EFFECTS OF FIELD MARGIN VEGETATION ON THE DIVERSITY AND ABUNDANCE OF INVERTE-BRATE TAXA IN SMALL HOLDER FARMS IN NAKURU COUNTY

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Introduction

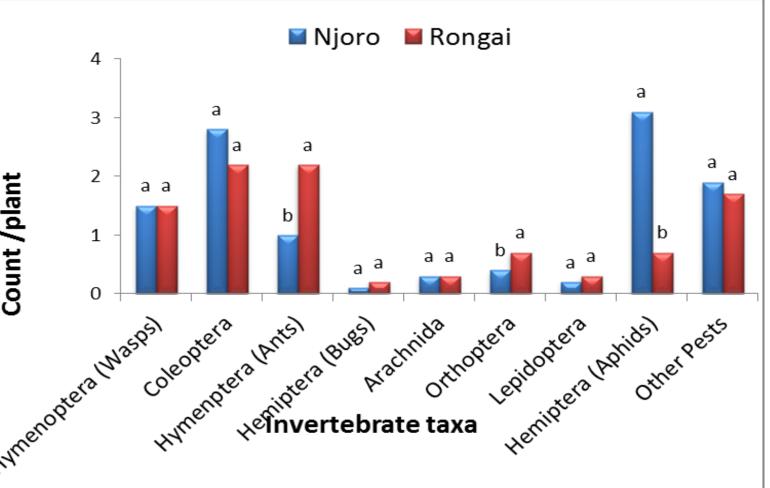
Results

Presence of spatial and temporal diverse vegetation plays an important role in enhancing invertebrate taxa in agricultural ecosystems. Research findings have shown that agricultural intensification reduces and disrupts invertebrate taxa like the natural enemies responsive to natural pest regulation and crop pollination. This translates to direct reduction in crop yield (Pimentel and Peshin 2014; Potts et al., 2016). For an effective natural pest regulation and pollination to occur, sufficient numbers of natural enemies are required throughout the cropping season. Hence it is important to provide alternate shelter other than the main crop such as hedgerows and weed margin strips to act as invertebrate taxa bankers. These will release the natural enemy in sequence with pest population build up dynamics and support their survival after harvesting the crop (Concepcion et al., 2008; Woltz et al., 2012). Sustainable conservation of natural enemies in field margin vegetation in farmlands in Kenya will provide an alternate method of pest control and increase crop yields. It will also reduce excessive use of pesticide and mitigate the its harmful effects on human, animals, organisms and the environment.

Effect of location showed diversity in field margin vegetation abundance and the associated invertebrate taxa in Njoro and Rongai

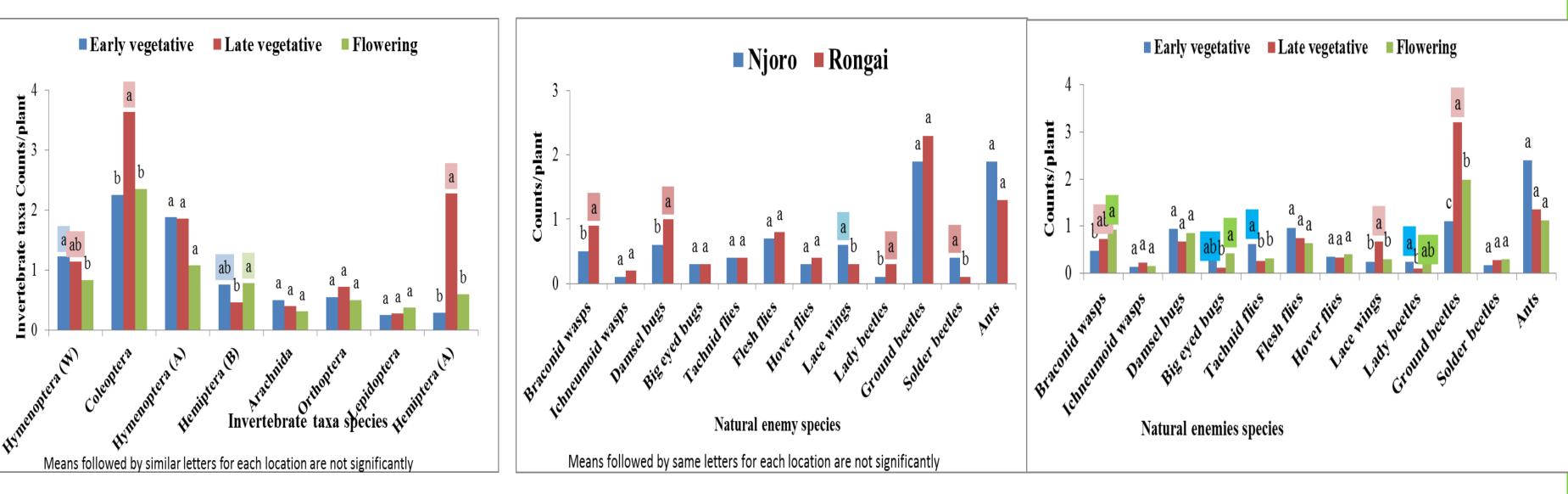
FIE	LD MARGIN SPECIES		PERCENT			COMMO
			ABUNDANCE		22	Mcdonal
	COMMON NAME	SCIENTIFIC NAME	NJORO	RONGAI	23	Thatching
1	Devil's horse	Achyranthes aspera	3.47	0.44	24	Lantana
	whip				25	Lions ear
2	Goat weed	Ageratum conyzoides	3.57	2.49	26	
3	Amaranthus spp	Amaranthus retroflexux	2.49	1.70	27	Oxalis
4	Wild oat	Avena fatua		1.39	28	Double th
5	Khaki weed	Alternanthera punges		1.81	29	Chinese la
6	Wild rape seed	Brassica napus	0.92	4.78	30	Kikuyu gr
7	Black jack	Bidens pilosa	9.28	3.46		
8	Wandering jew	Commelina bengalensis	2.87	1.67	31	Carrot gra
9	Couch grass	Cynodon dactylon	4.69	8.37	32	Sow thist
10	Rhodes grass	Chloris gayana	12.21	4.27	33	
11	Rattle pod	Crotalaria lanceolata	3.00	1.30	34	
12	Nut grass	Cyperus rotundus	2.65	8.26	35	Maba
13	Little-iron weed	Cyanthillium cinerum		5.11	36	White ey
14	African stargrass	Cynodon plectostachyus		1.98	37	Sodom a
15	Fat hen	Chinopodium album	0.86		38	black night
16	Fleabane	Conyza bonaviensis	1.98		39	Sudan gra
17	Thorn apple	Datura stramonium	2.81	1.89	40	
18	Saltgrass	Distichlis spicata	1.	3.70	40	Dandelio
19	Wild fingermillet	Eleusine indica	2.42	3.81	41	Verbena
20	Love grass	Eragrotis curvula	3.41	4.67	42	
21	Wire grass	Eriachne obtuse	4.97	1.59	1	
					1	Total Numbe
					GR	AND TOTA

	COMMON NAME	SCIENTIFIC NAME	NJORO	RONGA
22	Mcdonalds eye	Galinsoga perviflora	7.68	4.58
23	Thatching grass	Hyparrhenia.spp		0.68
24	Lantana	Lantana camara	3.98	
25	Lions ear	Leonotis nepetifolia	3.98	2.40
26	African basil	Ocimum. gratissimum	0.64	
27	Oxalis	Oxalis latifolia	2.30	
28	Double thorn	Oxygonum sinuatum	0.99	1.15
29	Chinese lantern	Physalis angulate	4.59	1.17
30	Kikuyu grass	Pennisetum clandestinum	1.50	
31	Carrot grass	Parthenium hysterophorus		4.43
2	Sow thistle	Sonchus arvensis	2.87	
33	Purslane	Portulacea oleracea		2.75
34	Goose berry	Physalis peruviana		1.10
35	Maba	Physalis philadelphica		1.43
36	White eye	Richardia brasiliensis		7.25
37 38 39	Sodom apple	Solanum. Incanum		0.86
	black nightshade	Solanum nigrum		0.59
	Sudan grass	Sorghum sudanense		1.39
40	Mexican merigold	Tagetes minuta	4.14	2.78
41	Dandelion	Taraxacum officinale		4.74
42	Verbena	Verbena bonaviensis	0.67	
43	Wild vetch	Vicia. Sativa	5.07	•
Total Number of Plant species per location			28	34
GR/	AND TOTAL IN THE T	43		



Materials and methods

Invertebrate taxa species varied across the locations and the seasons, the same trend was observed on the natural enemies of the bean aphids on Dolichos lablab.



The natural enemy interaction was observed both in the Dolichos crop plots along with the field margin vegetation near the crop in Njoro and Rongai

Invertebrate taxa collection and field mar-

gin documentation

On farm sites : Njoro and Rongai - 8 farms (Replicates), 2 diversity environment

Methods deployed in field vegetation documentation

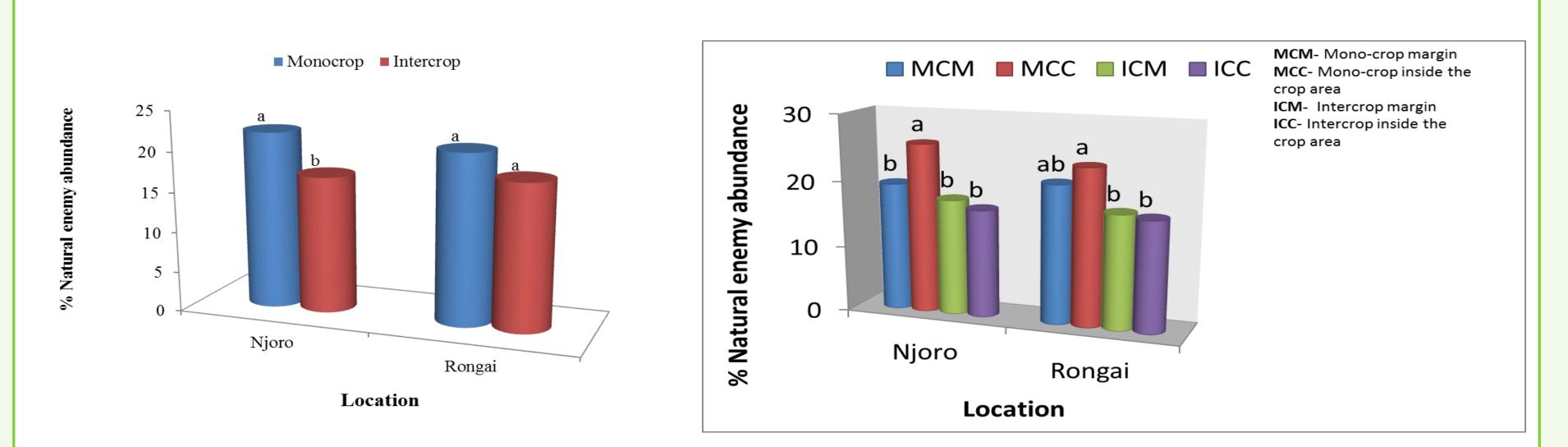
Throwing a quadrat three times per field margin counting species identification aided by East Africa weed hand book

Method deployed in collection of invertebrate taxa

Yellow Sticky traps, pan traps, suction traps and sweep netting

Data analysis

Data on invertebrate taxa counts and field margin species abundance was subjected to analysis of variance using PROC GLM using SAS software and treatment means separated using Tukov's HSD test at $\alpha < 0.05$



Conclusion

Jocations have diverse margin vegetation but have equal potential in supporting invertebrate taxa populations.

In the presence of natural growing margin vegetation the invertebrate taxa like the natural enemies are supported throughout the cropping season.

Populations of natural enemies remain high in the field margin as well as the main crop with slight population deviation between the inter and mono cropping systems

- Field margin vegetation when incorporated in the Kenyan cropping system have a poten-

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