氣候暖化情境下落花生之衝擊評估

Impact Assessment to Growth environment of Peanuts under Warming Scenario

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摘　要

落花生為臺灣重要旱作之一，主要栽培區域分布於雲林縣、彰化縣，雲林縣產量占全臺 78%，依種植時間可分為春作與秋作，播種時間春作約為 2 至 3 月；秋作約為 8 至 9 月，種植約 4 至 5 個月可收獲。近年來落花生受豪雨損害日趨嚴重，近 10 年每年皆有豪雨損失，損失金額最高達兩千萬元，經本研究幾次災後現勘情形蒐整，落花生受損災況多為作物植株長時間淹水，造成根部或果實發霉、發黑或發芽，使落花生受到直接損失，而機械化收獲方式也受豪雨影響，若田區土壤含水量過高，除機械無法下田採收外，採收之莢果沾黏過多泥土，尚需人工處理造成耗時又費工。爰本研究將評估氣候變遷全球平均溫度上升至 1.5 與 2 度 C(新暖化情境)時，春作落花生受豪雨災害之衝擊。

據觀測資料顯示，全球平均溫度自工業革命前到近期(1986-2005 年)已上升 0.63 度 C，經本研究模式推估，各模式間到達 1.5 度 C 情境之中位數為 2029 年；而達 2 度 C 情境之中位數為 2045 年。以雲林縣為例，新暖化情境下 2 至 4 月平均降雨量減少，其他月份皆有增加趨勢，而其改變量 2 度 C 情境較 1.5 度 C 情境劇烈，即乾旱與水澇皆有加重趨勢。在不同情境下春作落花生生長期間，2 至 4 月新暖化情境下將面臨更乾旱情形，應加強田間灌溉，乾旱最嚴重為 3 月平均雨量分別降低 6.2 ㎜、8.7 ㎜；而收穫期 5 月平均雨量分別增加 2.8 ㎜、13.6㎜，6 月平均雨量分別增加 28.8 ㎜、39 ㎜，將造成收穫期損失衝擊加重。本研究可作為未來農產業適栽區、產期調整與相關栽培管理之參考。

關鍵詞：暖化情境，落花生，衝擊評估

Abstract

Peanuts are one of the main dry crops in Taiwan. The main cultivation areas are distributed in Yunlin County, Changhua County, and Yunlin County, with nearly 80% output of total output in Taiwan. Peanuts have been frequently damaged by torrential rain in the past 10 years. The results of several field investigations in this study found that the damage to peanuts is mostly caused by long-term flooding of crop plants, causing roots and fruits to mold, blacken or germinate. The mechanized harvesting work is also affected by heavy rain. If the soil moisture content in the field is too high, the machine will not be able to harvest, and the harvested peanuts will stick to too much soil, which will cost excess costs. This study assesses the impact of torrential rain disasters in spring peanuts under the scenario of a global average temperature rise of 1.5 and 2 degrees C.

The result in Yunlin County show that the average rainfall decreases from February to April under the warming scenario, with an increasing trend in other months, and the change is more severe in the 2°C scenario than in the 1.5°C scenario. During the growth period of spring peanuts under different conditions, more droughts occur under the warming conditions from February to April, average rainfall is reduced by 6.2 mm and 8.7 mm respectively in March. While the average rainfall in May (harvest period), rainfall increased by 2.8 mm and 13.6 mm respectively, and the average rainfall in June increased by 28.8 mm and 39 mm respectively, which will cause more serious impacts and losses. This study can be used as a reference for agricultural cultivation areas, production period adjustments and related cultivation management.

Keywords：Warming scenario, Peanuts, Impact assessment