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Ecophysiological Traits of Field-Grown *Crotalaria incana* and *C. pallida* as Green Manure

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Abstract: To evaluate the growth capacity and some chemical characteristics of two *Crotalaria* species, *C. incana* and *C. pallida*, used as green manure, we conducted a field experiment at Osaka, Japan. Both *Crotalaria* species exhibited vigorous vegetative growth, and leaf area was expanded in *C. pallida* and branching was promoted in *C. incana*. Top dry weight and nitrogen content of *C. pallida* were twice as high as those of *C. incana* at 87 and 120 days after transplanting (DAT), and the lower values in *C. incana* were attributed to drastic defoliation of lower leaves due to earlier anthesis from mid-July. Several indicators for rapid decomposition of the plants used as green manure, such as C/N ratio, lignin (L) content and L/N ratio at 56, 87 and 120 DAT, were significantly higher in *C. pallida* than in *C. incana*. However, these values might not be critical for nitrogen mineralization after incorporation of the materials into soil. To evaluate the qualitative traits of the two species as green manures, the materials were mixed with soil at a rate of 20 g fresh weight per pot, and seeds of wheat were sown at 10 and 30 days after mixing the green manure (DAM). The growth and nitrogen uptake of wheat grown on the soil mixed with *C. pallida* were inferior to those of wheat grown on the soil mixed with *C. incana* on both sowing dates, and the difference between the effectiveness of the two species as green manure was larger in the wheat sown on 10 DAM than on 30 DAM. The possible increase in nitrogen supply and growth inhibition by incorporation of these materials to wheat plants were discussed.

Keywords: [Bradyrhizobium](#), [Cropping system](#), [Crotalaria](#), [Green manure](#), [Growth inhibition](#), [Nitrogen mineralization](#), [Wheat](#)



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