

Contents

1	Introduction	1
	References	5
2	Forest Structure	9
2.1	Introduction	9
2.2	Total Aboveground Biomass	10
2.2.1	Aboveground Biomass Increases with Fallow Age	10
2.2.2	Total Aboveground Biomass Increases at First, but then Remains Constant	11
2.3	Trees and Herbs Abundance	12
2.4	Total Basal Area	15
2.5	Canopy Height	17
2.5.1	Canopy Height Increases with Fallow Age	17
2.5.2	No Significant Difference with Fallow Age	18
2.6	Plant Density	19
2.6.1	Stem Density Increases, or Increases and then Stabilizes	19
2.6.2	Stem Density Increases, but Shows a Decline in Early or Intermediate Stages	21
2.6.3	Stem Density Varies Among Age Classes	22
2.6.4	Stem Density Decreases with Fallow Age	23
2.7	Discussion and Conclusions	25
	References	35
3	Species Richness and Diversity	39
3.1	Introduction	39
3.2	Total Species Richness	40
3.2.1	Species Richness Increases with Fallow Age	41
3.2.2	Species Richness Increases at First, then Drops Off or Stays Constant	48
3.2.3	No Significant Difference Between Age Classes	51

3.3	Tree and Herb Species Richness	51
3.3.1	Species Richness Increases with Fallow Age	51
3.3.2	Species Richness Peaks at Early to Intermediate Stages. . .	52
3.4	Total Species Diversity	54
3.4.1	Species Diversity Increases Rapidly, then Remains Constant	54
3.4.2	Species Diversity Increases with Fallow Age	56
3.4.3	Species Diversity Decreases When Fallows Age.	62
3.5	Discussion and Conclusions	62
	References	65
4	Species Composition.	67
4.1	Introduction	67
4.2	Succession from Grasses to Trees	69
4.2.1	Location-Specific Patterns of Change	70
4.3	Fallow Length and Species Composition	71
4.3.1	Similarity of Species Composition in Similar-Aged Fallows	73
4.3.2	Pioneer Species Recruit First During Succession.	75
4.3.3	Both Pioneer and Forest Species Recruit Together in the Early Stage of Succession.	77
4.3.4	Replacement of Pioneers by Shade-Tolerant Species. . . .	80
4.3.5	Time to Reach Similar Species Composition as the Old-Growth Forest.	82
4.3.6	High Variability of Species Composition.	83
4.4	Discussion and Conclusions	86
	References	88
5	Factors Contributing to Differences in Forest Recovery Rates	91
5.1	Introduction	91
5.2	Number of Slash-and-Burn Cycles.	92
5.3	Length of Fallow Period.	98
5.4	Type of Soil	103
5.4.1	Faster Forest Regeneration in Soil with Higher Fertility and Better Structure	104
5.4.2	Soil Properties Have No Effect on Forest Structure. . . .	110
5.4.3	Impact of Shortened Fallow Duration on Soil Fertility . . .	110
5.5	Types of Forest.	115
5.6	Discussion and Conclusions	116
	References	118
6	Conclusions	123
	References	126

Ecological Succession on Fallowed Shifting Cultivation
Fields

A Review of the Literature

Delang, C.O.; Li, W.M.

2013, VIII, 127 p. 41 illus., Softcover

ISBN: 978-94-007-5820-9