**Supplementary Material**

**Impact of forest succession and land management on soil organic carbon stocks in Singapore**

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**Table S1**: Example: Plot #13 – Evidence for secondary forests representing natural forests succession.

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| Criterion /Question | Evidence | Result |
| Stand does not have a closed emergent canopy of late succession native species (at the most a few scattered large trees)? | * There are no emergent canopy trees (>60cm) per hectare,
* The total AGB of 198 [Mg ha-1] and lower is typical for naturally regenerating secondary forests after disturbance in Southeast Asia.
 | **Class 2****Secondary Forests representing natural forests succession** |
| Is there a larger pool of medium sized trees of native species? | * The stand is dominated by medium-sized late succession native species (61%) dominated by *Garcinia* spp., *Callophyllum* spp., *Litsea* spp., *Syzygium* spp. and *Palaquium* spp.
* More than one-third (39%) of trees belong to early succession species including *Rhodamnia* spp. and *Macaranga* spp.
 |
| There is no evidence of past land conversion or plantation activities? | * There is total absence of any tree species used for forest and/or agriculture plantation
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Due to the wide range of stand conditions found in Class 3 originating either from tree plantations or fruit orchards, two examples are presented.

**Table S2:** Example: Plot #24 – Evidence for secondary forests **after tree plantation**/fruit orchard

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| Criterion /Question | Evidence | Result |
| There is no closed emergent canopy or scattered large trees of late succession native species? | * There are no emergent canopy trees (>60cm) per hectare.
 | **Class 3****Secondary forests after tree plantation/fruit orchard** |
| Is there a larger pool of medium sized trees of either exotic species or mixed with native fruit trees/early-succession species? | * The stand is dominated by medium-sized exotic species (87%) made up of *Acacia auriculiformis*,
* The rest are early-succession native species of small diameters – mainly *Vitex pinnata*,
* The low total AGB of 105 [Mg ha-1] is typical for tree plantations
 |
| Is there evidence of past tree plantation activities? | * Dominance of *Acacia auriculiformis* points to former intensive tree plantation management
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**Table S3:** Example: Plot #7 – Evidence for secondary forests after tree plantation/**fruit orchard**

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| Criterion /Question | Evidence | Result |
| There is no closed emergent canopy or scattered large trees of late succession native species? | * There are no emergent canopy trees (>60cm) per hectare.
 | **Class 3****Secondary forests after tree plantation/fruit orchard** |
| Is there a larger pool of medium sized trees of either exotic species or mixed with native fruit trees/early-succession species? | * The stand is dominated by medium-sized planted fruit trees *(Dimocarpus longan*, *Durio zebethinus*, *Artocarpus integer*)
* The rest are native species of small diameters – mainly (*Dracaena fragrans*, *Ficus* spp.),
* The total AGB of 256 [Mg ha-1] is at the higher end because of earlier dense planting of fruit trees.
 |
| Is there evidence of past tree plantation activities? | * Dominance of *Acacia auriculiformis* points to former intensive tree plantation management
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**Table S4:** Example: Plot #2 – Evidence for Secondary Forests after agriculture crop cultivation

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| Criterion /Question | Evidence | Result |
| There is no closed emergent canopy or scattered large trees of late succession native species? | * There are no emergent canopy trees (>60cm) per hectare,
 | **Class 4****Secondary Forests after agriculture crop cultivation** |
| Is the stand dominated by invasive tree species? | * The stand is dominated by the invasive *Spathodea campanulat*a (African Tulip) colonizing open areas with aggressive seed dispersal by wind.
* The total AGB of 87 [Mg ha-1] is low, but made up mostly of African Tulip (88%).
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| Is there evidence of past intensive agriculture with soil tillage? | * Plot located in an area known from records to be used for intensive agriculture crop cultivation.
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