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The exponential increase in the human population in tandem with increased food demand has caused agriculture to be the global- dominant form of land use. Afrotropical drylands are currently facing the loss of natural savannah habitats and agricultural intensification with largely unknown consequences for bee pollinators. In this study we investigate the effects of agricultural intensification on bee assemblages in the Afrotropical drylands of northern Tanzania. We disentangled the direct effects of agricultural intensification and temperature on bee richness from indirect effects mediated by changes in floral resources. We collected data from 24 study sites representing three levels of management intensity (natural savannah, moderate intensive and highly intensive agriculture) spanning an extensive gradient of mean annual temperature (MAT) in northern Tanzania. We used ordinary linear models and path analysis to test the effects of agricultural intensity and MAT on bee species richness. We found that bee species richness increased with agricultural intensity and with increasing temperature. The effects of agricultural intensity and temperature on bee species richness were mediated by the positive effects of agriculture and temperature on the richness of floral resources used by bees. During the off-growing season, agricultural land was characterized by an extensive period of fallow land holding a very high density of flowering plants with unique bee species composition. Our study reveals that bee assemblages in Afrotropical drylands benefit from agricultural intensification in the way it is currently practiced. However, further land- use intensification, including year-→ round irrigated crop monocultures and excessive use of agrochemicals, is likely to exert a negative impact on bee diversity and pollination services, as reported in temperate regions. Moreover, several bee species were restricted to natural savannah habitats. To conserve bee communities and guarantee pollination services in the region, a mixture of savannah and agriculture, with long periods of fallow land should be maintained.