



## **Estimate of fine root production including the impact of decomposed roots in a Bornean tropical rainforest**

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Considerable carbon is allocated belowground and used for respiration and production of roots. It is reported that approximately 40 % of GPP is allocated belowground in a Bornean tropical rainforest, which is much higher than those in Neotropical rainforests. This may be caused by high root production in this forest. Ingrowth core is a popular method for estimating fine root production, but recent study by Osawa et al. (2012) showed potential underestimates of this method because of the lack of consideration of the impact of decomposed roots. It is important to estimate fine root production with consideration for the decomposed roots, especially in tropics where decomposition rate is higher than other regions. Therefore, objective of this study is to estimate fine root production with consideration of decomposed roots using ingrowth cores and root litter-bag in the tropical rainforest. The study was conducted in Lambir Hills National Park in Borneo. Ingrowth cores and litter bags for fine roots were buried in March 2013. Eighteen ingrowth cores and 27 litter bags were collected in May, September 2013, March 2014 and March 2015, respectively. Fine root production was comparable to aboveground biomass increment and litterfall amount, and accounted only 10% of GPP in this study site, suggesting most of the carbon allocated to belowground might be used for other purposes. Fine root production was comparable to those in Neotropics. Decomposed roots accounted for 18% of fine root production. This result suggests that no consideration of decomposed fine roots may cause underestimate of fine root production.