

Dans le cadre des projets



EPURVAL 2



IMTA - Romanian study case

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Associer les espèces pour une aquaculture durable :
l'aquaculture multi trophique intégrée

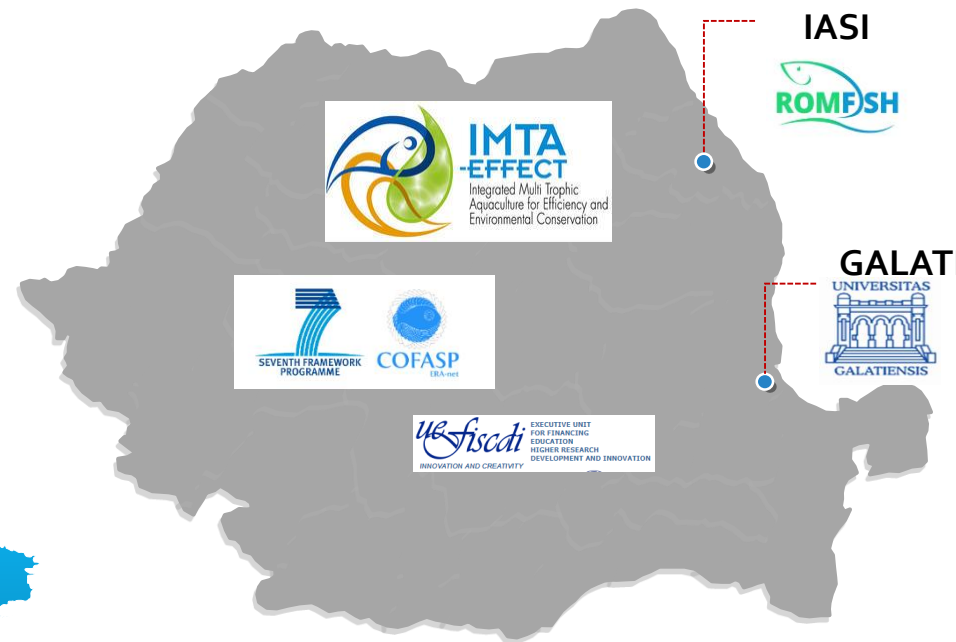
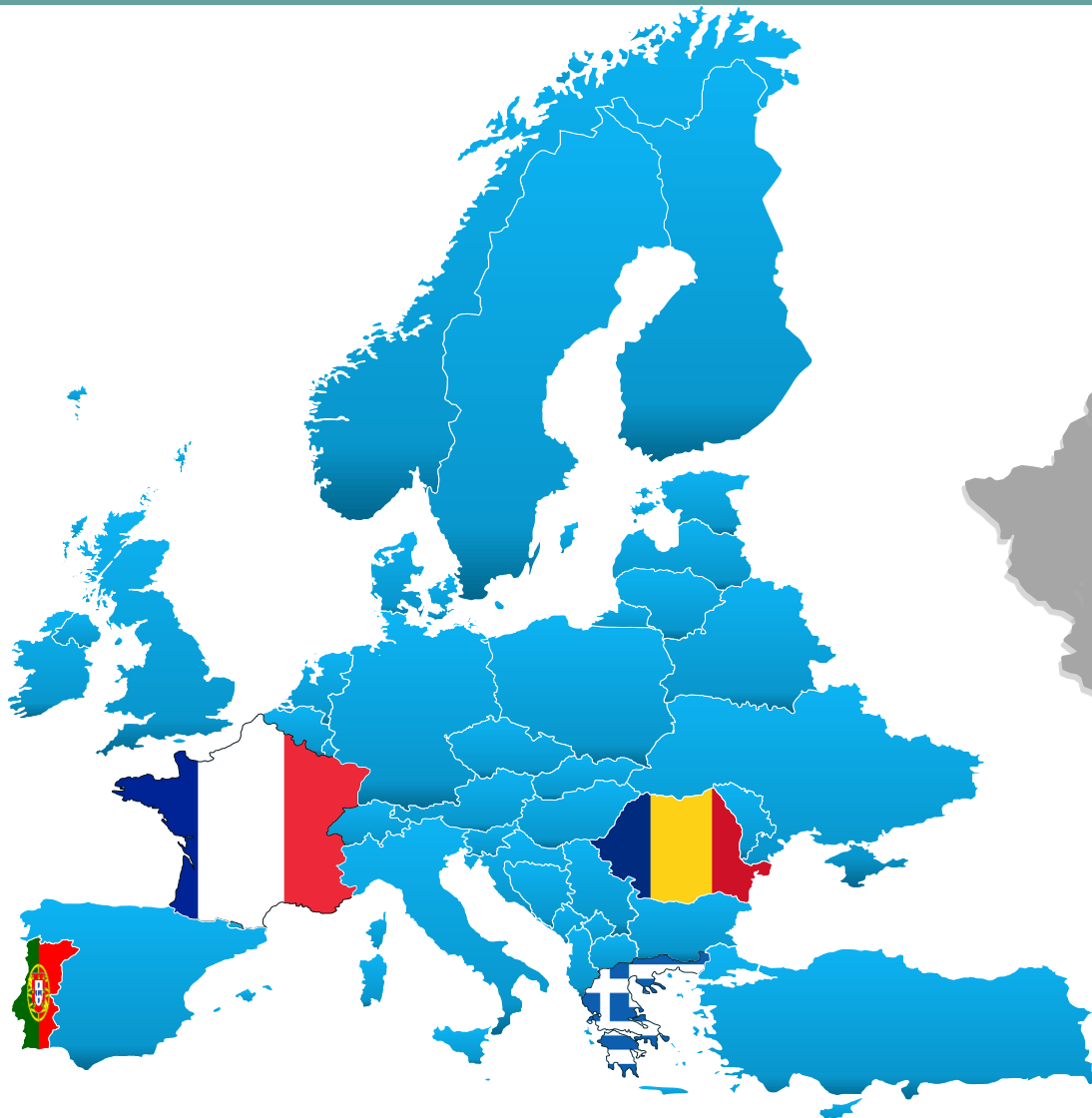
Avec la participation de :



Breiz'alg



Romanian context



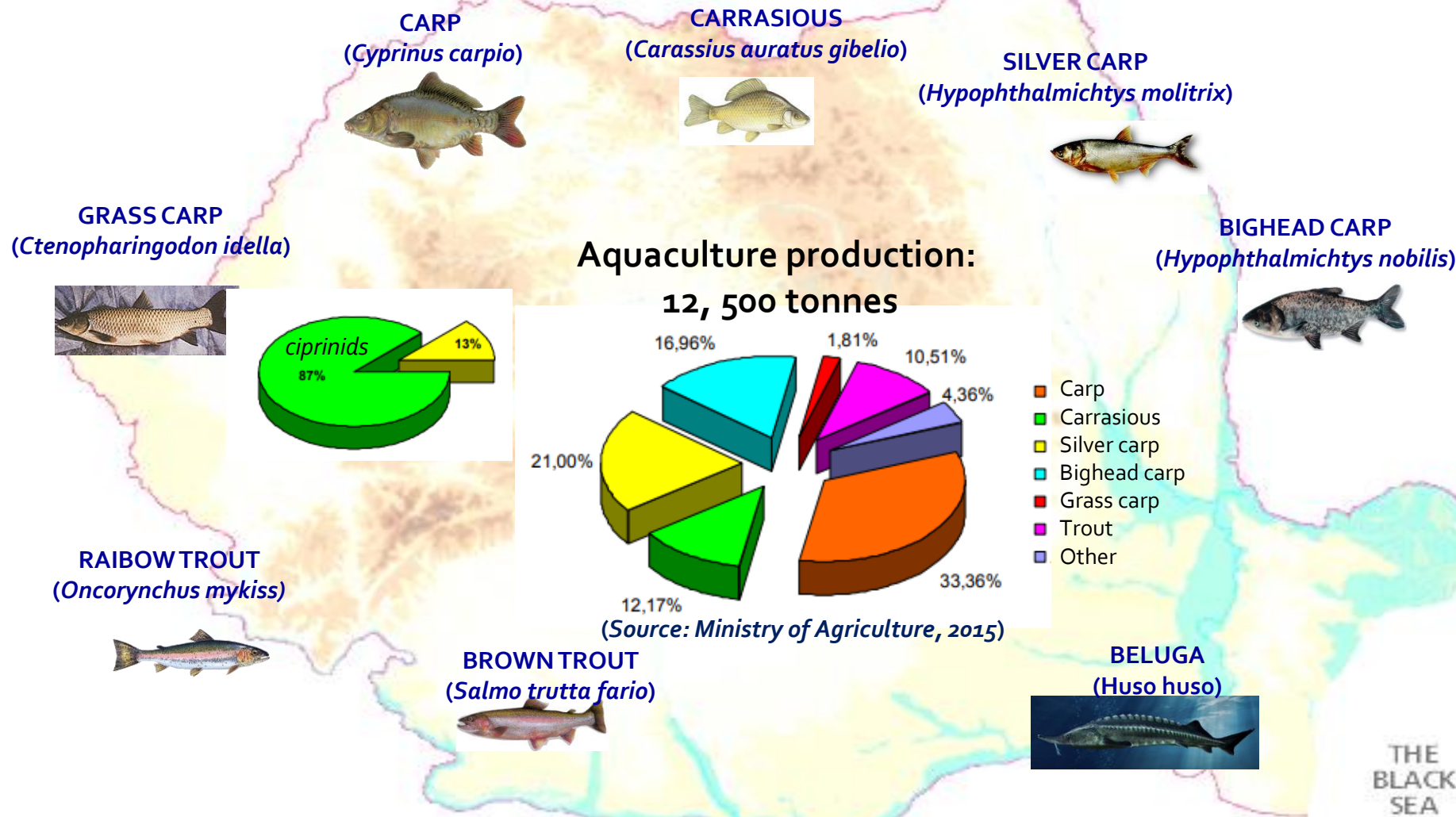
Surface: 238,000 km², of which 3% represents inland waters.

- 400,000 ha natural lakes and ponds;
- 84,500 ha fish farms;
- 15,000 ha fish nursery areas;
- 66,000 km rivers of which 18,200 km are mountainous;
- 1,075 km in the lower Danube; and
- 25,000 km² are representing the exclusive economic area of the Black Sea

Romania
Hydrographical
network



STATUS OF THE AQUACULTURE IN ROMANIA



To identify the links between the living aquatic organisms and biological compartments, in order to optimize the use of nutrients and to propose new production systems, more efficient and environmentally friendly.



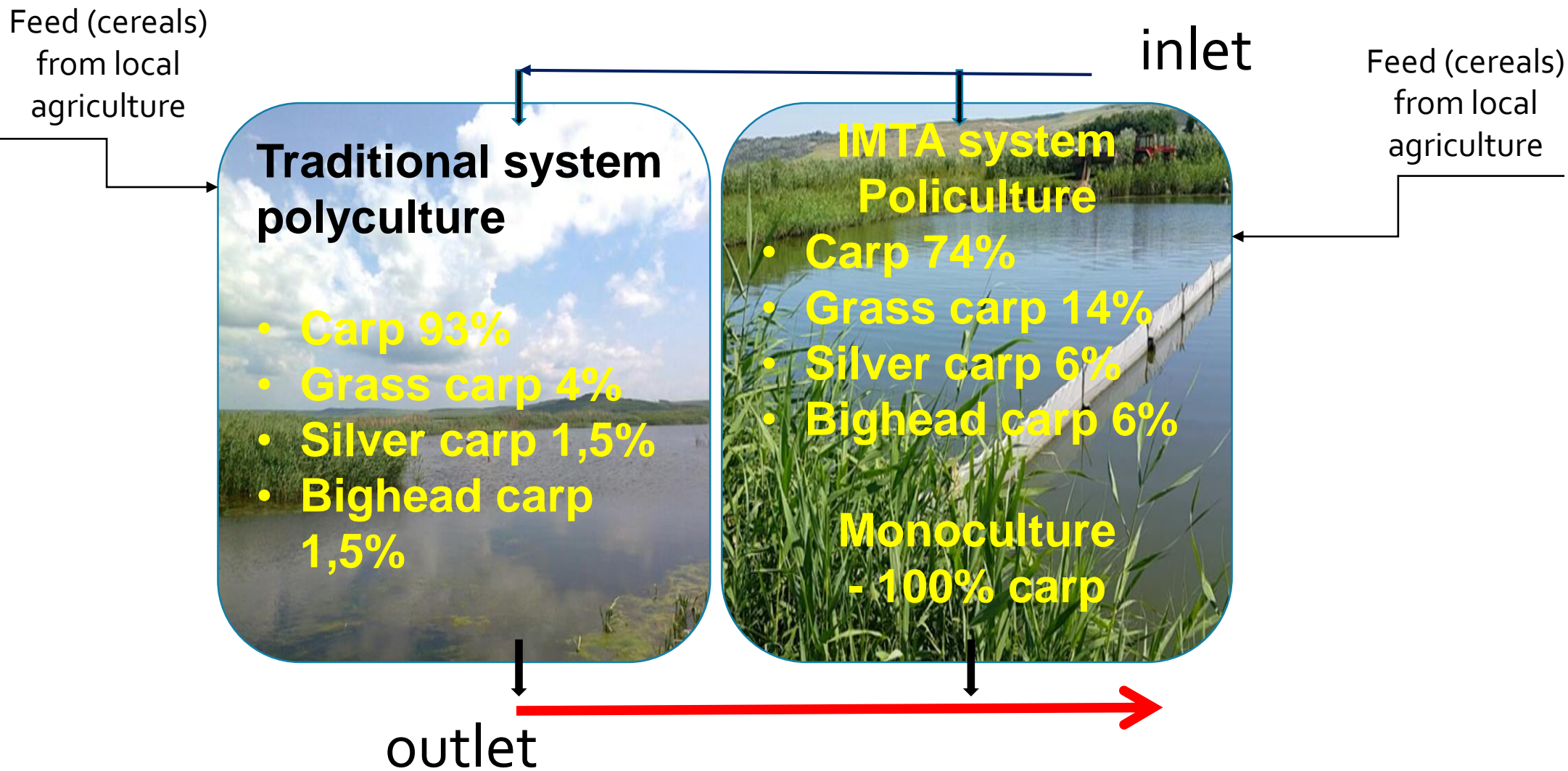
Content

• 2016 - MOVILENI Fish Farm, IAȘI

• 2017 - VLĂDENI Fish Farm, IAȘI



Experimental model



Experimental observations



Zootechnical performances of cultured ichthyofauna



Biological communities in experimental ponds

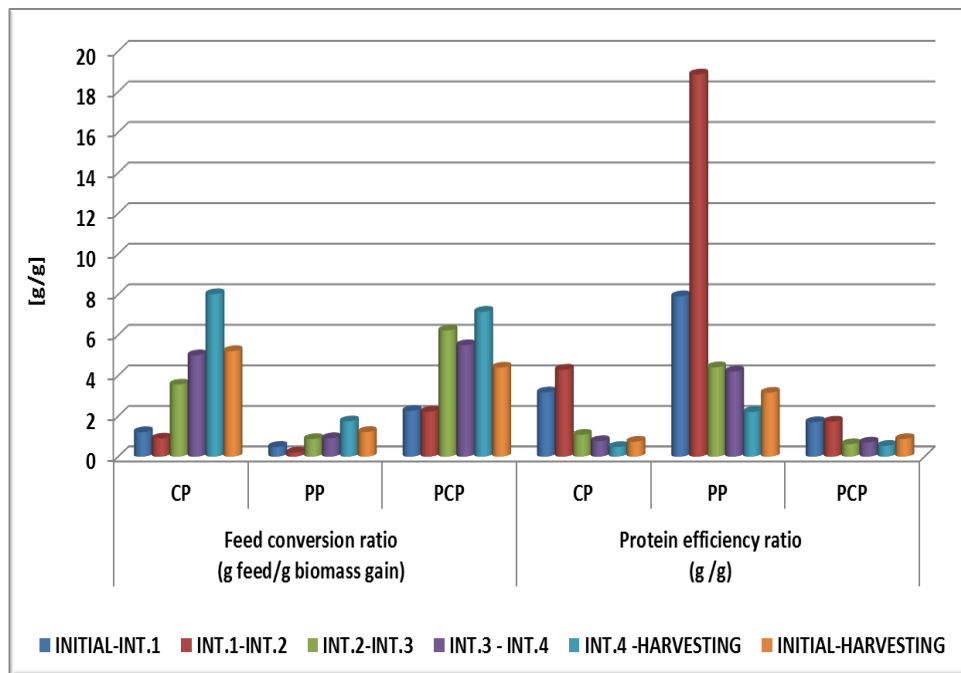


Fate of nutrients in the productive compartments

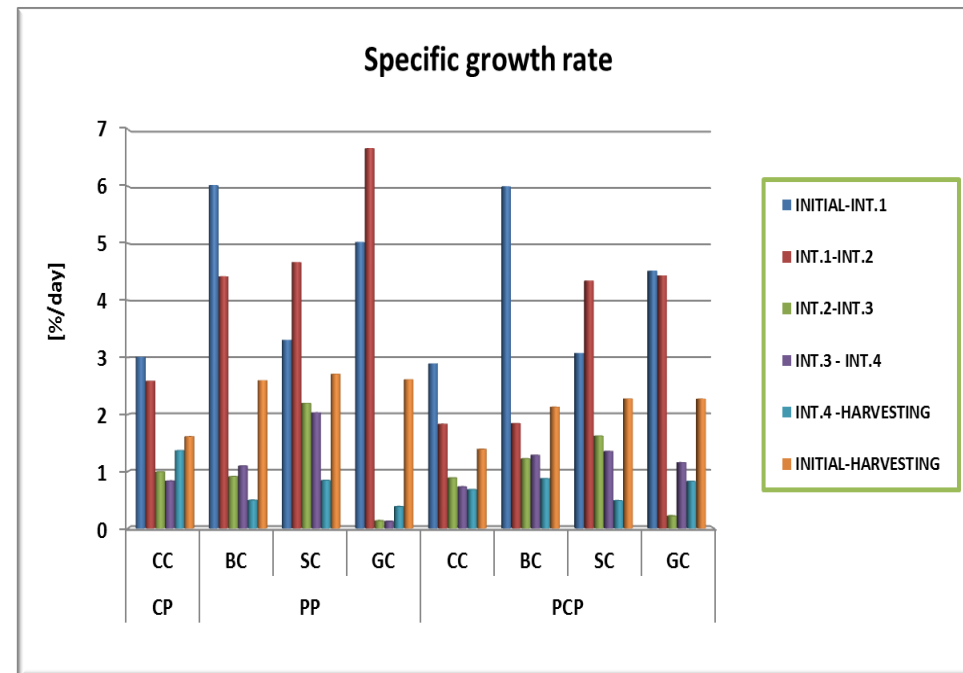
Zootechnical performances of cultured ichthyophauna



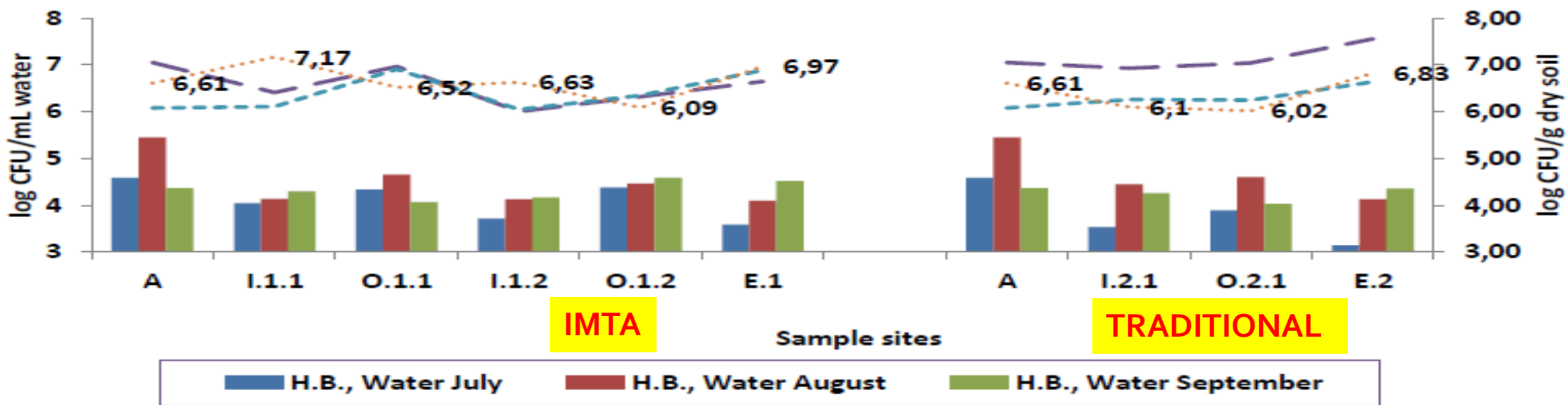
Evolution of feed conversion ratio (FCR) and protein efficiency ratio (PER) for each species and tested variants



The evolution of specific growth rate (SGR) per species and variants



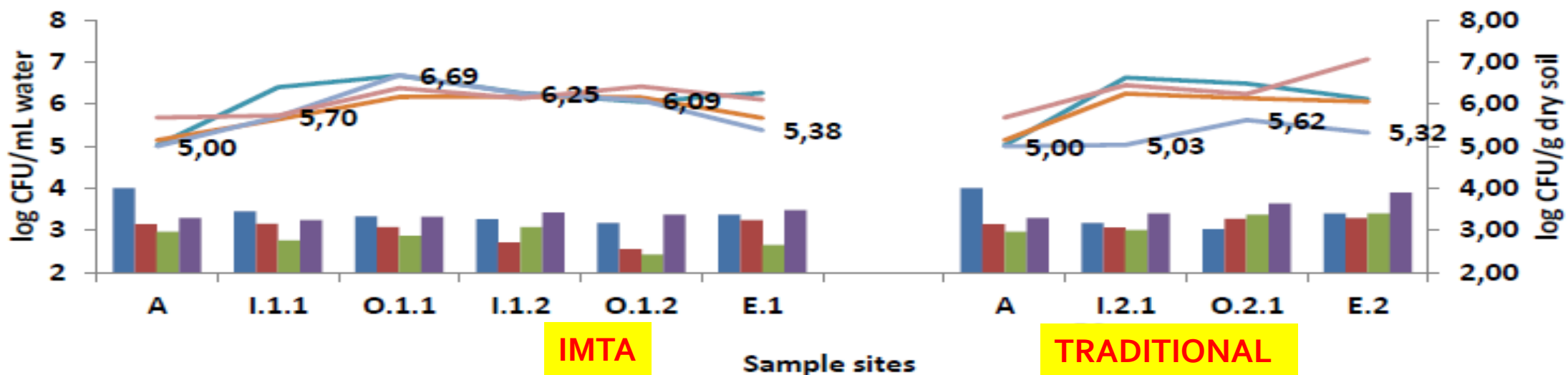
Biological communities in experimental ponds



The total number of heterotrophic bacteria from water and soil in vegetative season, Movileni

For soil, the number of heterotrophic bacteria ranged from 6.05 to 7.17 log CFU/g dry soil for IMTA system and from 6.10 to 7.51 log CFU/g dry soil for traditional system.

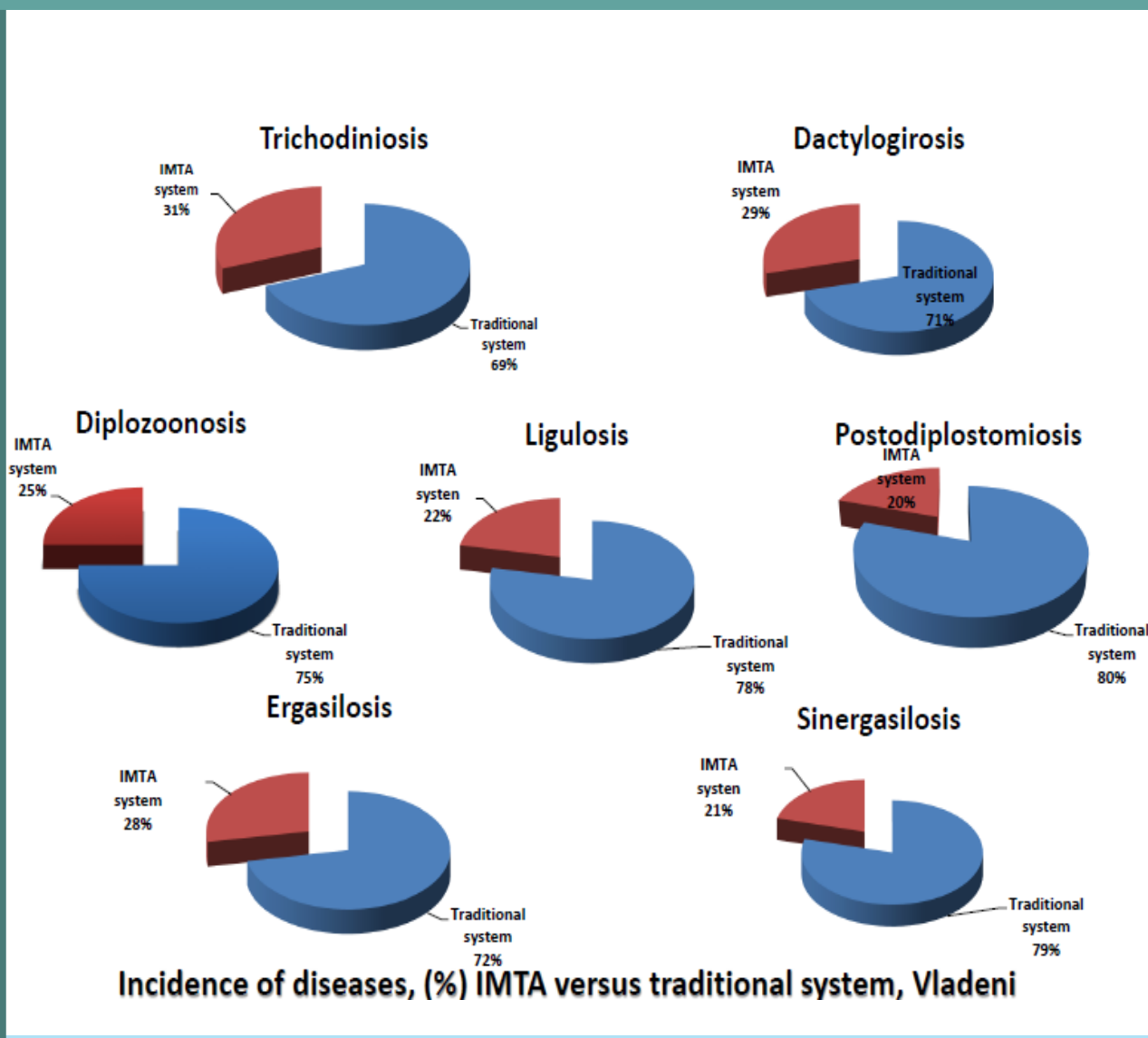
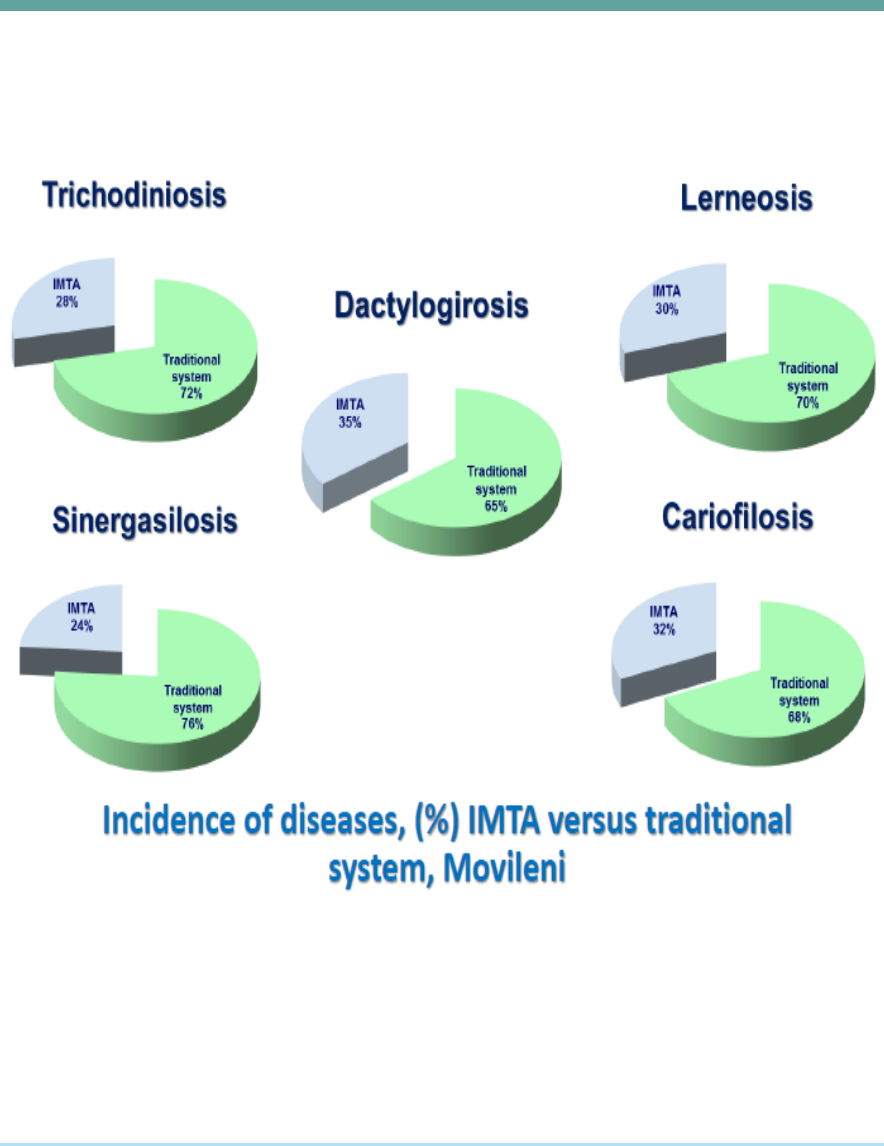
Biological communities in experimental ponds



The total number of heterotrophic bacteria from water and soil in vegetative season, Vladeni

The number of heterotrophic bacteria ranged from 5.00 to 6.38 log CFU/g dry soil for IMTA system and from 5.00 to 7.07 log CFU/g dry soil for traditional system.

Biological communities in experimental ponds



Fate of nutrients in the productive compartments



Nitrogen (kg)	2016				2017			
	IMTA		Traditional		IMTA		Traditional	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Fish	8	17.03	9.02	18.8	2.36	40.43	2.42	25.18
Feed	12.79		33.91		61.48		143.45	
Sediments	60.75	63.15	69.85	76.88	40.21	48.94	50.82	64.16
Water	121.68	261.76	153.65	371.49	125.5	163.59	178.63	299.56
Reeds		15.68		47.39		17.28		105.53
Unrecorded	154.4		248.13		40.69		119.11	

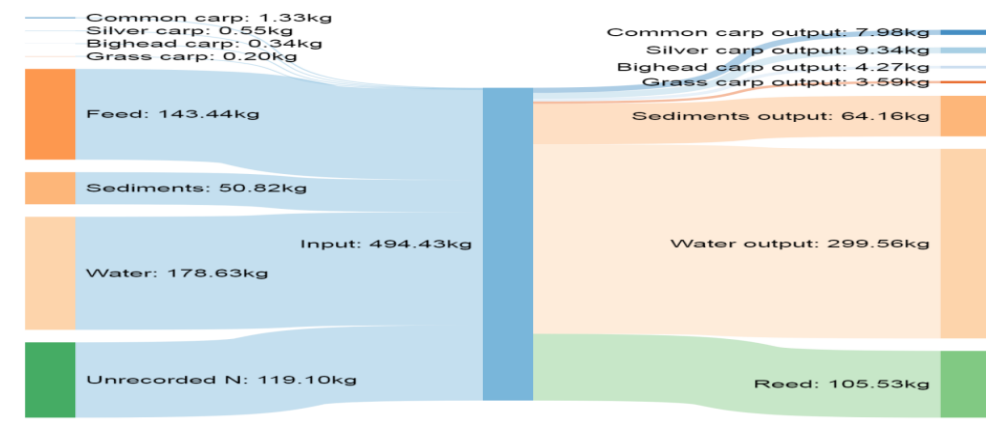
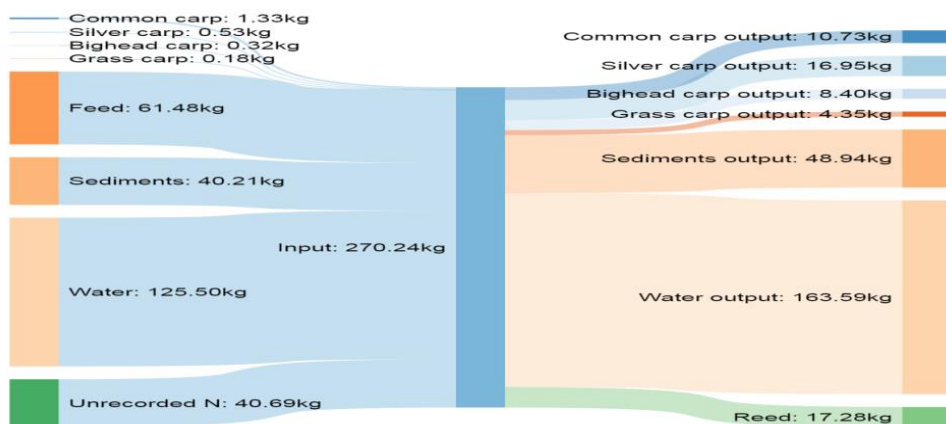
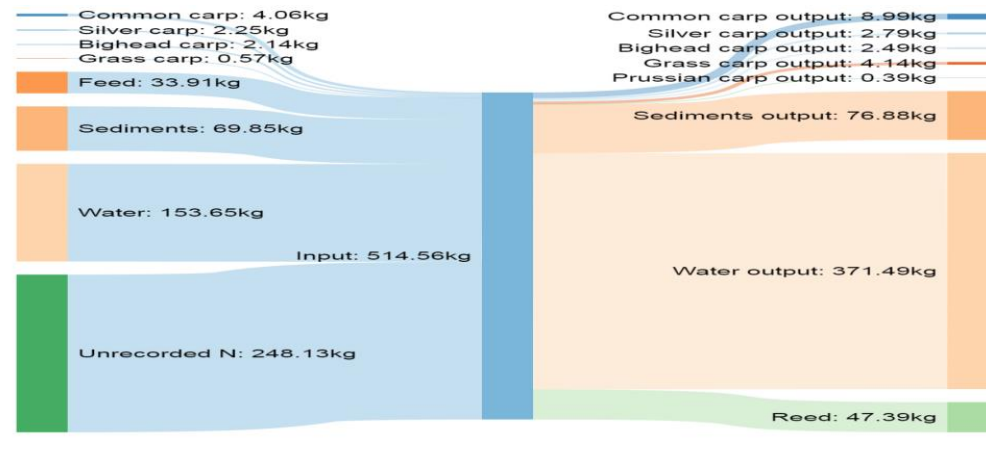
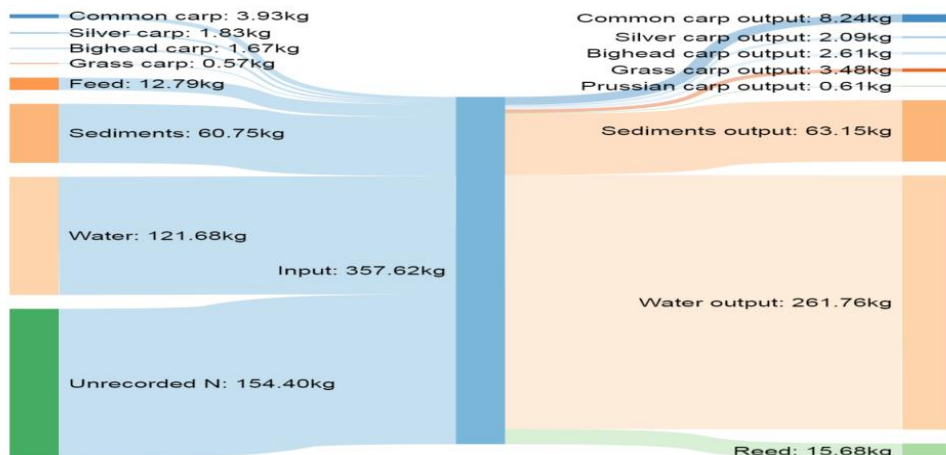
Phosphorous (kg)	2016				2017			
	IMTA		Traditional		IMTA		Traditional	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT
Fish	0.3	1.54	0.54	2.45	0.79	13.26	0.81	8.85
Feed	2.57		6.81		9.31		21.72	
Sediments	6.63	8.85	8.85	11.42	2.46	19.24	8.71	27.32
Water	15.49	15.89	17.35	22.13	136.54	168.57	131.11	226.23
Reeds		0.78		2.3		0.05		0.42
Unrecorded	2.07				52.02		100.47	

Fate of nutrients in the productive compartments

IMTA pond

Polyculture pond

Total nitrogen (TN) in the experimental trials



Associer les espèces pour une aquaculture durable : l'aquaculture multi trophique intégrée

Avec la participation de :

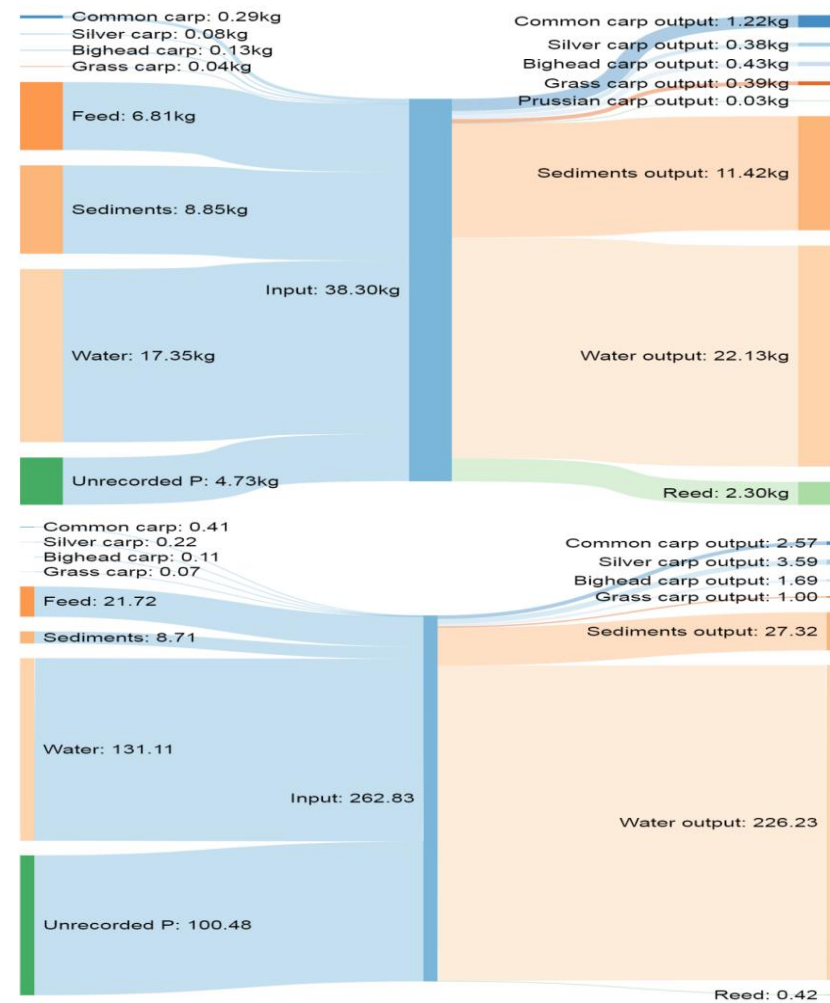
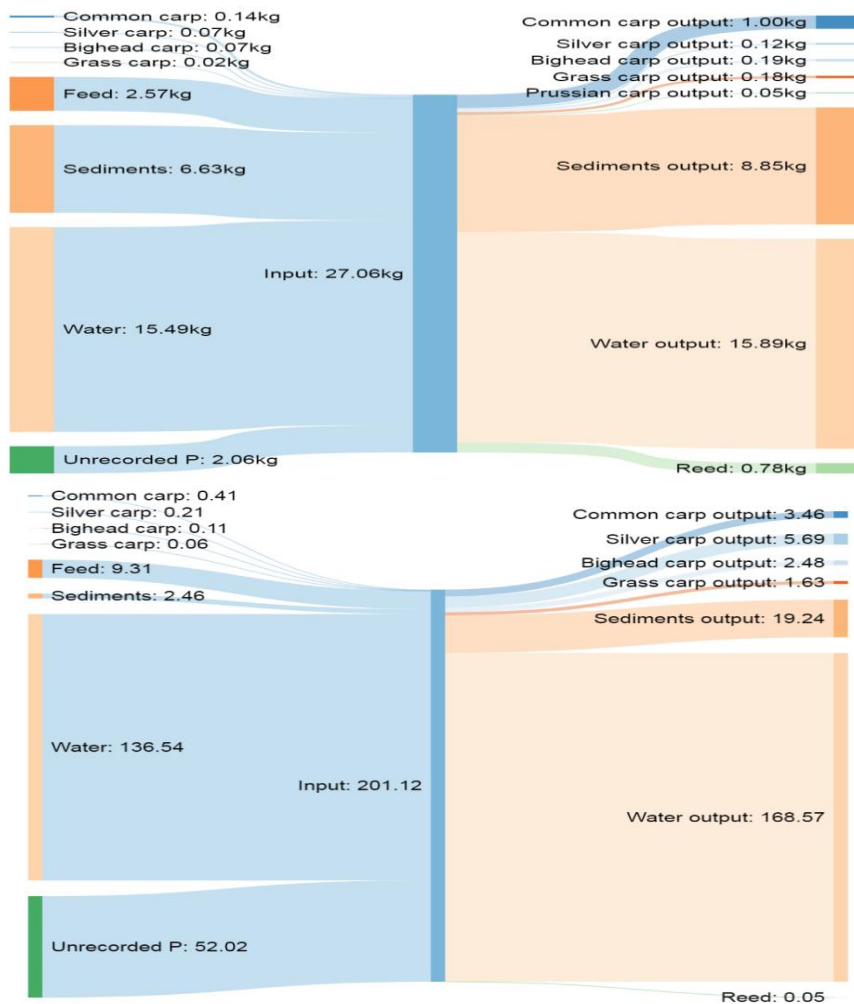


Fate of nutrients in the productive compartments

IMTA pond

Total phosphorus (TP) in experimental trials

Polyculture pond



- the feed conversion rate was better in IMTA system
- similar parasitic fauna structure was observed in both traditional polyculture and IMTA pond cyprinid culture
- Phosphorus and Nitrogen compounds dynamics in cyprinids ponds can be significantly and positive influenced by applying the IMTA technology
- **equilibrium among different farmed organisms species!**



Thank you for your patience!

