Supplementary data 2.

Chi-square and proportions test For the general test the $\alpha = 0.05$; while for paired tests (*post hoc)* the new one $\alpha = k(k\text{-}1/2)$; where k is the number of groups compared in the general test.

Table S2.1. Chi-square test for the biological form categories of the three agroforestry systems species in general and their comparison in pairs. $\chi^2 (5,211) = 259.25$, $p < 0.001$. New alpha of 0.0033 for paired comparisons.

Pair compared	Chi-square and p value	Pair compared	Chi-square and p value
Herbaceous-Trees	$\chi^2 (1,181) = 32.75$, $p < 0.001$	Trees-Ferns	$\chi^2 (1,55) = 43.65$, $p < 0.001$
Herbaceous-Shrubs	$\chi^2 (1,154) = 70.23$, $p < 0.001$	Shrubs -Climbing	$\chi^2 (1,45) = 0.55$, $p = 0.45$
Herbaceous-Climbing	$\chi^2 (1,149) = 79.73$, $p < 0.001$	Shrubs-Epiphytes	$\chi^2 (1,34) = 7.52$, $p = 0.006$
Herbaceous-Epiphytes	$\chi^2 (1,38) = 104.35$, $p < 0.001$	Shrubs-Ferns	$\chi^2 (1,28) = 17.28$, $p < 0.001$
Herbaceous-Ferns	$\chi^2 (1,132) = 120.27$, $p < 0.001$	Climbing-Epiphytes	$\chi^2 (1,29) = 4.17$, $p = 0.04$
Trees-Shrubs	$\chi^2 (1,77) = 9.46$, $p < 0.001$	Climbing-Ferns	$\chi^2 (1,23) = 12.56$, $p < 0.001$
Trees-Climbing	$\chi^2 (1,72) = 14.22$, $p < 0.001$	Epiphytes-Ferns	$\chi^2 (1,12) = 3$, $p = 0.08$
Trees-Epiphytes	$\chi^2 (1,61) = 30.31$, $p < 0.001$		

Table S2.2. Proportion test for the biological form of species between the three Agroforestry systems and their comparison in pairs. New alpha of 0.016 for paired comparisons.

	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Herbaceous $\chi^2 (2,119) = 63.21, p < 0.001$	$\chi^2 (1,119) = 4.13, p = 0.04$	$\chi^2 (1,119) = 32.35, p < 0.001$	$\chi^2 (1,119) = 14.4, p < 0.001$
Trees $\chi^2 (2,45) = 39.61, p < 0.001$	$\chi^2 (1,45) = 8.56, p < 0.001$	$\chi^2 (1,45) = 14.28, p < 0.001$	$\chi^2 (1,45) = 32.20, p < 0.001$
Shrubs $\chi^2 (2,21) = 17.45, p < 0.001$	$\chi^2 (1,21) = 0.23, p = 0.63$	$\chi^2 (1,21) = 18.18, p < 0.001$	$\chi^2 (1,21) = 15.21, p < 0.001$
Climbing $\chi^2 (2,18) = 5.10, p = 0.07$	$\chi^2 (1,18) = 2.13, p = 0.14$	$\chi^2 (1,18) = 4.48, p = 0.03$	$\chi^2 (1,18) = 0.47, p = 0.49$
Epiphytes $\chi^2 (2,7) = 5.6, p = 0.06$	$\chi^2 (1,7) = 0.4, p = 0.52$	$\chi^2 (1,7) = 6, p < 0.001$	$\chi^2 (1,7) = 4, p = 0.04$
Ferns $\chi^2 (2,3) = 1.6, p = 0.44$	$\chi^2 (1,3) = 0, p = 1$	$\chi^2 (1,3) = 0, p = 1$	$\chi^2 (1,3) = 1, p = 0.31$

Table S2.3. Chi-square test for the categories of origin of species of agroforestry systems in general and proportional test for their comparison in pairs. χ^2 (1,211) =7. 20, $p = 0.001$. New alpha of 0.016 for paired comparisons.

	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Native χ^2 (2,125) = 45.51, $p < 0.001$	χ^2 (1,125) = 6.69, $p < 0.001$	χ^2 (1,125) = 19.66, p <0.001	χ^2 (1,125) = 46.37, p < 0.001
Introduced χ^2 (2,86) = 60.10, $p < 0.001$	χ^2 (1,86) = 17.06, $p < 0.001$	χ^2 (1,86) = 54.93, $p < 0.001$	χ^2 (1,86) = 14.29, $p < 0.001$

Table S2.4. Chi-square test for the categories of plant management grade of agroforestry systems in general and their comparison in pairs. χ^2 (4,211) = 314.19, $p < 0.001$. New alpha of 0.005 for paired comparisons.

Pair compared	Chi-square and p value	Pair compared	Chi-square and p value
Cultivated-Wild	χ^2 (1,189) =24.89, $p < 0.001$	Wild-Promoted	χ^2 (1,75) = 67.21, $p < 0.001$
Cultivated-Tolerated	χ^2 (1,160) = 112.22, $p < 0.001$	Wild-Protected	χ^2 (1,76) = 64.47, $p < 0.001$
Cultivated- Promoted	χ^2 (1,149) = 141.11, $p < 0.001$	Tolerated-Promoted	χ^2 (1,15) = 8.06, $p < 0.001$
Cultivated-Protected	χ^2 (1, 150) = 138.24, $p < 0.001$	Tolerated-Protected	χ^2 (1,16) = 6.25, $p = 0.01$
Wild-Tolerated	χ^2 (1, 86) = 41.86, $p < 0.001$	Promoted-Protected	χ^2 (1,5) = 0.2, $p = 0.65$

Table S2.5. Proportion test for the degree of plant management between the three agroforestry systems and their comparison in pairs. New alpha of 0.016 for paired comparisons.

	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Cultivated $\chi^2 (2, 135) = 85.19, p < 0.001$	$\chi^2 (1, 135) = 16.98, p < 0.001$	$\chi^2 (1, 135)=84.23, p<0.001$	$\chi^2 (1,135) = 31.18, p < 0.001$
Wild $\chi^2 (2,62) = 45.02, p < 0.001$	$\chi^2 (1,62) = 26.16, p < 0.001$	$\chi^2 (1,62) = 0.03, p = 0.85$	$\chi^2 (1,62) = 27.74, p < 0.001$
Tolerated $\chi^2 (2,9) = 1.9, p = 0.38$	$\chi^2 (1,9) = 0.25, p = 0.61$	$\chi^2 (1,9) = 0.81 \ p = 0.36$	$\chi^2 (1,9) = 1.92, p = 0.16$
Promoted $\chi^2 (2,2) = 0, p = 1$	$\chi^2 (1,2) = 0, p = 1$	$\chi^2 (1,2) = 0, p = 1$	$\chi^2 (1,2) = 0, p = 1$
Protected $\chi^2 (2,3) = 3.5, p = 0.17$	$\chi^2 (1,3) = 1, p = 0.31$	$\chi^2 (1,3) = 1, p = 0.31$	$\chi^2 (1,3) = 3, p = 0.08$

Table S2.6. Proportion test for the species richness of agroforestry systems in general and their comparison in pairs. $\chi^2 (2,211)= 162.71$, $p < 0.001$. New alpha of 0.016 for paired comparisons.

Pair compared	Chi-square and p value
Home gardens-Coffee plantations	$\chi^2 (1,211) = 1.19, p = 0.27$
Home gardens-Milpa	$\chi^2 (1,211) = 130.11, p < 0.001$
Coffee plantations-Milpa	$\chi^2 (1,211) = 107.67, p < 0.001$

Table S2.7. Proportion test for used part of agroforestry systems plants in general and their comparison in pairs. χ^2 (7,211) = 453.83, p < 0.001). New alpha of 0.0017 for paired comparisons.

Pair compared	Chi-square and p value	Pair compared	Chi-square and p value
Whole plant-Leaves	χ^2 (1,211) = 67.24, p < 0.001	Flower-Stem	χ^2 (1,211) = 7.50, p = 0.006
Whole plant-Flower	χ^2 (1,211) = 127.84, p < 0.001	Flower-Seed	χ^2 (1,211) = 8.28, p = 0.004
Whole plant-Fruit	χ^2 (1,211) = 53.99, p < 0.001	Flower-Pod	χ^2 (1,211) = 18.78, p < 0.001
Whole plant-Stem	χ^2 (1,211) = 78.78, p < 0.001	Flower-Root	χ^2 (1,211) = 23.09, p < 0.001
Whole plant-Seed	χ^2 (1,221) = 179.74, p < 0.001	Fruit-Stem	χ^2 (1,211) = 2.42, p = 0.11
Whole plant-Pod	χ^2 (1,211) = 202.59, p < 0.001	Fruit-Seed	χ^2 (1,211) = 49.09, p < 0.001
Whole plant-Root	χ^2 (1,211) = 209.55, p < 0.001	Fruit-Pod	χ^2 (1,211) = 66.15, p < 0.001
Leaves-Flower	χ^2 (1,211) = 12.02, p < 0.001	Fruit-Root	χ^2 (1,211) = 71.82, p < 0.001
Leaves-Fruit	χ^2 (1,211) = 0.66, p = 0.41	Stem-Seed	χ^2 (1,211) = 30.64, p < 0.001
Leaves-Stem	χ^2 (1,211) = 0.40, p = 0.52	Stem-Pod	χ^2 (1,211) = 45.78, p < 0.001
Leaves-Seed	χ^2 (1,211) = 38.41, p < 0.001	Stem-Root	χ^2 (1,211) = 51.06, p < 0.001
Leaves-Pod	χ^2 (1,211) = 54.47, p < 0.001	Seed-Pod	χ^2 (1,211) = 2.19, p = 0.13
Leaves-Root	χ^2 (1,211) = 59.93, p < 0.001	Seed-Root	χ^2 (1,211) = 4.40, p = 0.03
Flower-Fruit	χ^2 (1,211) = 18.97, p < 0.001	Pod-Root	χ^2 (1,211) = 0.12, p = 0.72

Table S2.8. Proportion test for used part of plants between the three agroforestry systems and their comparison in pairs. New alpha of 0.016 for paired comparisons.

Used part	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Whole plant χ^2 (2, 205) = 90.45, $p < 0.001$	χ^2 (1, 205) = 0.15, $p = 0.69$	χ^2 (1, 205)=70.70, p<0.001	χ^2 (1,205) = 78.18, $p < 0.001$
Leaves χ^2 (2,106) = 28.04, $p < 0.001$	χ^2 (1,106) = 1.23, $p < 0.26$	χ^2 (1,106) = 25.64, p <0.001	χ^2 (1,106) = 15.16, $p < 0.001$
Flower χ^2 (2,44) = 13.54, $p = 0.16$	χ^2 (1,44) = 0.04, $p = 0.82$	χ^2 (1,44) = 2.56, $p = 0.10$	χ^2 (1,44) = 1.36, $p = 0.24$
Fruit χ^2 (2,129) = 50.44, $p < 0.001$	χ^2 (1,129) = 0.06, $p = 0.80$	χ^2 (1,129) = 38.30, p<0.001	χ^2 (1,129) = 42.55, $p < 0.001$
Stem χ^2 (2,85) = 56.04, $p < 0.001$	χ^2 (1,85) = 10.41, $p < 0.001$	χ^2 (1,85) = 19.44, $p < 0.001$	χ^2 (1,85) = 53.92, $p < 0.001$
Seed χ^2 (2,26) = 2.19, $p = 0.33$	χ^2 (1,26) = 1.39, $p = 0.23$	χ^2 (1,26) = 0.08, $p = 0.77$	χ^2 (1,26) = 0.37, $p = 0.54$
Pod χ^2 (2,12) = 0.75, $p = 0.68$	χ^2 (1,12) = 0.01, $p = 1$	χ^2 (1,12) = 0.01, $p = 1$	χ^2 (1,12) = 0.18, $p = 0.66$
Root χ^2 (2,4) = 3, $p = 0.22$	χ^2 (1,4) = 0.01, $p = 1$	χ^2 (1,4) = 0.66, $p = 0.41$	χ^2 (1,4) = 0.66, $p = 0.41$

Table S2.9. Proportion test for the destination of species of agroforestry systems in general and their comparison in pairs. $\chi^2 (2,211) = 492.11$, $p < 0.001$. New alpha of 0.016 for paired comparisons.

Destination	Chi-square and p value
Self-consumption-Selling	$\chi^2 (1,211) = 304.4$, $p < 0.001$
Self-consumption-Bartering	$\chi^2 (1,211) = 394.78$, $p < 0.001$
Selling-Bartering	$\chi^2 (1,211) = 19.09$, $p < 0.001$

Table S2.10. Proportion test for destination of species between the three agroforestry systems and their comparison in pairs. New alpha of 0.016 for paired comparisons.

Destination	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Self-consumption $\chi^2 (2, 211) = 162.71, p < 0.001$	$\chi^2 (1, 211) = 1.19, p = 0.27$	$\chi^2 (1, 211) = 130.11, p < 0.001$	$\chi^2 (1,211) = 107.67, p < 0.001$
Selling $\chi^2 (2,57) = 12.78, p < 0.001$	$\chi^2 (1,57) = 2.31, p = 0.12$	$\chi^2 (1,57) = 11.40, p < 0.001$	$\chi^2 (1,57) = 2.95, p = 0.08$
Bartering $\chi^2 (2,14) = 1.5, p = 0.47$	$\chi^2 (1,14) = 0.17, p = 0.67$	$\chi^2 (1,14) = 0.01, p = 1$	$\chi^2 (1,14) = 0.65, p = 0.41$

Table S2.11. Proportion test for categories of plants use of agroforestry systems in general and their comparison in pairs. $\chi^2(8,211) = 260.83$, $p < 0.001$. New alpha of 0.0013 for paired comparisons.

Pair compared	Chi-square and p value	Pair compared	Chi-square and p value
Food-Medicinal	$\chi^2(1,211) = 39.77, p < 0.001$	Ornamental-Live fence	$\chi^2(1,211) = 26.11, p < 0.001$
Food-Ornamental	$\chi^2(1,211) = 9.50, p = 0.002$	Ornamental-Construction	$\chi^2(1,211) = 52.61, p < 0.001$
Food-Firewood	$\chi^2(1,211) = 35.86, p < 0.001$	Ornamental-Forage	$\chi^2(1,211) = 56.92, p < 0.001$
Food-Shade	$\chi^2(1,211) = 38.44, p < 0.001$	Firewood-Shade	$\chi^2(1,211) = 0.01, p = 0.90$
Food-Domestic use	$\chi^2(1,211) = 116.93, p < 0.001$	Firewood-Domestic use	$\chi^2(1,211) = 30.95, p < 0.001$
Food-Live fence	$\chi^2(1,211) = 65.32, p < 0.001$	Firewood-Live fence	$\chi^2(1,211) = 4.82, p = 0.02$
Food-Construction	$\chi^2(1,211) = 100.55, p < 0.001$	Firewood-Construction	$\chi^2(1,211) = 20.59, p < 0.001$
Food-Forage	$\chi^2(1,211) = 105.79, p < 0.001$	Firewood-Forage	$\chi^2(1,211) = 23.70, p < 0.001$
Medicinal-Ornamental	$\chi^2(1,211) = 10.37, p < 0.001$	Shade-Domestic use	$\chi^2(1,211) = 28.78, p < 0.001$
Medicinal-Firewood	$\chi^2(1,211) = 0.05, p = 0.82$	Shade-Live fence	$\chi^2(1,211) = 3.88, p = 0.04$
Medicinal-Shade	$\chi^2(1,211) = 0.01, p = 1$	Shade-Construction	$\chi^2(1,211) = 18.73, p < 0.001$
Medicinal-Domestic use	$\chi^2(1,211) = 27.70, p < 0.001$	Shade-Forage	$\chi^2(1,211) = 21.73, p < 0.001$
Medicinal-Live fence	$\chi^2(1,211) = 3.44, p = 0.06$	Domestic use-Live fence	$\chi^2(1,211) = 12.03, p < 0.001$
Medicinal-Construction	$\chi^2(1,211) = 17.82, p < 0.001$	Domestic use-Construction	$\chi^2(1,211) = 1.09, p = 0.29$
Medicinal-Forage	$\chi^2(1,211) = 20.76, p < 0.001$	Domestic use-Forage	$\chi^2(1,211) = 0.42, p = 0.51$
Ornamental-Firewood	$\chi^2(1,211) = 8.33, p < 0.001$	Live fence-Construction	$\chi^2(1,211) = 5.41, p = 0.01$
Ornamental-Shade	$\chi^2(1,211) = 9.66, p < 0.001$	Live fence-Forage	$\chi^2(1,211) = 7.23, p < 0.001$
Ornamental-Domestic use	$\chi^2(1,211) = 66.37, p < 0.001$	Construction -Forage	$\chi^2(1,211) = 0.03, p = 0.84$

Table S2.12. Proportion test for categories of plants use between the three agroforestry systems and their comparison in pairs. New alpha of 0.016 for paired comparisons.

Use category	Home gardens-Coffee plantations	Home gardens-Milpa	Coffee plantations-Milpa
Food χ^2 (2, 113) = 57.07, $p < 0.001$	χ^2 (1, 113) = 0.25, $p = 0.61$	χ^2 (1, 113)=48.99, p<0.001	χ^2 (1,113) = 41.44, $p < 0.001$
Ornamental χ^2 (2,79) = 31.84, $p < 0.001$	χ^2 (1,79) = 0.44, $p = 0.50$	χ^2 (1,79) = 20.85, $p < 0.001$	χ^2 (1,79) = 28.11, $p < 0.001$
Medicinal χ^2 (2,47) = 64.72, $p < 0.001$	χ^2 (1,47) = 23.11, $p < 0.001$	χ^2 (1,47) = 58, $p < 0.001$	χ^2 (1,47) = 9.36, $p < 0.001$
Firewood χ^2 (2, 50) = 61.82, $p < 0.001$	χ^2 (1, 50) = 15.59, $p < 0.001$	χ^2 (1, 50) = 16.84, $p < 0.001$	χ^2 (1,50) = 57.92, $p < 0.001$
Shade χ^2 (2,48) = 62.02, $p < 0.001$	χ^2 (1, 48) = 17.63, $p < 0.001$	χ^2 (1, 48) = 14.49, $p < 0.001$	χ^2 (1,48) = 57.07, $p < 0.001$
Domestic use χ^2 (2, 9) = 109.89, $p = 0.15$	χ^2 (1, 9) = 1.46, $p = 0.22$	χ^2 (1, 9) = 0.01, $p = 1$	χ^2 (1,9) = 1.46, $p = 0.22$
Live fence χ^2 (2, 31) = 25.8, $p < 0.001$	χ^2 (1, 31) = 0.17, $p = 0.67$	χ^2 (1, 31) = 22.15, $p < 0.001$	χ^2 (1,31) = 17.38, $p < 0.001$
Construction χ^2 (2,15) = 24.45, $p < 0.001$	χ^2 (1, 15) = 10.02, $p < 0.001$	χ^2 (1, 15) = 0.91, $p <= 0.33$	χ^2 (1,15) = 17.60, $p < 0.001$
Forage χ^2 (2, 13) = 10.76, $p < 0.001$	χ^2 (1, 13) = 8.60, $p < 0.001$	χ^2 (1, 13) = 2.87, $p = 0.08$	χ^2 (1,13) = 1.06, $p = 0.30$