MEF4CAP

Monitoring and Evaluation Frameworks for the Common Agricultural Policy

Lessons learned brief

Demonstration Case 1, Poland: Integrating and digitalising administrative data in FADN to support efficient and sustainable fertilization.

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Short summary of the Demonstration Case, its rationale and objectives

Demonstration Case 1 (abbreviated DC1) was conducted in Poland with selected farms covered by the farm accountancy data network (FADN). The objective was to test the feasibility of collecting new information and generating new indicators that could be used for monitoring and evaluation of the Common Agricultural Policy (CAP). New indicators were integrated with annual reports to provide farmers with information to support farm management.

Indicators related to efficient soil fertility management are regarded as having great importance since national statistics indicate overuse of fertilisers in Polish agriculture. The farms in this DC have different production types and economic sizes and were selected to collect experiences and opinions on the new indicators that would, as much as possible, reflect most agriculture producers in Poland. Experts collecting FADN data for those provided farmers with information on the DC. They also collected additional data.

In order to minimise additional burdens on farmers and their advisors in the collection of data for FADN, an automatic, direct transfer of digital administrative data was proposed. Namely, the integration of data on parcels (from the Paying Agency or PA, hence LPIS, IACS) and the type of production (from FADN) of the farms participating in the DC, were tested. The administrative parcel data were therefore combined with additionally collected data on crop production at field level, mineral and organic fertiliser applications and catch crops.

Currently data on fertiliser use, collected for FADN purpose, is aggregated at farm level. Therefore, it can only be analysed as an element of the total cost of on-farm production. Farmers would benefit from the new indicators given the more accurate information on possible adjustments needed in fertiliser application.

A schema of the data flows between farmers, IACS and FADN is given in Figure 1:

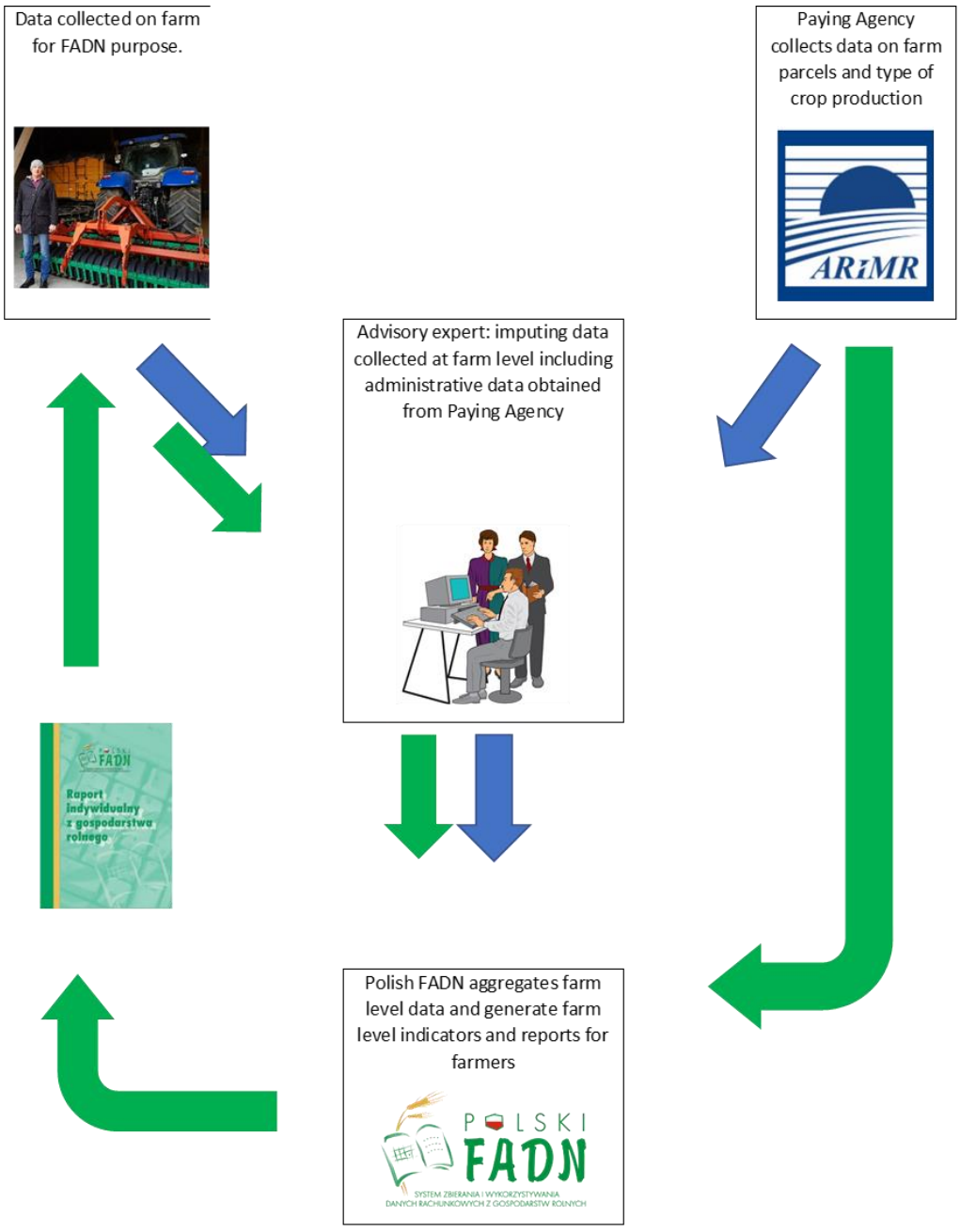

Figure 1: Flow of data in Polish FADN – green lines present the new concept with direct data flow from Paying Agency to FADN to generate a report for the farmer with new indicators.

An important part of DC1 is also to collect the opinion of farmers and their advisors on the new indicators, their collection process, and opportunities of digitalisation also for practical applications in farm management.

Let us now reflect on the technologies suggested in the DC, on the data and indicators generated and on the adoption process altogether. What can we say about the "readiness" level (from a technological and social perspective) of the technologies suggested in this DC? Are these ready to be adopted and if not, what are the reasons why?

There are several obstacles preventing a broad application of the solutions proposed in DC1, and hence their 'readiness' level. These can be classified as into the following categories: organisational; methodological; and social issues.

The main organisational problem relates to the inconsistency between data collected at farm level for FADN, and administrative data collected by the PA. By definition, FADN data are as much as possible close to the actual farm situation. For instance, what was revealed in DC1 was that there is a discrepancy between land formally (as reported by the PA) and informally (captured in FADN) cultivated by the farmer due to informal renting of land. Secondly, the administrative data on crop production collected by the PA is not as detailed as the one collected by FADN. Therefore, the connection between digital data provided the by the PA and the FADN data, required the assistance of both the farmer and the advisor to correctly match cultivated land parcels (originated from the PA) with crop production data (from FADN).

Organisational and methodological issues relate to interoperability. Despite a clear ambition by all parties to allow the automatic transfer of administrative data (IACS) to FADN, procedures to make this possible are lacking, resulting in the less straightforward flow of administrative data to farmers and then from farmers to the FADN system.

For a broad uptake of new indicators, the above issues are likely to be solved with advanced technical solutions such as artificial intelligence (AI). However, this requires elaboration of the procedures and algorithms and working on samples as an input for AI.

There are two kinds of observed obstacles related to social matters. One is the farmers ability to correctly interpret new indicator values. A manually calculated balance of nutrients based on amount of fertiliser applications (natural and mineral) and plant assimilation of nutrients, cannot replace periodical soil tests. Also, there are many factors out of the farmer control that influence assimilation of NPK. Adjustment of doses should therefore be assisted by experts.

The other obstacle is trust related. Values that would suggest overuse of fertiliser could result in farmer unwillingness to provide data in the future. To argue in favour of farmers sharing their data, we must ensure that results will create win-win conditions. Results should actually suggest policy measures that will encourage farmers to apply more environmentally friendly practises. This issue of trust and unwillingness to share data in the future also relates to the (unintentionally revealed) discrepancy between formally and informally cultivated land due to informal renting of land.

Can the solution suggested be adopted by all type of farmers or different ones should be used depending on farmers type (small scale, large scale, etc.)

The problems mentioned above, of connecting administrative and FADN data, affects all farms. In the case of administrative data transfer automatisation, additional data will still be required - for example collection of mineral fertiliser application per plot (FADN collects such data per holding). For small and medium scale farmers we do not see technical solutions for automatic collection of fertiliser application at plot level which are affordable (economically justified). Small scale farms rather continue to collect and input data manually for the FADN database.

It is also true that annual reports would be available for all farmers that are enriched with the new indicators upon collection of additional information regarding mineral fertiliser application per plot.

What about the data/indicators used/generated in this DC? Anything missing that needs to be considered? Reference for instance is to the time dimension for some indicators, needed for monitoring over time.

Due to the sensitivity of the new indicators to other factors, e.g. rainfall, soil moisture, experts suggest periodical application of soil tests to cross check accuracy of the manually calculated new indicators. For example, unusual weather conditions can result in excessive leakage of nutrients that is not connected with unproper fertiliser management practices. Similarly, comparison of new indicators values between farms is complicated while adjustment to local uncontrolled conditions such as weather, must be taken into account.

What motivates stakeholders to adopt the proposed technologies?

Farmers participating in DC1, regardless of the scale and type of the farm, are interested in improving economic results.

New indicators would help them to optimise the use of mineral fertilisers, given the availability of more precise (plot level) data. As a result, this would lead to systematic monitoring of fertiliser use and optimisation of costs. It would also help in the long term to justify a broad application of catch crops for reducing nutrient leaching.

Which barriers do you think this stakeholder faces when adopting the technologies?

Some of the obstacles related to organisational and methodological barriers, on top of the social factors mentioned above.

Collection of additional, more accurate data on fertiliser application at plot level is a significant problem for farmers. This implies investing time - an asset that good farmers are always short with - in additional activities that do not directly translate into economic benefits. Farmers mentioned that new technologies for the direct transfer of digital data, despite aiming to reduce their burden, require additional knowledge. In the case of this DC inconsistencies between administrative and FADN data bases resulted in additional work for farmers and their advisory expert.

Given these barriers, which actions/measures do you think should be in place to overcome them? By whom?

Demonstration of the future economic benefits of improved fertiliser management with the support of new indicators is likely to encourage farmers to undertake the additional effort required. Advisors that assist farmers with FADN accountancy could help explain to farmers what the potential benefits of new indicators are. Similarly, they could help in the interpretation of the new indicators' values.

Any other comment or insights from the national workshops

Advisors that participated in the national workshop expressed the need for training to support farmers with new indicators interpretation. Further adoption of the advanced technologies for the direct transfer of digital data to FADN is also a challenge for advisors. On the one hand, the majority of small farmers are rather disinterested in undertaking heavy investments while the problem of succession exists for their farms. On the other hand, in some large farms advanced technologies supporting fertilisation management (e.g. machinery equipped with technologies automatically recording and transferring data on fertiliser application at plot level for farm management purposes) are already in use.

Any reflections on the applicability of the DC to other contexts (other users, other member states, other indicators).

Despite the declarations of policy makers, the future of small family farms is rather murky. The cost of new technologies makes them affordable only for bigger farms, which deepens the technological gap between the two. One can expect some dramatic structural changes in the near future followed, only then, by a broader adoption of new technologies.

