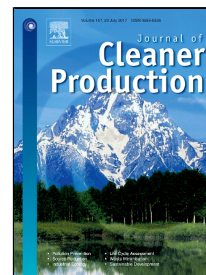


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Integrative analysis of carbon structure and carbon sink function for major crop production in China's typical agriculture regions

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1 **Integrative analysis of carbon structure and carbon sink function for**  
2 **major crop production in China's typical agriculture regions**

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13 **Abstract**

14 Crop production not only creates economic values, but also has ecological  
15 functions. The carbon sink function of crops plays an important role in mitigating  
16 climate changes. This paper collected and analyzed the carbon cost data of staple  
17 crops in China, estimated the carbon sink and carbon source effects of farmlands, and  
18 quantitatively evaluated the carbon inputs and outputs of crop production systems.  
19 The results showed that the carbon footprints of crops in six typical agriculture  
20 regions were quite different, and the major crops production showed as carbon sinks  
21 in general. The carbon sequestration of different crops in the same region were  
22 significantly different, as well as the same crop in different regions. China's farmland  
23 ecosystem showed carbon sequestration effect: the total annual net carbon sink of  
24 three major crops, rice, wheat, and corn, was about 165.76TgC, of which rice was the  
25 highest, accounting for 48.71%. This study also proposed the key ways for energy  
26 conservation and emission reduction of crop production in every region, and  
27 suggested the technology direction for improving carbon sink function. This study  
28 provided important basis for policy formulation and planning about the low-carbon  
29 agriculture development in China.

30 **Keywords:** carbon structure, carbon sink function, crop production, typical  
31 agriculture region

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