

ION-2

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(1.1-1.3)

ION-2.

(2.1-2.3).

$$\text{Ca}^{2+} = [\text{Ca}^{2+}] (1 + [\text{CO}_3^{2-}] / K_{\text{CaCO}_3} + [\text{MgCO}_3] / K_{\text{CaHCO}_3} + [\text{SO}_4^{2-}] / K_{\text{CaSO}_4}); \quad (1.1)$$

$$\text{Mg}^{2+} = [\text{Mg}^{2+}] (1 + [\text{CO}_3^{2-}] / K_{\text{MgCO}_3} + [\text{HCO}_3^-] / K_{\text{MgHCO}_3} + [\text{SO}_4^{2-}] / K_{\text{MgSO}_4}); \quad (1.2)$$

$$\text{Na}^+ = [\text{Na}^+] (1 + [\text{CO}_3^{2-}] / K_{\text{NaCO}_3} + [\text{SO}_4^{2-}] / K_{\text{NaSO}_4}); \quad (1.3)$$

$$\text{CO}_3^{2-} = [\text{CO}_3^{2-}] (1 + [\text{Ca}^{2+}] / K_{\text{CaCO}_3} + [\text{Mg}^{2+}] / K_{\text{MgCO}_3} + [\text{Na}^+] / K_{\text{NaCO}_3}); \quad (2.1)$$

$$\text{HCO}_3^- = [\text{HCO}_3^-] (1 + [\text{Ca}^{2+}] / K_{\text{CaHCO}_3} + [\text{Mg}^{2+}] / K_{\text{MgHCO}_3}); \quad (2.2)$$

$$\text{SO}_4^{2-} = [\text{SO}_4^{2-}] (1 + [\text{Ca}^{2+}] / K_{\text{CaSO}_4} + [\text{Mg}^{2+}] / K_{\text{MgSO}_4} + [\text{Na}^+] / K_{\text{NaSO}_4}); \quad (2.3)$$

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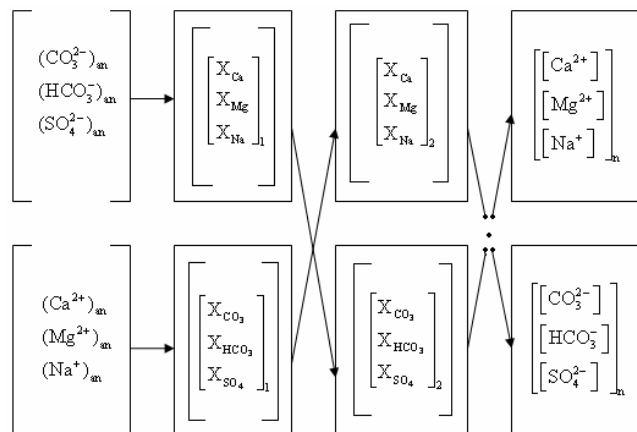
[3].

$$X_{\text{Ca}}, \quad X_{\text{Mg}}, \quad X_{\text{Na}},$$

[2].

25-30%.

[1, 2, 4].



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ION-2 [2].

“Java”

MS

Windows XP.

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(.3).

Отчет

Равновесные концентрации реальных форм существования главных ионов в растворе для заданных почвенных проб.

	Ca^{2+}	Mg^{2+}	Na^+	CO_3^{2-}	HCO_3^-	SO_4^{2-}
Проба 1	$3,892 \cdot 10^{-3}$	$8,668 \cdot 10^{-3}$	$57,97 \cdot 10^{-3}$	$0,211 \cdot 10^{-3}$	$8,098 \cdot 10^{-3}$	$20,83 \cdot 10^{-3}$

Закреть

.3

1.

(«PROTON») //

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ION-2

Файл Отчет Справка

Проба 1

Проба Проба 1

Тип пробы	Естественный почвенный раствор
Температура раствора, °C	20.0
Общая щелочность раствора, мг-экв/л	3.2
Водородный показатель (pH)	4.6
Параметр	Значение
Ca^{2+}	0,152
Mg^{2+}	0,425
Na^+	1,22
SO_4^{2-}	0,122
Cl^-	0,005

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ION-2 SOFTWARE FOR CALCULATING THE ASSOCIATE-ION EQUILIBRIUM IN THE SOIL SOLUTION

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Summary. The ION-2 computer program was developed for calculating the actual state of the main ions with consideration for their association in the soil solution. The calculation procedure of the thermodynamic equilibrium of ion composition is based on the system of equations for the material balance of ions.

Key words: mathematical simulation, thermodynamic equilibrium, ion composition, soil solution–plant system, ION-2 software.