

# Native Green Grid by AES

## Second Year Results of 1<sup>st</sup> Trial Set

1<sup>st</sup> Trial Set Group A

Group A: 4" Modules heavy weight media		Installation		1st yr		2nd yr	
Scientific name	Module #	# Live Plants 26-Jun-06	# Live Plants 21-Sep-06	# Live Plants 12-Jun-07	% Cover		
<b>Sedums</b>							
Sedum 1	13A	5	5	4	14		
Sedum 2	13A	5	5	4	15		
Sempervivum	13A	5	5	4	7		
<b>Best Performing Natives</b>							
<i>Allium cernuum</i>	1A	5	5	5	17		
<i>Aster azureus</i>	2A	5	5	5	7		
<i>Aster ericoides</i>	2A	5	5	5	10		
<i>Aster laevis</i>	3A	5	5	5	7		
<i>Bouteloua curtipendula</i>	3A	5	5	5	35		
<i>Carex bicknellii</i>	4A	5	5	5	15		
<i>Carex muhlenbergii</i>	4A	5	5	5	11		
<i>Coreopsis lanceolata</i>	5A	5	5	4	10		
<i>Dalea candidum</i>	5A	5	5	5	6		
<i>Eryngium yuccifolium</i>	6A	5	5	4	10		
<i>Fragaria virginiana</i>	7A	5	5	5	6		
<i>Geum triflorum</i>	7A	5	5	5	23		
<i>Heuchera richardsonii</i>	7A	5	5	5	23		
<i>Koeleria cristata</i>	8A	5	5	5	15		
<i>Liatris cylindracea</i>	8A	5	3	4	5		
<i>Opuntia humifusa</i>	9A	5	5	5	33		
<i>Penstemon hirsutus</i>	10A	5	5	4	13		
<i>Rudbeckia hirta</i>	11A	5	5	5	12		
<i>Solidago ptarmicoides</i>	11A	5	5	5	13		
<i>Sporobolus heterolepis</i>	11A	5	5	5	24		
<i>Tradescantia ohimensis</i>	12A	5	5	4	9		
<b>Worst Performing Natives</b>							
<i>Anemone cylindrica</i>	1A	5	3	1	2		
<i>Anemone patens wolgangaia</i>	1A	5	2	0	0		
<i>Asclepias tuberosa</i>	2A	5	5	0	0		
<i>Aster sericeus</i>	3A	5	2	2	2		
<i>Camassia scilloides</i>	4A	5	0	0	0		
<i>Coreopsis palmata</i>	5A	5	4	3	9		
<i>Dalea purpurea</i>	6A	5	3	3	5		
<i>Echinacea pallida</i>	6A	5	4	2	3		
<i>Lespedeza capitata</i>	8A	5	5	3	1		
<i>Lupinus perennis occidentalis</i>	9A	5	0	0	0		
<i>Lycopus americanus</i>	9A	5	0	0	0		
<i>Panicum leibergii</i>	10A	5	5	1	1		
<i>Phlox pilosa</i>	10A	5	2	1	1		
<i>Verbena stricta</i>	12A	5	5	3	12		
<i>Zizia aptera</i>	12A	5	5	2	3		

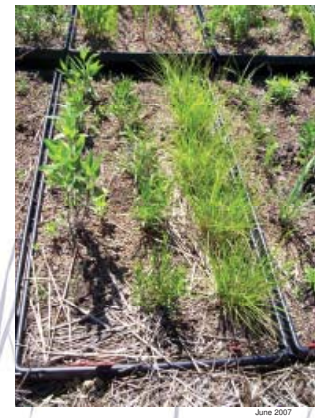
1<sup>st</sup> Trial Set Group B

Group B: 8" Modules medium weight media		Installation		1st yr		2nd yr	
Scientific name	Module #	# Live Plants 26-Jun-06	# Live Plants 21-Sep-06	# Live Plants 12-Jun-07	% Cover		
<b>Sedums</b>							
Sedum 1	13B	5	5	5	14		
Sedum 2	13B	5	5	5	15		
Sempervivum	13B	5	5	5	7		
<b>Best Performing Natives</b>							
<i>Allium cernuum</i>	12B	5	5	5	27		
<i>Anemone cylindrica</i>	12B	5	5	4	9		
<i>Anemone patens wolgangaia</i>	12B	5	5	5	18		
<i>Aster ericoides</i>	11B	5	5	5	23		
<i>Aster laevis</i>	11B	5	5	5	20		
<i>Aster pilosus</i>	10B	5	5	5	21		
<i>Aster sericeus</i>	10B	5	4	4	13		
<i>Carex bicknellii</i>	10B	5	5	5	42		
<i>Coreopsis palmata</i>	9B	5	5	5	29		
<i>Dalea candida</i>	9B	5	5	5	23		
<i>Dalea purpurea</i>	9B	5	5	3	20		
<i>Echinacea pallida</i>	8B	5	5	5	21		
<i>Eragrostis spectabilis</i>	8B	5	5	5	30		
<i>Heuchera richardsonii</i>	8B	5	5	5	39		
<i>Lespedeza capitata</i>	7B	5	4	4	2		
<i>Liatris aspera</i>	7B	5	2	5	15		
<i>Liatris cylindracea</i>	7B	5	4	4	10		
<i>Opuntia humifusa</i>	6B	5	5	5	29		
<i>Panicum leibergii</i>	6B	5	5	5	21		
<i>Penstemon digitalis</i>	5B	5	5	5	49		
<i>Penstemon hirsutus</i>	5B	5	5	5	26		
<i>Phlox pilosa</i>	5B	5	5	5	10		
<i>Ratibida pinnata</i>	4B	5	4	4	22		
<i>Schizachyrium scoparium</i>	4B	5	4	4	50		
<i>Senecio pauperculus</i>	4B	5	5	5	13		
<i>Solidago ptarmicoides</i>	3B	5	5	5	18		
<i>Solidago rigida</i>	3B	5	5	5	50		
<i>Sporobolus heterolepis</i>	2B	5	4	5	24		
<i>Teucrium canadense</i>	2B	5	5	5	46		
<i>Tradescantia ohimensis</i>	2B	5	5	5	18		
<i>Verbena hastata</i>	1B	5	5	5	23		
<b>Worst Performing Natives</b>							
<i>Asclepias tuberosa</i>	11B	5	5	0	0		
<i>Lupinus perennis occidentalis</i>	9B	5	0	0	0		
<i>Solidago speciosa</i>	1B	5	4	3	7		
<i>Verbena stricta</i>	1B	5	5	3	13		
<i>Zizia aptera</i>	1B	5	5	2	8		



1<sup>st</sup> Trial Set Second Year Weigh-in

Weight Summary	Per sq ft
Saturated modules Oct. 23, 2007	
<b>Average Weight of Native Mix in 4" Heavy Module</b>	<b>14.28</b>
Weight of Sedum Mix in 4" Heavy Module	17.63
<b>Average Weight of Native Mix in 8" Medium Module</b>	<b>24.76</b>
Weight of Sedum Mix in 8" Medium Module	27.38



### 1<sup>st</sup> Set Module Layout

North

	13B	13A	
	12B	12A	
	11B	11A	
	10B	10A	
	9B	9A	
	8B	8A	
West	7B	7A	East
	6B	6A	
	5B	5A	
	4B	4A	
	3B	3A	
	2B	2A	
	1B	1A	

South



1<sup>st</sup> Trial Set Supplemental Watering

Watering Regime	Year 1	Year 2
All modules (group A & B)	26-Jun	
All modules	29-Jun	
All modules	1-Jul	
All modules	5-Jul	
All modules	6-Jul	
All modules	11-Jul	
All modules	17-Jul	
Group A only	2-Aug	
Group A only	14-Aug	
Group B only	16-Aug	
All modules	23-Aug	
All modules		23-Oct

### Also: Natives on Traditional Green Roofs Data Collection



### Results from 2<sup>nd</sup> Set of Trials available in June 2008



### Measuring the Survivability of Native Plants in Variable Substrate Green Roof Systems

As suburban and urban open spaces and habitats are replaced with non-living impervious surfaces resulting from development, the necessity to develop alternative solutions to manage storm-water, overall environmental water quality and habitat loss is a top priority. Green roofs are an increasingly common best management practice to remediate these issues. Establishing plant material on rooftops provides numerous ecological and economic benefits, as well as providing biologically diverse habitat and a more aesthetically pleasing environment in which to work and live. Due to weight restrictions and costs, the industry typically selects shallow-substrate roof systems over deeper-substrate roof systems, and uses only a few selected species of plants. *Sedum* species have been the most commonly used plants because they are tolerant of extreme temperatures, high winds, lightweight planting media, and a limited water supply. In this study, we will compare and contrast the use of a more diverse mixture of native-plant species in both shallow-substrate and deeper-substrate modular and traditional green roofs systems. The results of our study indicate that a biologically diverse mixture of native-plant species will have a high survivability in both a shallow-substrate and deeper-substrate modular and traditional green roof system. However, the best mixture of plant species may vary between systems; and is dependent on micro- and macro-environmental conditions. Further, we will discuss the advantages and disadvantages of *Sedum*-dominated roof systems and diverse native-plant roof systems, and the ecological and cost benefits of biologically diverse modular green roof systems using native plants.