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Weed occurrence in sustainable cropping systems in Brazilian Cerrado

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Introduction Weeds are becoming widespread as a result of abuse in use of herbicides as sole method for its control, which resulted in selection of herbicide-tolerant weed species and evolution of resistant biotypes. Integrated cropping systems help reducing weed selection factors by favoring weed suppression by cultural means. In this brief report we aim to identify the main weed species which still constitute problems in crops grown under integrated cultural systems.

Material and Methods

The experiment was installed in 2009 at the area of Embrapa Western Agriculture, Ponta Porã, MS, Brazil (22° 32' 56" S 55° 38' 56" W), 680 m asl, in Oxisol soil. Treatments are listed at Table 1. Assessments of weed occurrence were performed in the early post-emergence of the 2011/12 cropping season, in completely randomized design. A quadrat with 0.5 m side was released randomly 10 times in each area, and weeds inside were counted and collected for determination of dry mass, being estimated the density, frequency, dominance and importance value of each species in each cropping system.

Results and Conclusions

The overall most important weed species in the area were *Bidens pilosa*, *Commelina benghalensis*, *Digitaria horizontalis* and *Raphanus sativus*; there was change in the species of individuals according to management type, being broadleaved species predominant (Table 1). Results show that farmers have to adopt species which provide soil coverage throughout the year, as the intercrop maize + *B. ruziziensis* or maize + *B. brizantha*, planted among forest trees always when possible.

Table 1. Importance value (%) for weed species reported in areas submitted to different uses.

Weed Species	1-NTSa	2-NTSb	3-CTS	4-Forestry	5-ICLa	6-ICLb	7-ICLFa1	8-ICLFa2
Amaranthus viridis		8.84						
Avena sativa			5.91				17.5	
Bidens pilosa	35.2	42.3	8.6					
Brachiaria brizantha				10.1	29.7			
Chamaesyce prostrata						10.0		
Chloris elata				65.1				
Commelina benghalensis					23.3	37.1		
Conyza bonariensis				16.3			33.4	
Cyperus rotundus								
Digitaria horizontalis		10.7				42.8		5.15
Euphorbia heterophylla	34.5							
Leonotis nepetifolia					6.55			
Raphanus sativus	20.5	18.8	68.2		34.0	10.0	44.3	94.8
Others	7.04	19.2	17.2	8.35	6.37		4.65	

Treatments (crop sequence from 2009-2011): **1-NTSa** =S/W/S/M/S; **2-NTSb** =S/W/S/(M+Br)/S; **3-CTS** =S/A/S/M/S; **4-Forestry** =E; **5-ICLa** =S/X/X/X/S; **6-ICLb** =S/W/S/(M+X)/X; **7-ICLFa1** =(E+S)/(E+A)/(E+S)/(E+M+Br)/(E+S); **8-ICLFa2** =(E+S)/(E+A)/(E+S)/(E+M+Br)/(E+S). **S** = soybean, **M** = maize, **Br** = *B. ruziziensis*, **X** = *B. brizantha* cv. Xaraés, **E** = *Eucalyptus*, **A** = oat, **W** = wheat. **NTSa/b** = no-till planting system (agriculture-only) with distinct crop successions; **CTS** = conventional soil tillage system (agriculture-only) with distinct crop successions; **ICLa/b** = integration crop-livestock; **ICLFa/b** = integration crop-livestock-forest. For ICLF, numbers "**1**" and "**2**" represent, respectively, evaluations in the rows of *Eucalyptus* and in the crops planted between these rows.