142 VIII International Scientific and Technical Conference «Information Technologies in Science, Education and Production^) (ITSEP-2020)

ITSEP
Informatlon TechnologiM

2

SECTION 2
DIGITIZATION OF AGRIBUSINESS

681.5.08

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V.A. BEREZHNOY, O.A. IVASHCHUK, Y.N. MASLAKOV, V.M. YATSENKO

DEVELOPMENT OF A MULTISPECTRAL LIGHTING MODULE
FOR DETECTION OF PLANT'S INFECTION SYMPTOMS

MS0119,

in vitro (   )   .

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In the given article authors developed and tested the MS0119 multispectral illumination module, which makes it possible to study plants in vitro in various spectra. This module allows you to get high-quality photographs. The images are used to search for infections and then to create a model of the test sample. The authors study the existing lighting systems, describe their pros and cons, and offer a multispectral module as an alternative option for lighting plants in vitro.

Keywords: monitoring, lighting control, computer vision, multispectral sensor.

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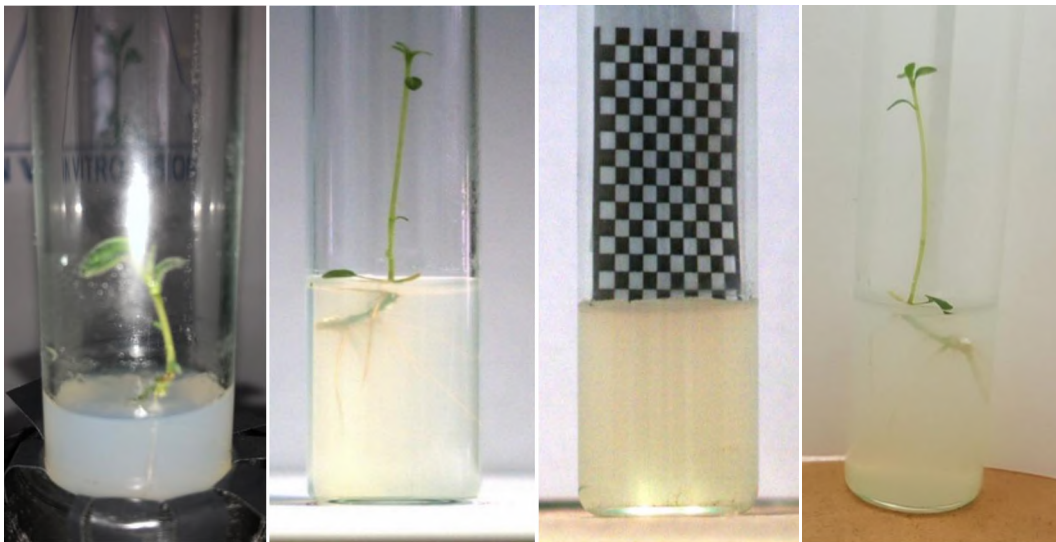,   .

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MS0119
(. 3),   (USART,
USB, SPI, I2C)   ,
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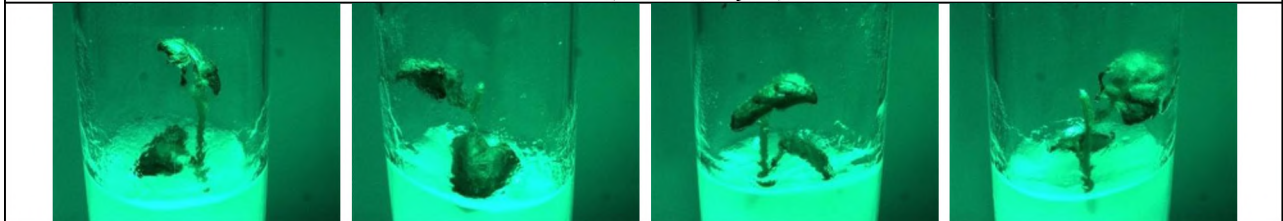|		( )		
1	945	15435385A9050	Wurth Elektronik	IR 945
2	855	15435385A9050	Wurth Elektronik	IR 855
3	730	PK2N-3LEE-SD	ProLight	Chery RED
4	660	PK2N-3LME-HSD	ProLight	Crimson
5	625	PK2N-3LRE-SD	ProLight	RED
6	590	PK2N-2LPE-A2	ProLight	Amber
7	525	PK2N-3LGE-SD	ProLight	Green
8	505	PK2N-3LCE-SD	ProLight	Cyan
9	455	PK2N-3LDE-SD	ProLight	Royal Blue
10	420	PK2N-3LLE-L	ProLight	Blue
11	400	PK2N-3LLE-SD	ProLight	UV
12	368	PK2N-3LLE-VS	ProLight	UV-S
13	6500K	SPHWH2L3D30CD4QTM3	SAMSUNG	Cold
14	2700K	SPHWH2L3D30ED4W0K3	SAMSUNG	Warm

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GigE

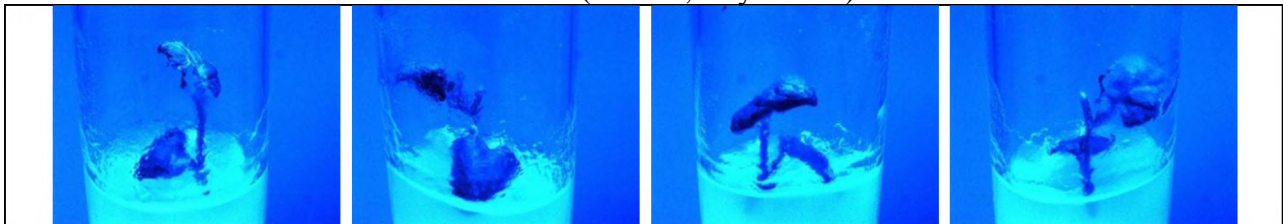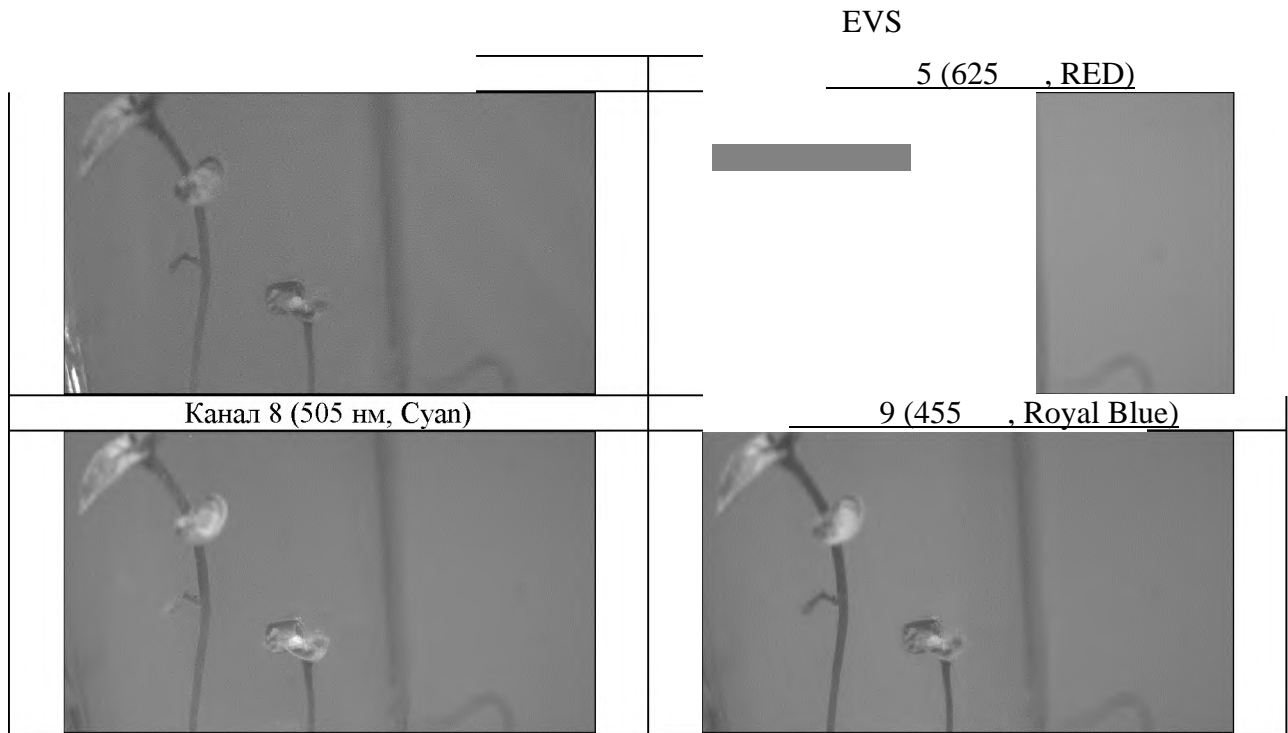5 (625 , RED)
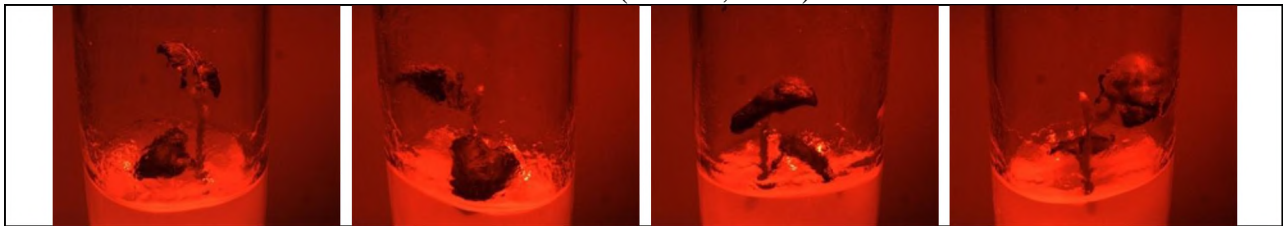
Канал 8 (505 нм, Cyan)

9 (455 , Royal Blue)

EVS

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	MS0119 GigE	MS0119 EVS	EVS
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1.   . .,   . .,   . .,   . . /
,   in vitro //
.   . 2019.   4 (2).   . 3-20.

2. Veys C., Chatziavgerinos F., Al Suwaidi A., Hibbert J., Hansen M., Bemotas G. and Grieve B. Multispectral imaging for presymptomatic analysis of light leaf spot in oilseed rape // Plant methods. 2019. Vol. 5 (1), P. 4-16.

3. Mahlein A.K., Oerke E.C., Steiner U. and Dehne H.W. Recent advances in sensing plant diseases for precision crop protection // European Journal of Plant Pathology. 2012. Vol. 133 (1). P. 197-209.

4. Bauriegel E., Giebel A., Geyer M., Schmidt U. and Herppich W.B. Early detection of Fusarium infection in wheat using hyper-spectral imaging // Computers and Electronics in Agriculture. 2011. Vol. 75 (2). P 304-312.

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