Crop-livestock integration system: perception of experts concerning challenges and opportunities

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Integrated crop-livestock (ICL) systems are precursor alternatives for sustainable production and land-use intensification. However, in most regions of Brazil, there is still low adoption of these systems, which makes the topic emerging and relevant for the investigation. Given this scenario, the research aimed to identify the main challenges and opportunities of using the ICL system. For this purpose, qualitative and exploratory research was carried out through semi-structured interviews with six specialists on the subject selected to work on projects concerning the ICL systems, five of whom are doctors from public institutions and one animal scientist manager of an agricultural management private company. The interviews were operated through the Google Meet platform between June and August 2021, being recorded, transcribed, and subsequently validated with the respondents. For data analysis, content analysis was used, whose a posteriori categories were synthesized in an analytical model, composed of three sets of challenging aspects for the use of ICL, namely (i) dualism: which describes disparity and asymmetry existing between the productive and economic profile of Brazilian farmers and grants the multiple technological levels adopted in rural properties; (ii) paradigms: that mostly concern the traditionalism of production - which translates into resistance to the adoption of new technologies - and the possibility of minimizing crop productivity caused by trampling and soil compaction by production animals, and ; (iii) obstacles: understood as the lack of technical and financial capacity of small producers to implement the most complex technological advances, lack of specialized technical assistance, difficulties in adapting the production system used for migration to the ICL system, acquisition of agricultural implements and market fluctuations in soybean and beef commodities. All specialists evidenced the lack of government support for the farmer to effectively benefit from technology transfer actions and routine monitoring of productive and economic indicators. In addition to the challenges, opportunities for the ICL system were also identified: the recovery of pastures and weed control, the containment of nematodes in the soil, the facilitation of access to rural credit, the convergence to the principles of regenerative and low carbon agriculture, and, finally, the maximization of productive and profitable efficiency through the diversification of agricultural production. Therefore, it is clear that there are multiple gaps pointed out by specialists who need basic progress so that advances in the adoption of crop-livestock integration systems are achieved and consolidated.

Keywords: dualism, integrated production systems, obstacles, opportunities, paradigms.