



superior machinery employed in specialised and intensive agricultural systems with scheme services, like soil fertility or biological regulation of pests and diseases (Duru et al. 2015; Horlings and Marsden 2011; Power 2010). In AN agricultural context, scheme services are the merchandise of interactions between farmland diversity (i.e., planned biodiversity crops, animals, hedgerows, etc. and associated biodiversity soil flora and fauna, herbivores, etc. colonizing the farm; Altieri 1999) and tailored management practices that are integrated over completely different temporal and spatial scales (Altieri 1999; Kremen et al. 2012). whereas soil fertility is managed at the sector level through acceptable crop rotations, intercropping, and tillage practices, biological regulation of pests is additionally managed at the landscape level thanks to the key role of crop spatial distribution, field margins, and hedges (Garbach et al. 2014; GABA et al. 2014; Landis et al. 2000; Power 2010; Rusch et al. 2010).

Crop livestock systems (Fig. 1) are advised as a theoretical ideal for implementing the principles of diversified and (horizontally) integrated agriculture (Hendrickson et al. 2008; Herrero et al. 2010; Lemaire et al. 2014; Ryschawy et al. 2014). nevertheless they need already declined in range in countries of the hemisphere, and also the trend towards specialization continues (Russelle et al. 2007; Peyraud et al. 2014; Veysset et al. 2014). to investigate this decline, 2 dynamics of specialization (i.e., a technique of production involving few or only 1 cropping or stock system; genus *Bos* and van Diamond State Ven 1999) should be assessed: specialization of crop production and of animal production implying abandonment of animal production and crop production, severally (Billen et al. 2010). Specialization of crop production is increasing, particularly in areas dominated by massive farm units (Peyraud et al. 2014). Integrated crop livestock farmers abandon animal production for