

Impacts of *Melaleuca* invasions on ecosystem processes

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Introduction

Both studies of litter decomposition and nutrient cycling were initiated during FY2003. Litter bags (12 x 12 cm) filled with approx. 20 g (dry wt) of freshly senescent dried plant litter of *Melaleuca*, pine, or sawgrass were placed in the field at each of the vegetation types. These litter bags are to be collected 6 times during the first year and 2-4 times during the second and third year. Molecular techniques are being developed to assess the soil biotic communities affecting litter decomposition and nutrient mineralization under different types of habitats in the Florida Everglades.

Preliminary data indicates highest decomposition rates for sawgrass litter, with 10% mass loss after 30 days. On the other hand, no mass loss was observed in pine while *melaleuca* lost 5% of its initial mass over the same period. The different decomposition rates could be explained partially by differences in the quality of the litter of these species. Nitrogen content was lowest (0.4%) in pine, resulting in C:N ratios of 111 to 143. *Melaleuca* litter had 0.7% N and lowest C:N ratios (67 to 83). In addition, both pine and *Melaleuca* have high levels of allelochemicals which may affect the composition and diversity of soil biota and consequently on ecosystem processes.

Litter Species	Site/ Stand	Day0				Day30			
		MASS (DWt g)	%C	%N	C/N	MASS (DWt g)	%C	%N	C/N
Melaleuca	Bmeade/Melaleuca	18.40	51.01	0.70	74	17.48	50.31	0.68	76
Melaleuca	Bmeade/Pine	18.40	51.01	0.70	74	17.35	50.38	0.51	100
	AVERAGE=	18.40	51.01	0.70	74	17.42	50.35	0.60	88
						95%	99%	85%	119%
Pine	Bmeade/Melaleuca	18.51	51.04	0.40	130	17.98	51.21	0.30	174
Pine	Bmeade/Pine	18.51	51.04	0.40	130	19.32	50.88	0.29	182
	AVERAGE=	18.51	51.04	0.40	130	18.65	51.05	0.30	178
						101%	100%	74%	137%
Melaleuca	HPark/Melaleuca	18.40	51.01	0.70	74	17.39	50.77	0.61	83
Melaleuca	HPark/Sawgrass	18.40	51.01	0.70	74	17.38	51.54	0.65	80
	AVERAGE=	18.40	51.01	0.70	74	17.39	51.16	0.63	82
						94%	100%	90%	110%
Sawgrass	HPark/Melaleuca	19.19	44.80	0.55	82	16.82	44.93	0.48	93
Sawgrass	HPark/Sawgrass	19.19	44.80	0.55	82	17.54	45.50	0.51	89
	AVERAGE=	19.19	44.80	0.55	82	17.18	45.22	0.50	91
						90%	101%	90%	111%

(Percent of initial values on Day 0)