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BIOINPUTS, REGULATION AND AGROECOLOGICAL TRANSITION: REGULATORY FRAMINGS IN A COMPARATIVE PERSPECTIVE

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This paper analyzes how different regulatory framings of bioinputs condition their forms of production, circulation, and use, unevenly influencing agroecological transition processes within agricultural systems. It is assumed that bioinputs do not operate as automatic vectors of transformation, since their practical meanings and sociotechnical effects are defined by the institutional rules that organize their integration into productive systems. The research adopts a qualitative comparative approach based on the systematic analysis of legislation, infra-legal norms, and official technical documents published between 1995 and 2024 in six countries (Argentina, Brazil, Colombia, the United States, France, and Mexico) selected due to their relevance in contemporary agriculture and their contrasting regulatory traditions. The comparison focused on two central regulatory dimensions: (i) the normative treatment of decentralized bioinput production, including on-farm production and collective biofactories; and (ii) registration and authorization regimes for

commercialization. These dimensions made it possible to identify recurring patterns of institutional framing and to examine their effects on the concrete forms of bioinput use. The results indicate the existence of two main groupings. In Brazil, Colombia, and, more ambiguously, Argentina, regulatory frameworks allow for differentiated regimes, exceptions, or specific provisions for decentralized production, often articulated with agroecology policies. In these contexts, bioinputs tend to be mobilized as instruments for the reorganization of productive systems, associated with diversification, reduced dependence on external inputs, and the strengthening of farmers' autonomy. In contrast, in the United States, France, and Mexico, bioinputs are predominantly framed by regulatory regimes originally designed for conventional synthetic inputs, guiding their insertion as standardized commodities within established agricultural input markets. It is concluded that the effects of bioinputs on agroecological transition depend less on their isolated biological properties and more on the institutional arrangements that regulate their conditions of existence and use.

Palavras-chave: agroecology; bioinputs; regulation; institutional frameworks; on-farm production.