Free IT Applications and Platforms for the Improvement of Agriculture

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Abstract A large number of applications and IT solutions have appeared on the market to easily and quickly monitor, record and control processes that are very dynamic, especially when we are talking about livestock production. Each of these solutions has its advantages and disadvantages. During work, we tested the potential of using Google applications.

Keywords: informatics, IT systems, IT solutions, livestock production, monitoring, real-time monitoring

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1 Introduction

The twenty-first century is rightly said to be the century of information and informatics. Organizations that quickly and easily adapt to incredibly fast changes in all fields of work in terms of the inclusion of IT systems, will manage to survive the latest industrial revolution. In these developments, agriculture is not only not neglected, but perhaps the most intense changes are expected in it in the next period, because humanity is not only more and more numerous, but we also have to take into account the quality of produced food and the pollution of the environment as a result of production. food.

Modern agriculture requires intensive work, constant control and monitoring in all segments of work, and above all in control points. Without intensive control of the production process, we cannot count on sustainable agriculture, not only conventional, but to a greater extent organic agricultural production, which we are increasingly turning to in work, production and food processing.

The question of all questions at a time of numerous procedures, exceptional intensity of production and food traffic, how to reconcile needs and real possibilities.

The use of various IT solutions proved to be not only good, but absolutely necessary here. The next question that arises is which and what kind. In accordance with the new situation, a large number of applications and IT solutions have appeared on the market to easily and quickly monitor, record and control processes that are very dynamic, especially when we talk about livestock production. Each of these solutions has its advantages and disadvantages, and due to the fact that these are commercial IT solutions, we will not mention them individually due to positive and negative aspects. We will present the advantages and disadvantages.

Advantages of commercial applications:

- they are usually made to order by complying with the required tasks by the lieutenant
- they are transparent
- -have a sufficient number of options and sufficient memory capacity
- Disadvantages of commercial applications:

- -require not so small material expenses
- if they are made to order, they require great knowledge of the customer, what and how it should contain and how to solve certain problems
- -require knowledge of the subject from the IT specialist
- if they are templated, there is a high probability that some of the essential segments do not meet the needs
- -if the platforms are concerned, additional money needs to be invested in order to properly and sufficiently protect the data.

For these reasons, the question arose whether there are opportunities to use some applications that are free to download in production. It turns out that many applications that can be downloaded for free from the Internet are very problematic because they have numerous technical flaws, are not compatible with the valid registry, or the data is stored on servers of dubious security status, and as such, our data can be exposed publicly, which can threaten our business.

The third possibility that we have seen (and which we have successfully tried) is the use of publicly available platforms by uploading our documents to those platforms.

Example of good practice

In order to test our idea experimentally, we decided to do it on the farm of the Agricultural School with the home of the student "Sonja Marinković" from Požarevac. From the official website of the Ministry of Agriculture, Forestry and Water Management, we downloaded a number of documents for keeping records in agriculture (field book – figure1), and in cooperation with the selection service with which we have a contract, we downloaded a group of documents for keeping records in animal husbandry. This part related to animal husbandry was a much bigger challenge because it involves a large number of bound documents (cows' register card, milk card, health card of cows and heifers, insemination card of cows and heifers, register card of sows, registration card of sows and gilts, dusting card, record of used food). This documentation is characteristic because the documents are official and keeping such records in this form greatly facilitates communication with official institutions.

How was the experiment conducted? We transferred all the documentation we received from the competent institutions into an electronic record (figure3). After that, we created a special google account to which we assigned access parameters only to colleagues who need to enter data. We placed the previously mentioned documents on the Google Drive of the created account. Immediately after the intervention or measurement, i.e. some of the actions in agriculture, the colleague who did the intervention with the animal, i.e. who did the control measurement or the agricultural operation, writes the data in the table that is on Google Drive (figure2). At the same moment, such data is available for review by all colleagues (superiors and subordinates) who have access to the account.

22.01.2022.	krava 2606	crna holstajn	indigestijq	Vlada
23.01.2022.	junica 7046	holštajn	teljenje	Vlada,Žikica
28.01.2022.	krava	8575	teljenje	Vlada,Žikica
28.01.2022	krava	8575	slabije jede	Vlada, Žikica
28.01.2022.	tele	sitnije od 8575	slabije sisa,temp.normalna	Vlada,Žikica
09.02.2022.	krava	8575	ušivanje vagine	Ivan,Vlada,II/2
12.02.2022.	krave	2606,9656,4414	diarea-dat carbobizmut	Vlada
13.02.2022.	krmača	9084	prašenje-oxytocin	Vlada
15.02.2022	**krava**	8575	uživanje vagine	Žikica,Vlada
19.02.2022.	prasići	13 komada	prevencija anemije	Vlada
23.02.2022.	nazimad	7 komada	prevencija ascaridose	Vlada,II/2
24.02.2022.	4 krave,5 svinja		ultrazvuk	Žikica,Vlada
25.02.2022.	jagnje		vulnera-ušivanje	Boba,III/2,Vlada
26.02.2022.	2 jagnjeta		shotapen,promselen	Vlada,II/2
26.02.2022.	krava	v.o. 1425		Vlada,Žikica
10.03.2022.	ovca		shotapen,dexa	Vlada IV/2
12.03.2022.	telad	8661,8662,8663	diarea,enrocin,hemoglobin s	Vlada,Žikica
22.03.2022.	krmača		prašenje,oxytocin	Vlada
28.03.2022.	17 prasadi		prevencija anemije	Vlada,Vesna,IV/
28.03.2022.	krmača		prašenje,oxytocin, shotapen	Vlada
29.03.2022.	krmača		retencija, ,shotapen, oxytocin	
29.03.2022.	2 nazimice		pg600	
	krava	8575	repozicija i uživanje vagine	Vlada,Žikica,IV/
23. 03.2022.	junica	4414	v.o.	Vlada, Žikica
01.04.2022.	12 praseta		prevencija anemije	Vlada,III/2
01.04.2022.	12 praseta		avitaminoza,promselen,B complex	Vlada, III/2
01.04.2022.	krmača	4785	prašenje,oxytocin,shotapen	Vlada
03.04.2022.	2 praseta		shotapen,dexa	
03.04.2022.	junica	4413	v.o.	Vlada,Žikica
08.04.2022.	12 praseta		avitaminoza AD3E,B kompleks	Vlada,Ii/2
08.04.2022.	16 praseta		prevencija anemije	Vlada,II/2
22.04.2022.	krave	9656,6553	lečenje sterilitet,deferelin	Vlada,Ivan,II/2
28.04.2022.	krava	9656	diarea,enrocin 10%,velecarbo pulvis	

Figure 2:
Source: own.

In this way, each of the colleagues has insight in real time into the changes that are happening in the economy, and it is easier to plan the next steps, but the realization of previously agreed actions. However, immediately after starting to use this approach in our work, we noticed a big problem – access to data by a large number of people potentially leads to accidental or intentional errors in entries, i.e. it is very easy to change the data in the tables, and it is easy to change previously entered data. In this way, a very important item, which is data security, has become very debatable and problematic.

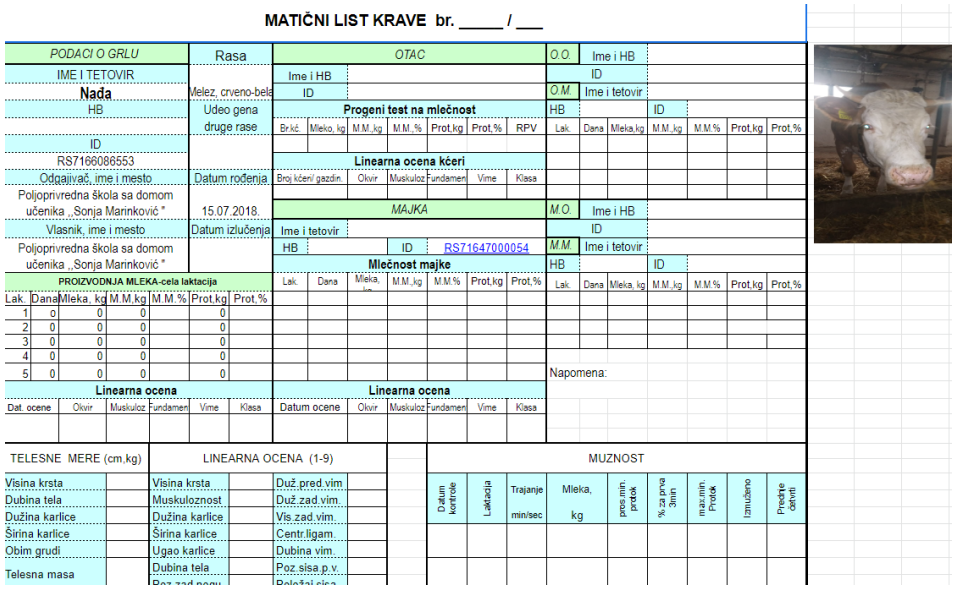

Figure 3:
Source: own.

This problem was solved in such a way that the data was entered in real time, but several memory records were made during the day in order to permanently save the data through recorded tables. With such an approach, we solved the problem of losing tables, but we created another problem related to the appearance of a large number of saved tables. However, when we made a cross-section of costs and obtained quality, we accepted that such solutions are still applied.

Advantages of this approach:

- it's completely free
- mobile phones and computers are used without high technical requirements
- they can be used by people without special training
- easy data entry
- easy access to data
- the data is entered into the electronic form of the official documents of the selection service
- Disadvantages of this approach:
- easy data loss
- tables are difficult to view for quick input, it is necessary to know the table formation well
- active internet is required for entering and searching data
- regular memorization of data is necessary
- good management of stored data is necessary.

References

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