

研究论文

黄土塬区麦田CO₂通量季节变化

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摘要 利用涡度相关法对黄土塬区小麦地CO₂通量季节变化进行了研究。结果表明: (1) 小麦CO₂通量日变化与生育期、光合有效辐射、土壤温度密切相关。(2) 小麦各生育期CO₂的平均日收支由大到小依次为拔节孕穗期>返青期>起身期>抽穗期>成熟期>灌浆期>出苗分蘖期>越冬期。(3) 白昼CO₂通量与光合有效辐射在出苗分蘖期、起身期、成熟期几乎不相关, 在灌浆期低度相关, 在其他生育期内都达到了显著相关。CO₂通量与夜间2cm土壤温度在越冬、起身、拔节孕穗期显著相关, 其他5个生育期内为低度相关。(4) 小麦收割后表现为碳源, 各天具体状况与前一天是否降雨、当天的天气状况有关。

关键词

[CO₂通量](#); [涡度相关法](#); [黄土塬区](#); [日变化](#); [季变化](#); [CO₂收支](#)

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The seasonal variation of CO₂ flux in a wheat field of the Loess Plateau

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Abstract The seasonal variation of CO₂ flux in a winter wheat field of the Loess Plateau was studied using an eddy covariance method. The following results were obtained. (1) Daily CO₂ flux was closely related to growing stages, photosynthetically active radiation, and soil temperature. (2) The average daily CO₂ flux at different growing stages followed the order of: jointing and booting >reviving >erecting >heading >ripening >grain-filling > seedling and tillering >wintering period. (3) There was little correlation between daytime CO₂ flux and photosynthetically active radiation at the seedling-tillering, heading, and maturing stages; but there was weak correlation during grain filling, and strong correlation in the other stages. There was significant correlation between CO₂ flux and nighttime soil temperatures at the 2-cm depth at the wintering, heading and jointing an

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d booting stage, and low correlation at the other stages. (4) The wheat field became carbon source after harvest. The carbon budget of a given day was affected by the weather of the day as well as the rainfall condition in the previous day.

Key words CO₂ flux eddy covariance method Loess Plateau daily variation variation during each growing stage CO₂ budget

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