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# IRON, ZINC, COPPER AND MANGANESE AVAILABILITY IN FOUR CONTRASTING HYDROMORPHIC SOILS OF EGBEMA, SOUTH-EASTERN NIGERIA

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Trace elements are particularly sensitive to surrounding environmental condition which influences their availability and behavior in the ecosystem. The study assessed the availability of four trace elements (Mn, Fe, Cu and Zn) in selected wetland soils of Egbema, Imo State, South-Eastern Nigeria. Six composite soil samples (0-30 cm depth) were collected from the different wetlands (Iyiaba, Omanpe, Orashi and Agbo). Soils were generally acidic (5.27-5.64) with low organic carbon (4.4-7.11 g $kg^{-1}$) and CEC (2.71-5.79 Cmol+$kg^{-1}$). Omanpe wetland soil contained significantly ($p<0.05$) higher quantity of Fe (43.97 mg$kg^{-1}$) compared to other soils investigated. Also, significantly ($p<0.05$) higher quantity of Cu (0.56 mg$kg^{-1}$) was recorded in Orashi wetland compared to other investigated soils.

***Keywords:*** *ecosystem, hydromorphic soils, trace element, South-eastern Nigeria*

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## ПРИСУТНІСТЬ ЗАЛІЗА, ЦИНКА, МІДІ ТА МАРГАНЦЯ У ЧОТИРЬОХ КОНТРАСТНИХ ГІДРОМОРФНИХ ГРУНТАХ У ЕГБЕМІ ПІВДЕННО-СХІДНОЇ НІГЕРІЇ

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Мікроелементи надто чутливі до екологічних умов навколишнього середовища, які впливають на їхню доступність і поведінку в екосистемі. У ході досліджень оцінили присутність чотирьох мікроелементів (Mn, Fe, Cu и Zn) в окремих заболочених грунтах Egbema штат Імо, Південно-Східної Нігерії. Шість збірних зразків грунту (із шару 0-30 см) було відібрано із різних заболочених угідь (Iyiaba, Omanpe, Orashi и Agbo). Грунти, як правило, були кислими (pH 5.27-5.64) з низьким умістом органічного вуглецю (4.4-7.11 г/ кг) і CEC (2.71-5.79 Cmol/кг). Заболочений грунт Omanpe містив значно (p <0,05) більшу кількість Fe (43.97 mg/kg) порівняно з іншими обстеженими грунтами. Крім того, було зафіксовано значно (p <0,05) більшу кількість Cu (0,56 mg/kg) у заболоченому грунті Orashi порівняно з іншими.

***Ключові слова**: екосистема, гідроморфні грунти, мікроелементи, Південно-східна Нігерія*

## НАЛИЧИЕ ЖЕЛЕЗА, ЦИНКА МЕДИ И МАРГАНЦА В ЧЕТЫРЕХ КОНТРАСТНЫХ ГИДРОМОРФНЫХ ПОЧВАХ ЭГБЕМА В ЮГО-ВОСТОЧНОЙ НИГЕРИИ

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Микроэлементы особенно чувствительны к состоянию окружающей среды, которая влияет на их доступность и поведение в экосистеме. В ходе исследования оценивали наличие четырех микроэлементов (Mn, Fe, Cu и Zn) в отдельных болотных почвах Egbema, штат Имо, Юго-Восточной Нигерии. Шесть сложных образцов почвы (0-30 см глубиной) были отобраны на различных болотных угодиях (Iyiaba, Omanpe, Orashi и Agbo). Почвы были, как правило, кислые (pH 5.27-5.64) с низким содержанием органического углерода (4.4-7.11 г/ кг) и CEC (2.71-5.79 Cmol/кг). Заболоченная почва Omanpe содержала значительно (p <0,05) большее количество Fe (43.97 mg/kg) по сравнению с другими исследуемыми почвами. Кроме того, было зафиксировано значительно (p <0,05) большее количество Cu (0,56 mgkg-1) в заболоченной почве Orashi по сравнению с другими исследуемыми почвами.

***Ключевые слова**: екосистема, гидроморфные почвы, микроэлементы, Юго-Восточная Нигерия.*