MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT OF THE SLOVAK REPUBLIC

Regulation (EU) 2017/1004 of the European Parliament and of the Council of 17 May 2017 on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008

Commission Implementing Decision (EU) 2016/1251 of 12 July 2016
adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019.

Commission Implementing Decision (EU) 2016/1701
laying down rules on the format for the submission of work plans for data collection in the fisheries and aquaculture sectors.

Commission Implementing decision 2018/1283
laying down rules on the format and timetables for the submission of annual data collection reports in the fisheries and aquaculture sectors

Slovak Annual Report for data collection in the fisheries and aquaculture sectors

2020

Version [1] – [2020] *(not to be added if same as above)*

BRATISLAVA, 28. 5. 2021

CONTENTS

SECTION 3: ECONOMIC AND SOCIAL DATA

PILOT STUDY 4: ENVIRONMENTAL DATA ON AQUACULTURE

General comment: This box fulfills paragraph 2 points (b) and (c) of Chapter III of the multiannual Union programme and Article 2 of the Decision (EU) 2016/1701.

General comment: *Proposal for a pilot study on collecting environmental data and analysis of micropollutants in pond aquaculture in Slovakia*

The main objectives of the proposed project, corresponding with the global developments in this area, are:

- *monitoring the occurrence of microplastics, pesticides, hormones, toxic metals, pharmaceuticals, drugs and their metabolites in water and sediments of selected ponds in Slovakia*
- *monitoring the possible distribution of micropollutants from water and sediments of selected ponds into fish*
- *evaluating the possible occurrence of selected types of micropollutants, the description of their dominant sources, their distribution into fish and the environmental risk for the aquatic ecosystem in Slovakia and the on consumer.*

Based on these findings, a detailed report with recommendations, a map of analyses and a electronic brochure for fish farmers and pond owners will be produced. Aquatic ecosystem contains many different micropollutants, such as pesticides, pharmaceuticals and drugs, which may have a dangerous impact on the aquatic environment and the organisms living there. Some types of pharmaceuticals, drugs and their metabolites are capable of affecting the behaviour, reproductive capacity and other properties of aquatic organisms even in small quantities. Currently, a significant portion of foreign studies focuses on the behaviour of these micro pollutants in the environment. Scientific studies over the past five years have indicated the presence of particular drugs not only in wastewater, surface water or groundwater, but also in the bodies of aquatic organisms. In addition, some of these substances are able to accumulate in the environment as well as in the bodies of aquatic organisms and get into the food chain. In this pilot study, we would like to contribute not only to the most recent scientific findings, but also to their practical use and greater protection of the environment and also get information about final fish product produced in pond environment. However exist few data about this problematic, proposed pilot study is first and unique project in Slovakia that covers all the pond-aquaculture´s sector. Pilot project on the collection of environmental data and assessing the risk of micropollutant distribution into the pond aquaculture environment, a comprehensive picture of data regarding the Slovak pond aquaculture sector is to be created. The aim of the proposed pilot study is to create a suitable starting point to ensure an optimal response for landlocked countries that are subject to mandatory environmental data collection in the future, including monitoring of the occurrence of micropollutants in water and sediments.

2. Duration of pilot study

2020-2021 (24 months)

The project will proceed in two stages. In the first stage sampling and analysis will be carried out (18 months), followed by an evaluation of results, creation of a report and a sampling map (4 months).

1. Method selected for collecting data.

In the proposed pilot study, we will investigate the occurrence and possible penetration of selected species of aquatic ecosystem micro pollutants into common carp (carp) in production ponds in Slovakia using highly sensitive analytical instruments and methods. Specifically, it will be the monitoring of the occurrence and possible penetration of groups of micropollutants such as pesticides, hormones, pharmaceuticals, drugs and their possible metabolites, toxic metals or compounds from the PCB group. The monitoring will be carried out on 60 to 100 production ponds, the water of individual ponds (dominantly decanted samples), sediment below 5 mm and selected fish species (carp) will be analysed. During the pilot study, 100 samples of water (the volume of one sample will be 2 liters), 100 samples of pond sediments (the dry weight of the sediments will be 100 g), and 300 pieces of selected fish (a sample of 100 g of muscle from each subject) will be analysed. The environmental impact will be compared with possible impact on carp muscle and on the consumer. Carp will be collected in live weight range 2-3 kg. From one production pond 3 carps will be collected. (approx. 300 fish to be examined). The carp will be subjected to analytical methods to evaluate the occurrence of selected specific groups of micropollutants (hormones, pharmaceuticals, drugs and their metabolites, pesticides, PCBs, toxic metals and microplastics) which can enter into fish from pond environment. From a

scientific point of view, it is essential that the method development and data collection on Slovak production ponds is subject at least 60 ponds to make a relevant statistical statement. Because of the different nature conditions, there are influences on the results of the survey, which cannot be determined in advance. These factors can only be determined and taken into account adequately when interpreting data in a statistically sufficiently secure data situation. Data sets from less than 60 ponds cause higher statistical uncertainties and may therefore lead to misinterpretation of data and results. The analysis of individual types of micropollutant groups will be carried out using several analytical techniques:

- GC and LC-MS / MS (analysis of pesticides, hormones, pharmaceuticals, drugs and their metabolites or compounds of the PCB group),
- UV-VIS spectrophotometer (selected metals, some PCBs),
- Atomic absorption spectroscopy (AAS) (selected toxic metals)
- FTIR / Raman spectroscopy, fluorescence and SEM electron microscopy (microplastics and nanoplastics),

Also the possible hormonal (estrogen) activity of the obtained samples will be investigated.

2. Were the planned number achieved?

The Monitoring committee approved pilot project on 27th May 2021. Managing authority will soon prepare call for this project. Main part of pilot study such as collecting of the samples should start in September 2021. After evaluation of samples, report will be prepared until May 2022.