julbernardia globiflora	0.17	5.56	1.67	5.56
Lannea schweinfurthii	0.17	5.56	1.67	5.56
Monotes engleri	0.17	5.56	1.67	5.56
Ochna natalitia	0.17	5.56	1.67	5.56
Parinari curatellifola	0.17	5.56	1.67	5.56
Pterocarpus angolensis	0.17	5.56	1.67	5.56
Uapaca nitida	0.17	5.56	1.67	5.56

NM_Fallow_5_10				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.23	6.67	2.31	6.67
Annona senegalensis	0.15	4.44	1.54	4.44
Baphia massaiensis	0.15	4.44	1.54	4.44
Brachystegia boehmii	0.31	8.89	3.08	8.89
Brachystegia manga	0.08	2.22	0.77	2.22
Brachystegia spiciformis	0.46	13.33	4.62	13.33
Bridelia micrantha	0.08	2.22	0.77	2.22
Burkea africana	0.15	4.44	1.54	4.44
Combretum apiculatum	0.08	2.22	0.77	2.22
Combretum molle	0.08	2.22	0.77	2.22
Combretum umbricola	0.08	2.22	0.77	2.22
Combretum zeyheri	0.23	6.67	2.31	6.67
Crossopteryx febrifuga	0.15	4.44	1.54	4.44
Diplorhynchus condylocarpon	0.38	11.11	3.85	11.11
Julbernardia globiflora	0.15	4.44	1.54	4.44
Lannea schweinfurthii	0.08	2.22	0.77	2.22
Mangifera indica	0.08	2.22	0.77	2.22
Margaritaria discoidea	0.08	2.22	0.77	2.22

Parinari curatellifola	0.15	4.44	1.54	4.44
Pseudolachnostylis maprouneifolia	0.08	2.22	0.77	2.22
Pteleopsis myrtifolia	0.15	4.44	1.54	4.44
Securidaca longepedunculata	0.08	2.22	0.77	2.22

SC_Fallow_1_4				
Species	**Af**	**Raf**	**Ad**	**Rad**
Brachystegia manga	0.25	8.33	2.50	8.33
Brachystegia spiciformis	0.25	8.33	2.50	8.33
Burkea africana	0.50	16.67	5.00	16.67
Diplorhynchus condylocarpon	0.25	8.33	2.50	8.33
Monotes engleri	0.25	8.33	2.50	8.33
Parinari curatellifola	0.25	8.33	2.50	8.33
Pericopsis angolensis	0.25	8.33	2.50	8.33
Philenoptera violacea	0.25	8.33	2.50	8.33
Pseudolachnostylis maprouneifolia	0.50	16.67	5.00	16.67
Terminalia brachystemma	0.25	8.33	2.50	8.33

SC_Fallow_11_25				
Species	**Af**	**Raf**	**Ad**	**Rad**
Brachystegia boehmii	0.50	12.50	5.00	10.71
Brachystegia manga	0.17	4.17	1.67	3.57
Brachystegia spiciformis	0.67	16.67	8.33	17.86
Burkea africana	0.33	8.33	5.00	10.71
Combretum apiculatum	0.33	8.33	3.33	7.14
Diospyros kirkii	0.17	4.17	1.67	3.57
Diplorhynchus condylocarpon	0.33	8.33	3.33	7.14
Julbernardia globiflora	0.17	4.17	1.67	3.57
Lannea discolor	0.17	4.17	3.33	7.14
Monotes engleri	0.17	4.17	1.67	3.57
Ozoroa obovata	0.17	4.17	3.33	7.14
Philenoptera violacea	0.33	8.33	3.33	7.14
Pterocarpus angolensis	0.17	4.17	1.67	3.57
Vitex payos	0.33	8.33	3.33	7.14

SC_Fallow_5_10				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.18	5.00	1.82	3.57
Albizia versicolor	0.09	2.50	0.91	1.79
Annona senegalensis	0.09	2.50	1.82	3.57
Boscia mossambicensis	0.09	2.50	0.91	1.79

Brachystegia boehmii	0.27	7.50	4.55	8.93
Brachystegia spiciformis	0.09	2.50	1.82	3.57
Burkea africana	0.09	2.50	1.82	3.57
Combretum collinum	0.09	2.50	1.82	3.57
Combretum molle	0.09	2.50	0.91	1.79
Combretum umbricola	0.18	5.00	1.82	3.57
Combretum zeyheri	0.09	2.50	1.82	3.57
Diospyros kirkii	0.09	2.50	0.91	1.79
Diplorhynchus condylocarpon	0.18	5.00	2.73	5.36
Julbernardia globiflora	0.27	7.50	3.64	7.14
Lannea discolor	0.09	2.50	1.82	3.57
Lannea schweinfurthii	0.09	2.50	0.91	1.79
Monotes engleri	0.09	2.50	0.91	1.79
Pericopsis angolensis	0.18	5.00	1.82	3.57
Philenoptera violacea	0.09	2.50	0.91	1.79
Piliostigma thonningii	0.09	2.50	0.91	1.79
Pseudolachnostylis maprouneifolia	0.09	2.50	0.91	1.79
Pteleopsis myrtifolia	0.36	10.00	4.55	8.93
Pterocarpus angolensis	0.27	7.50	4.55	8.93
Strychnos madagascariensis	0.09	2.50	0.91	1.79
Terminalia brachystemma	0.09	2.50	1.82	3.57
Terminalia sericea	0.09	2.50	1.82	3.57
Vitex payos	0.09	2.50	1.82	3.57

Fallow regeneration trees

NM_Fallow_1_4				
Species	**Af**	**Raf**	**Ad**	**Rad**
Acacia sp	0.20	2.13	2.00	2.08
Albizia sp	0.40	4.26	4.00	4.17
Brachystegia boehmii	0.80	8.51	10.00	10.42
Brachystegia spiciformis	0.40	4.26	4.00	4.17
Bridelia micrantha	0.20	2.13	2.00	2.08
Burkea africana	0.40	4.26	4.00	4.17
Catunaregam spinosa	0.40	4.26	4.00	4.17
Combretum molle	0.40	4.26	4.00	4.17
Combretum paniculatum	0.20	2.13	2.00	2.08
Combretum psidioides	0.20	2.13	2.00	2.08
Cussonia sp	0.20	2.13	2.00	2.08
Dichrostachys cinerea	0.40	4.26	4.00	4.17
Diospyros sp	0.20	2.13	2.00	2.08
Diospyros usambarensis	0.20	2.13	2.00	2.08

Diplorhynchus condylocarpon	0.40	4.26	4.00	4.17
Elaeodendron matabelicum	0.20	2.13	2.00	2.08
Eliadendro sp	0.20	2.13	2.00	2.08
Eugenia cf. natalitia	0.20	2.13	2.00	2.08
Ficus sycomorus	0.20	2.13	2.00	2.08
Flacourtia indica	0.20	2.13	2.00	2.08
Garcinia livingstonei	0.20	2.13	2.00	2.08
Gardenia volkensii	0.20	2.13	2.00	2.08
Hugonia orientalis	0.20	2.13	2.00	2.08
Hymenocardia acida	0.20	2.13	2.00	2.08
Julbernardia globiflora	0.20	2.13	2.00	2.08
Lannea schweinfurthii	0.20	2.13	2.00	2.08
Margaritaria discoidea	0.20	2.13	2.00	2.08
Ozoroa obovata	0.20	2.13	2.00	2.08
Pericopsis angolensis	0.20	2.13	2.00	2.08
Philenoptera violacea	0.20	2.13	2.00	2.08
Phyllanthus muellerianus	0.20	2.13	2.00	2.08
Pseudolachnostylis maprouneifolia	0.20	2.13	2.00	2.08
Rourea orientalis	0.20	2.13	2.00	2.08
Securidaca longepedunculata	0.20	2.13	2.00	2.08
Strychnos decussata	0.20	2.13	2.00	2.08
Strychnos madagascariensis	0.20	2.13	2.00	2.08
vangueriopsis lanciflora	0.20	2.13	2.00	2.08

NM_Fallow_11_25				
Species	**Af**	**Raf**	**Ad**	**Rad**
Afrocanthium racemulosum	0.25	1.14	2.50	1.12
Albizia sp	0.50	2.29	5.00	2.25
Allophylus africanus	0.13	0.57	2.50	1.12
Baphia massaiensis	0.13	0.57	1.25	0.56
Boscia mossambicensis	0.75	3.43	7.50	3.37
Brachystegia boehmii	0.75	3.43	7.50	3.37
Brachystegia manga	0.38	1.71	3.75	1.69
Brachystegia spiciformis	1.00	4.57	10.00	4.49
Bredelia sp	0.13	0.57	1.25	0.56
Bridelia micrantha	0.13	0.57	1.25	0.56
Burkea africana	0.63	2.86	6.25	2.81
Cassine aethiopicum	0.13	0.57	1.25	0.56
Catunaregam spinosa	0.25	1.14	2.50	1.12
Combretum apiculatum	0.25	1.14	2.50	1.12
Combretum molle	0.13	0.57	1.25	0.56

Combretum zeyheri	0.50	2.29	5.00	2.25
Dichrostachys cinerea	0.13	0.57	1.25	0.56
Dicliptera sp	0.25	1.14	2.50	1.12
Diospyros cf kirkii	0.13	0.57	1.25	0.56
Diospyros galpinii	0.25	1.14	2.50	1.12
Diospyros loureiriana	0.13	0.57	1.25	0.56
Diospyros sp	0.25	1.14	2.50	1.12
Diospyros squarrosa	0.13	0.57	1.25	0.56
Diospyros usambarensis	0.13	0.57	1.25	0.56
Diplorhynchus condylocarpon	0.75	3.43	7.50	3.37
Elaeodendron buchananii	0.25	1.14	2.50	1.12
Elaeodendron matabelicum	0.75	3.43	10.00	4.49
Eliadendro sp	0.63	2.86	6.25	2.81
Euphorbiaceae	0.13	0.57	1.25	0.56
Fabaceae	0.13	0.57	1.25	0.56
Faurea rochetiana	0.13	0.57	1.25	0.56
Flacourtia indica	0.63	2.86	6.25	2.81
Flacourtiaceae	0.25	1.14	2.50	1.12
Garcinia livingstonei	0.13	0.57	1.25	0.56
Gardenia volkensii	0.13	0.57	1.25	0.56
Hugonia orientalis	0.75	3.43	7.50	3.37
Hymenocardia acida	0.13	0.57	1.25	0.56
Julbernardia globiflora	0.88	4.00	8.75	3.93
Landolphia parvifolia	0.75	3.43	7.50	3.37
Lannea schweinfurthii	0.38	1.71	3.75	1.69
Margaritaria discoidea	0.75	3.43	7.50	3.37
Monotes engleri	0.50	2.29	5.00	2.25
Ochna leptoclada	0.13	0.57	1.25	0.56
Ochna natalitia	0.13	0.57	1.25	0.56
Ozoroa obovata	0.13	0.57	1.25	0.56
Parinari curatellifola	0.38	1.71	3.75	1.69
Pericopsis angolensis	0.50	2.29	5.00	2.25
Phyllanthus muellerianus	0.25	1.14	2.50	1.12
phyllanthus sp	0.13	0.57	1.25	0.56
Prespermum febrifuga	0.38	1.71	3.75	1.69
Pseudolachnostylis maprouneifolia	0.38	1.71	3.75	1.69
Psorospermum febrifugum	0.13	0.57	1.25	0.56
Pteleopsis myrtifolia	0.13	0.57	1.25	0.56
Pterocarpus angolensis	0.25	1.14	2.50	1.12
Rhus dentata	0.13	0.57	1.25	0.56
Rothmannia engleriana	0.13	0.57	1.25	0.56

Rourea orientalis	0.63	2.86	6.25	2.81
Securidaca longepedunculata	0.50	2.29	5.00	2.25
Senna petersiana	0.50	2.29	5.00	2.25
Strychnos decussata	0.13	0.57	1.25	0.56
Strychnos madagascariensis	0.13	0.57	1.25	0.56
Strychnos spinosa	0.13	0.57	1.25	0.56
Uapaca nitida	0.13	0.57	1.25	0.56
Uvaria lucida	0.13	0.57	1.25	0.56
Vangueria infausta	0.13	0.57	1.25	0.56
vangueriopsis lanciflora	0.25	1.14	2.50	1.12
Vitex doniana	0.13	0.57	1.25	0.56
Ximenia americana	0.13	0.57	1.25	0.56
Zanha africana	0.50	2.29	5.00	2.25

NM_Fallow_5_10

Species	Af	Raf	Ad	Rad
Afrocanthium racemulosum	0.17	0.94	1.67	0.93
Albizia sp	0.67	3.76	6.67	3.70
Allophylus africanus	0.17	0.94	1.67	0.93
Annona senegalensis	0.17	0.94	1.67	0.93
Balanites maughamii	0.08	0.47	0.83	0.46
Baphia massaiensis	0.17	0.94	1.67	0.93
Boscia mossambicensis	0.25	1.41	2.50	1.39
Brachystegia boehmii	0.75	4.23	7.50	4.17
Brachystegia manga	0.25	1.41	2.50	1.39
Brachystegia spiciformis	0.75	4.23	7.50	4.17
Bredelia sp	0.08	0.47	0.83	0.46
Bridelia micrantha	0.25	1.41	2.50	1.39
Burkea africana	0.83	4.69	8.33	4.63
Cassine aethiopicum	0.08	0.47	0.83	0.46
Catunaregam spinosa	0.17	0.94	1.67	0.93
Combretum apiculatum	0.08	0.47	0.83	0.46
Combretum molle	0.75	4.23	7.50	4.17
Combretum psidioides	0.08	0.47	0.83	0.46
Combretum sp	0.08	0.47	0.83	0.46
Combretum zeyheri	0.58	3.29	5.83	3.24
Cussonia sp	0.08	0.47	0.83	0.46
Dichrostachys cinerea	0.08	0.47	0.83	0.46
Dicliptera sp	0.17	0.94	1.67	0.93
Diospyros galpinii	0.08	0.47	0.83	0.46
Diospyros loureiriana	0.17	0.94	1.67	0.93

Diospyros sp	0.50	2.82	5.00	2.78
Diospyros squarrosa	0.17	0.94	1.67	0.93
Diospyros usambarensis	0.17	0.94	1.67	0.93
Diplorhynchus condylocarpon	0.50	2.82	5.00	2.78
Dirichletia sp	0.25	1.41	2.50	1.39
Ehretia sp	0.08	0.47	0.83	0.46
Elaeodendron buchananii	0.17	0.94	1.67	0.93
Elaeodendron matabelicum	0.25	1.41	2.50	1.39
Eliadendro sp	0.08	0.47	0.83	0.46
Euclea schimperi	0.08	0.47	0.83	0.46
Eugenia cf. natalitia	0.42	2.35	4.17	2.31
Flacourtia indica	0.42	2.35	5.83	3.24
Flacourtiaceae	0.17	0.94	1.67	0.93
Garcinia livingstonei	0.25	1.41	2.50	1.39
Gardenia sp	0.17	0.94	1.67	0.93
Hugonia orientalis	0.58	3.29	5.83	3.24
Julbernardia globiflora	0.75	4.23	7.50	4.17
Landolphia parvifolia	0.33	1.88	3.33	1.85
Lannea schweinfurthii	0.17	0.94	1.67	0.93
Margaritaria discoidea	0.67	3.76	6.67	3.70
Markhamia zanzibarica	0.08	0.47	0.83	0.46
Monotes engleri	0.08	0.47	0.83	0.46
Ochna leptoclada	0.08	0.47	0.83	0.46
Ochna natalitia	0.17	0.94	1.67	0.93
Olax dissitiflora	0.08	0.47	0.83	0.46
Ormocarpum kirkii	0.08	0.47	0.83	0.46
Ozoroa obovata	0.08	0.47	0.83	0.46
Parinari curatellifola	0.08	0.47	0.83	0.46
Pericopsis angolensis	0.17	0.94	1.67	0.93
Phyllanthus muellerianus	0.25	1.41	2.50	1.39
phyllanthus sp	0.08	0.47	0.83	0.46
Prespermum febrifuga	0.08	0.47	0.83	0.46
Pseudolachnostylis maprouneifolia	0.25	1.41	2.50	1.39
Psorospermum febrifugum	0.08	0.47	0.83	0.46
Pteleopsis myrtifolia	0.17	0.94	1.67	0.93
Pterocarpus angolensis	0.25	1.41	2.50	1.39
Rourea orientalis	0.42	2.35	5.00	2.78
Securidaca longepedunculata	0.17	0.94	1.67	0.93
Senna petersiana	0.08	0.47	0.83	0.46
Steganotaenia araliacea	0.25	1.41	2.50	1.39
Strychnos decussata	0.08	0.47	0.83	0.46

Strychnos madagascariensis	0.08	0.47	0.83	0.46
Strychnos spinosa	0.17	0.94	1.67	0.93
Swartzia madagascariensis	0.08	0.47	0.83	0.46
Terminalia sericea	0.17	0.94	1.67	0.93
Uvaria lucida	0.50	2.82	5.00	2.78
Vangueria infausta	0.17	0.94	1.67	0.93
vangueriopsis lanciflora	0.25	1.41	2.50	1.39
Ximenia americana	0.08	0.47	0.83	0.46

SC_Fallow_1_4				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.38	2.42	5.00	2.26
Allophylus africanus	0.13	0.81	1.25	0.56
Bauhinia tomentosa	0.13	0.81	1.25	0.56
Brachystegia boehmii	0.63	4.03	10.00	4.52
Brachystegia spiciformis	0.63	4.03	7.50	3.39
Bridelia micrantha	0.13	0.81	1.25	0.56
Burkea africana	0.75	4.84	11.25	5.08
Cassine aethiopicum	0.13	0.81	2.50	1.13
Catunaregam spinosa	0.38	2.42	6.25	2.82
Combretum psidioides	0.38	2.42	6.25	2.82
Combretum umbricola	0.13	0.81	1.25	0.56
Combretum zeyheri	0.25	1.61	2.50	1.13
Crossopteryx febrifuga	0.13	0.81	2.50	1.13
Dichrostachys cinerea	0.50	3.23	6.25	2.82
Diospyros cf kirkii	0.25	1.61	3.75	1.69
Diospyros loureiriana	0.25	1.61	5.00	2.26
Diplorhynchus condylocarpon	0.75	4.84	10.00	4.52
Elaeodendron buchananii	0.38	2.42	5.00	2.26
Elaeodendron matabelicum	0.13	0.81	2.50	1.13
Flacourtia indica	0.88	5.65	11.25	5.08
Garcinia livingstonei	0.25	1.61	5.00	2.26
Hugonia orientalis	0.75	4.84	10.00	4.52
Hymenocardia acida	0.13	0.81	2.50	1.13
Julbernardia globiflora	0.75	4.84	10.00	4.52
Lannea schweinfurthii	0.50	3.23	6.25	2.82
Margaritaria discoidea	0.38	2.42	6.25	2.82
Monotes engleri	0.13	0.81	1.25	0.56
Mundulea sericea	0.13	0.81	1.25	0.56
Ochna leptoclada	0.25	1.61	5.00	2.26
Ochna natalitia	0.25	1.61	3.75	1.69

Olax dissitiflora	0.38	2.42	5.00	2.26
Pericopsis angolensis	0.38	2.42	6.25	2.82
Phyllanthus muellerianus	0.13	0.81	1.25	0.56
Piliostigma thonningii	0.13	0.81	1.25	0.56
Pseudolachnostylis maprouneifolia	0.63	4.03	8.75	3.95
Psorospermum febrifugum	0.13	0.81	1.25	0.56
Pteleopsis myrtifolia	0.38	2.42	6.25	2.82
Pterocarpus angolensis	0.38	2.42	5.00	2.26
Rourea orientalis	0.13	0.81	2.50	1.13
Senna petersiana	0.13	0.81	1.25	0.56
Strychnos madagascariensis	0.25	1.61	5.00	2.26
Strychnos spinosa	0.13	0.81	2.50	1.13
Swartzia madagascariensis	0.25	1.61	2.50	1.13
Syzygium cordatum	0.13	0.81	2.50	1.13
Terminalia sericea	0.38	2.42	5.00	2.26
Vachellia sp	0.25	1.61	2.50	1.13
Vangueria infausta	0.13	0.81	2.50	1.13
vangueriopsis lanciflora	0.38	2.42	5.00	2.26
Zanha africana	0.13	0.81	1.25	0.56

SC_Fallow_11_25				
Species	**Af**	**Raf**	**Ad**	**Rad**
Albizia sp	0.40	3.70	6.00	3.80
Brachystegia boehmii	0.80	7.41	8.00	5.06
Brachystegia spiciformis	0.40	3.70	6.00	3.80
Bridelia micrantha	0.60	5.56	8.00	5.06
Burkea africana	0.20	1.85	4.00	2.53
Catunaregam spinosa	0.20	1.85	4.00	2.53
Combretum collinum	0.40	3.70	4.00	2.53
Combretum molle	0.60	5.56	8.00	5.06
Combretum umbricola	0.20	1.85	2.00	1.27
Dichrostachys cinerea	0.40	3.70	4.00	2.53
Diospyros cf kirkii	0.20	1.85	2.00	1.27
Diplorhynchus condylocarpon	0.60	5.56	8.00	5.06
Elaeodendron buchananii	0.20	1.85	4.00	2.53
Elaeodendron matabelicum	0.20	1.85	4.00	2.53
Eugenia cf. natalitia	0.20	1.85	4.00	2.53
Flacourtia indica	0.40	3.70	4.00	2.53
Hugonia orientalis	0.20	1.85	4.00	2.53
Julbernardia globiflora	0.60	5.56	8.00	5.06
Lannea discolor	0.20	1.85	4.00	2.53

Margaritaria discoidea	0.20	1.85	4.00	2.53
Monotes engleri	0.40	3.70	6.00	3.80
Olax dissitiflora	0.20	1.85	8.00	5.06
Ozoroa obovata	0.20	1.85	4.00	2.53
Pseudolachnostylis maprouneifolia	0.20	1.85	4.00	2.53
Rothmannia engleriana	0.20	1.85	4.00	2.53
Rourea orientalis	0.60	5.56	8.00	5.06
Strychnos decussata	0.20	1.85	4.00	2.53
Strychnos madagascariensis	0.20	1.85	4.00	2.53
Swartzia madagascariensis	0.20	1.85	4.00	2.53
Vachellia nilotica	0.40	3.70	4.00	2.53
Vachellia sp	0.40	3.70	4.00	2.53
Vitex payos	0.40	3.70	4.00	2.53

SC_Fallow_5_10				
Species	**Af**	**Raf**	**Ad**	**Rad**
Afrocanthium racemulosum	0.17	0.82	1.67	0.49
Albizia sp	0.92	4.51	14.17	4.15
Annona senegalensis	0.17	0.82	3.33	0.98
Antidesma venosum	0.08	0.41	1.67	0.49
Bauhinia tomentosa	0.08	0.41	0.83	0.24
Brachystegia boehmii	0.92	4.51	16.67	4.88
Brachystegia spiciformis	0.67	3.28	10.83	3.17
Bridelia micrantha	0.17	0.82	3.33	0.98
Burkea africana	0.33	1.64	5.00	1.46
Cassine aethiopicum	0.08	0.41	1.67	0.49
Catunaregam spinosa	0.42	2.05	8.33	2.44
Combretum apiculatum	0.08	0.41	1.67	0.49
Combretum collinum	0.08	0.41	1.67	0.49
Combretum molle	0.42	2.05	7.50	2.20
Combretum psidioides	0.42	2.05	7.50	2.20
Combretum umbricola	0.08	0.41	1.67	0.49
Combretum zeyheri	0.17	0.82	3.33	0.98
Crossopteryx febrifuga	0.08	0.41	1.67	0.49
Dichrostachys cinerea	0.50	2.46	6.67	1.95
Diospyros cf kirkii	0.33	1.64	6.67	1.95
Diplorhynchus condylocarpon	0.83	4.10	13.33	3.90
Dirichletia sp	0.25	1.23	4.17	1.22
Elaeodendron buchananii	0.17	0.82	2.50	0.73
Elaeodendron matabelicum	0.17	0.82	2.50	0.73
Eugenia cf. natalitia	0.17	0.82	3.33	0.98

Faurea rochetiana	0.08	0.41	1.67	0.49
Flacourtia indica	0.75	3.69	12.50	3.66
Garcinia livingstonei	0.33	1.64	5.00	1.46
Gardenia volkensii	0.08	0.41	1.67	0.49
Hugonia orientalis	0.42	2.05	7.50	2.20
Hymenocardia acida	0.42	2.05	8.33	2.44
Julbernardia globiflora	0.83	4.10	12.50	3.66
Lannea discolor	0.17	0.82	3.33	0.98
Lannea schweinfurthii	0.50	2.46	7.50	2.20
Margaritaria discoidea	0.58	2.87	10.00	2.93
Monotes engleri	0.58	2.87	9.17	2.68
Mundulea sericea	0.33	1.64	4.17	1.22
Ochna leptoclada	0.08	0.41	1.67	0.49
Ochna natalitia	0.08	0.41	0.83	0.24
Olax dissitiflora	0.50	2.46	7.50	2.20
Ozoroa obovata	0.08	0.41	1.67	0.49
Parinari curatellifola	0.25	1.23	4.17	1.22
Pericopsis angolensis	0.08	0.41	1.67	0.49
Phyllanthus muellerianus	0.50	2.46	7.50	2.20
Piliostigma thonningii	0.17	0.82	2.50	0.73
Pseudolachnostylis maprouneifolia	0.67	3.28	11.67	3.41
Psorospermum febrifugum	0.08	0.41	1.67	0.49
Pteleopsis myrtifolia	0.50	2.46	8.33	2.44
Pterocarpus angolensis	0.58	2.87	9.17	2.68
Rothmannia engleriana	0.25	1.23	5.00	1.46
Rourea orientalis	0.58	2.87	10.00	2.93
Senna petersiana	0.17	0.82	3.33	0.98
Strychnos madagascariensis	0.58	2.87	11.67	3.41
Strychnos sp	0.08	0.41	1.67	0.49
Swartzia madagascariensis	0.08	0.41	1.67	0.49
Syzygium cordatum	0.08	0.41	1.67	0.49
Terminalia brachystemma	0.25	1.23	5.00	1.46
Terminalia sericea	0.42	2.05	7.50	2.20
Uapaca nitida	0.25	1.23	4.17	1.22
Vachellia nilotica	0.08	0.41	0.83	0.24
Vachellia sp	0.33	1.64	4.17	1.22
Vangueria infausta	0.08	0.41	0.83	0.24
vangueriopsis lanciflora	0.25	1.23	3.33	0.98
Vitex doniana	0.25	1.23	4.17	1.22
Vitex payos	0.08	0.41	1.67	0.49
Ximenia americana	0.08	0.41	1.67	0.49