

was 32.15 g/kg 2.35 4.63 times than the layer II (20 ~ 40 cm) and layer III (40 ~ 60 cm) respectively, and the entire profile was 17.60 g/kg. The soil organic carbon density layer I ~ III were 6.76 kg/m<sup>2</sup> 3.17 kg/m<sup>2</sup> and 1.74 kg/m<sup>2</sup> respectively, the average soil organic carbon density was 11.67 kg/m<sup>2</sup>. Soil organic carbon reserve in *C. kawakamii* National Forest Park stored at 0 ~ 60 cm was about 1.49 × 10<sup>4</sup> t, layer I, II, III were 8.66 × 10<sup>3</sup> t 4.01 × 10<sup>3</sup> t 2.20 × 10<sup>3</sup> t respectively, which were calculated with voronoi. Soil organic carbon content and density have similar spatial distribution in southwest and northeast, which both have a high value area, along with the direction of WN - ES. They emerged stripe distribution, regularly decreasing from WS - EN line to northwest and southeast respectively. The results of correlation analysis and stepwise regression analysis showed that soil organic carbon content associated with soil physicochemistry properties, reaching a significant level, and were positively correlated with total nitrogen, total phosphorus, hydrolyzable nitrogen, available phosphorous, available potassium, negatively correlated with the PH, total potassium and soil bulk density, and can be further described by the formula:  $O = 27.77 + 37.88 TN + 0.05 AN + 59.69 TP - 7.28 pH - 7.04 B$ . The effects of topography, soil physicochemistry properties and human disturbance on soil organic carbon in *C. kawakamii* forest were also analyzed. All these results may be available for enhancing the precision of soil organic carbon reserve, assessing eco-efficiency of the *C. kawakamii* natural forest and its roles and functions in regional carbon cycle.

**Key words:** *Castanopsis kawakamii* forest; soil organic carbon; Voronoi; spatial distribution

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## 封面照片说明: 岷江上游干旱河谷

岷江上游干旱河谷区位于四川省阿坝藏族羌族自治州东部,大地构造地貌上属青藏高原与四川盆地的过渡地带,为横断山区东北缘。区内的地质构造主要为龙门山断裂带,新构造运动强烈,地震活跃,以高山峡谷地貌为主,岭谷相对高度达 1 000 ~ 3 000 m。在这种特殊地质地貌以及大气环流的共同作用下,焚风效应显著,河谷地带年降雨量最低的不足 500 mm,蒸发量却高达 1 340 mm 左右,并且风大风频。受这种地质地貌和气候条件控制,在河谷地带发育了典型的干旱河谷灌丛,即灌丛多由带刺的灌木、小灌木、半灌木或小半灌木构成,生长的草本亦多为耐旱种类。岷江上游以茂县飞虹乡及附近为干旱河谷的核心区,干旱河谷景观最为典型。照片即为茂县飞虹乡一带的岷江干旱河谷。

(嘉 益)