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SOFTWARE ANALYSIS OF AN AUTOMATED HYDROPONICS SYSTEM

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Annotation . This article automated of hydroponics software supply done increase methods present is enough Today's in the day in the world to food has been Demand increased is going Hence hydroponics _ system software supply work out of farming new stable method and market economy we will develop . "FX3U-64MT/ESS MITSUBISHI" controllers using software software supply work exit and to him need has been components in choosing Demand from being done come came out without selected sensors parameters learning and him observation and again work for software supply done increase need _ Hydroponics to systems circle previous done affairs according to inspection seeing released _ And finally gx developer software from supply used without of users mutually effect ease for one how much affairs done increased _

Key words : Hydroponics system , Gx developer, Automation , Mechatronics , FX3U-64MT/ESS MITSUBISHI, Controller ,

Introduction : Hydroponics is a Cultivation method being plants _ water and food from the mixture used without without soil in the environment is grown . This is a village economy didn't happen in the land as well as in the cities food work to issue hope wakes up . This in the system minerals and food substances with mixed water straight away of the plant to the roots effect it does _ coco-peat , perlite and others such as different different tools by support can _ Research that's it showed that it is small in size hydroponics system automation method of the following consists of computerized the system to build through done is increased :

- "FX3U-64MT/ESS MITSUBISHI" microcontroller .
- pH sensor .
- EC sensor (in the solvent food level measure for) .
- Temperature sensor .
- Liquid pumps pH and food substances to reservoirs connected .

Hydroponics advantages :

- Water thrifty Cultivation method
- Food substances and optimal use of minerals and again use
- In soil born diseases / infections / alien from weeds / pests freedom
- Traditional to farming than of the crop faster growth pace
- Water deficiency or soil cover didn't happen in places Cultivation for comfortable
- On ships / floating in the gardens farming do , city in places in your house farming to do for answer will give

Experience FX3U-64MT/ESS MITSUBISHI controller convenience increase in order to was conducted .

This method to learn preparation in the process one how much literature , sources [6, 7, 8, 9,] were studied and analysis done , that's it similar different different of materials to FX3U-64MT/ESS MITSUBISHI controller directed studies scientific from jihad seeing released _ Research work from exit main the goal :

Gx developer software supply hydroponics to the system wide current reach and this through many to achievements from reaching consists of .[11, 12, 13,]

Experience part

Research take to go for affairs technical in terms of develops . To hydroponics mineral fertilizer to give for experiential part and research transfer for FX3U-64MT/ESS MITSUBISHI controller and software supply and control measure from tools consists of laboratory stand created _ Laboratory device the following main elements own into takes :

- Software supply setup
- Gx developer program through food driver our pumps supply (Fig. 1)

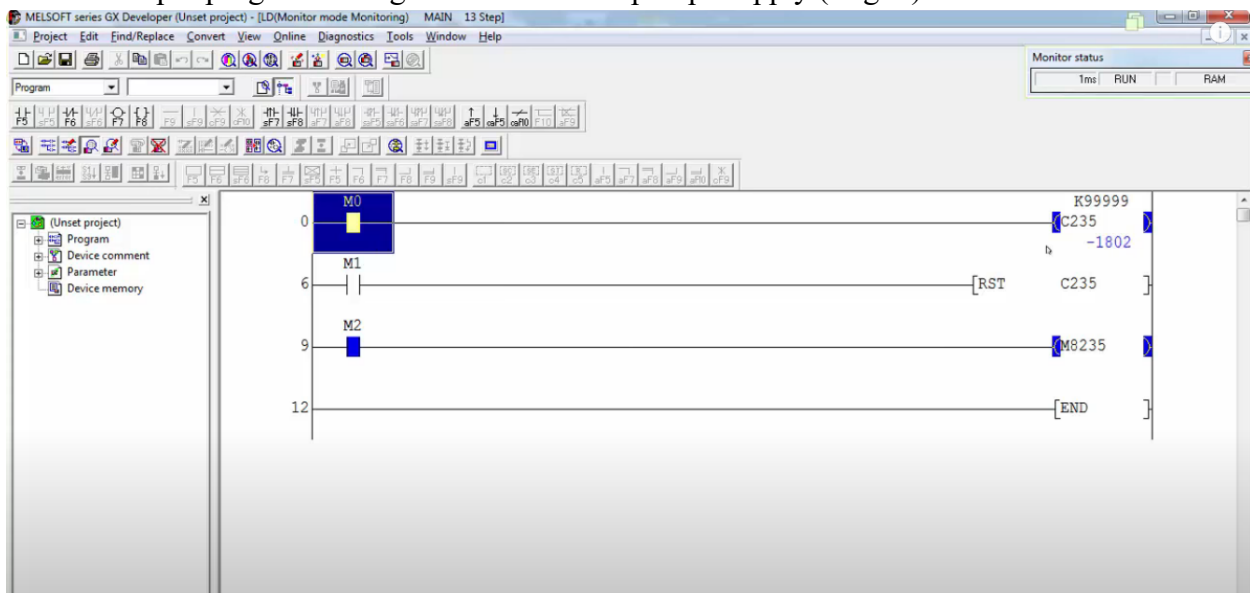


Figure 1. Food driver our pumps software supply

- Hydroponics in the system automatic program the work take going structural scheme (Fig. 2)

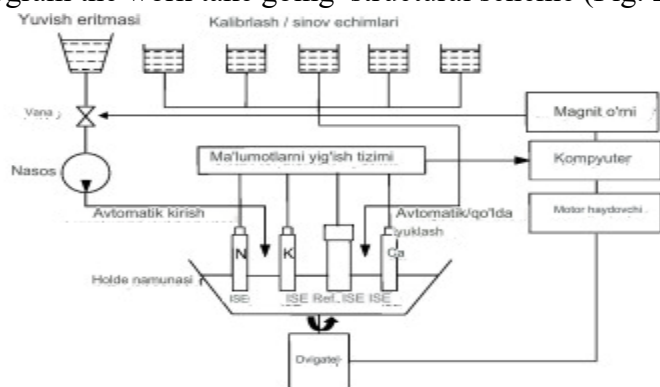


Figure 2. Hydroponics in the system automatic program the work take going structural scheme

- NO₃⁻ –K⁺– Ca²⁺–Mg²⁺ ion- selective electrodes preparation
- Nitrate feel for different different chemical mixtures with PVC -based five different ion- selective membranes is prepared . potassium (K⁺), calcium (Ca²⁺) and magnesium (Mg²⁺) ions (Table 1). NO₃⁻ and K⁺ ion- selective of membranes chemical composition Who and others by those

reported with one different was _ Ca and Mg ion- selective membranes for suitable respectively one and two chemical compositions previous in studies described to procedures according to prepared (Fig. 1).

Table 1. Hydroponics Cultivation for 200 times concentrated solutions preparation for used chemical compounds composition

(Table 1)

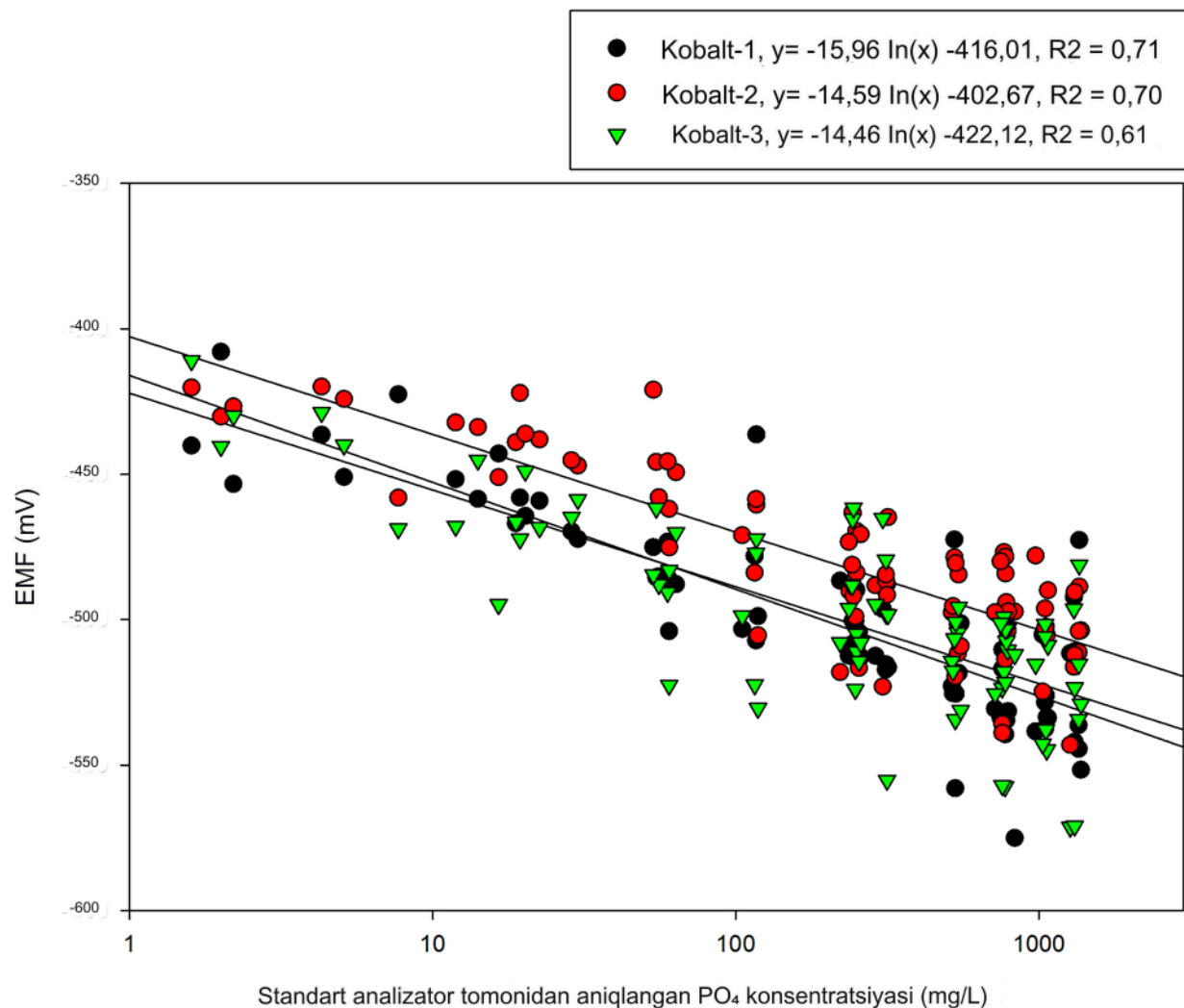
Tank	Ishlatilgan kimyoviy moddalar	Miqdori (2 L uchun)
A	KNO ₃	48 g
	5[Ca(NO ₃) ₂ · 2H ₂ O]NH ₄ NO ₃	140,4 g
	NH ₄ NO ₃	9,6 g
	EDTA-Fe (EDTAFE _{Na} · 3H ₂ O)	1,29 g
B	KNO ₃	48 g
	KH ₂ PO ₄	27,2 g
	Mg(NO ₃) ₂ · 6H ₂ O	6,4 g
	MgSO ₄ · 7H ₂ O	49,4 g
	H ₃ BO ₃	0,31 g
	MnO ₄ · 5H ₂ O	0,484 g
	ZnSO ₄ · 7H ₂ O	0,228 g
	CuSO ₄ · 5H ₂ O	0,04 g
(NH ₄) ₆ Mo ₇ O ₂₄ · 4H ₂ O	0,018 g	

Ion- selective of membranes food to substances relationship

TDDA-NPOE and Valinomycin based on NO₃ and K ion- selective of electrodes the answers suitable respectively NO₃ and K's the single ion concentration is 10 to 10 when it was From -6 to 10 -1 M. NO₃ and K membranes with obtained EMF values suitable of NO₃ and K concentration in the range from 10 -5 to 10 -1 M respectively to the logarithm almost linear proportional was _ However , the concentration of 10 - 6 to 10 -5M between tension in the indicators a little change it has been .

RESULTS AND DISCUSSIONS

This in research hydroponic system for FX3U-64MT/ESS MITSUBISHI controller through in solutions of macronutrients , i.e. NO₃ -N, K, Ca and of Mg concentration typical concentration measure for suitable those who are determination for different various PVC- based ion- selective membranes for sensitivity and selectivity tests was conducted . Of the eight ISE electrodes EMF one of time in itself measure for automatic the electrode washing and information to collect based on special work developed and work issued test stand used _



Summary

Research as a result past periods for real data samples according to trained adaptive neuro-ambiguous networks in the form of approximate models to build based on exit predict method offer done _ Offer done method based on approximation done predict model was created .

Hydroponics MITSUBISHI controllers in the system almost each how personal to the computer based on the system one how many PLC's the work time systems with in full real time to management turns _ Modular extensions opportunity functional changes and additions desired at the time done increase possible means _ If necessary if , management system openness not only the third towards components to combine , perhaps there is machines and systems for customized again equipment solutions are also possible will give .

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