

Measuring Backyard Composting

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Overall Strategy

- Early Emphasis was placed on Evaluation
- Surveys and Database set up initially
- Use all available data to cross check numbers

Basic Formula

- Tons of Yard Waste Composted =

Number of Bins x pounds per bin

Studies Used in Evaluation

- Backyard Composting Program Telephone Survey Results, Dec 1997
- Seattle Backyard Composting Program Evaluations, 1995, 1992, 1991, 1990
- City of Seattle Home Organics Waste Management Survey, 3/96
- City of Seattle Waste Composition Studies, 1988/89, 1992, 1994, 1996

Other Data Used

- City of Seattle Quarterly Yard Waste Reports
- Database of Bin Reciepients

Steps to Measuring

- Total Tons of Yard waste
- Translate into tons per household
- Percent of total that is compostable in backyard
- Number of households receiving bins (not number of bins delivered)
- Percentage of households with bins in use

Equations Used

- Tons of Yardwaste / number of households = pounds per hh
- pounds per hh * percentage compostable (% that is leaves and grass = pounds per bin
- pounds per bin * number of bins = total composted

Tons of Yard Waste

- It is total of yard waste that is generated in residential sector.
- We include yard waste from curbside program, still left in waste stream, estimates of backyard compost, and grass cycle.
- In Seattle that is about 67,700 tons for 1995 for about 149,400 households or 906 pounds per household per year.
- This figure includes some of the self haul yard waste that comes from residences via landscapers or self haul by residents

Percentage that is Compostable

- We use information from our 88/89 Waste Composition Study which sampled monthly for 12 months. Study was prior to curbside yard waste program.
- Study results were that 17.1% of the disposed residential stream was yard waste and 75% of that was leaves and grass. Other 25% was prunings.
- Self Haul Auto: 35% of yard waste was leaves and grass
- Self Haul Truck: 30% of yard waste was leaves and grass
- Weighted average of 3 streams is 70%

Total Composted per bin

- Take total generated per household * percentage compostable.
- 906 pounds per household * .70 = (approx) 625 pounds per household per year.
- Assume a 90% efficiency, that is of those who compost, they will compost 90% of their leaves and grass
- 90% of 625 = 562 pounds per household

Alternative Sources of pounds per bin

- the 1991, 1992 and 1995 bin recipient surveys estimated 554, 551 and 537 pounds per household per year composted.
- Survey asks them to estimate number of times they filled their bin. We use a factor to convert to pounds.
- Pretty close to 562 derived from waste composition, and program tons.
- 1997 survey showed 722 pounds. It was a wet year but.....
- Non-scientific study of individuals weighing their yard waste also yielded about 500 pounds per year.

Number of bins

- We have kept track of number of bins delivered.
- From survey of bin recipients we know how many bins are actually used.
- We also did Organics survey of general population. That survey confirmed the number of bins in use.

Cumulative Bins Delivered

• Year	1st bin	2nd bin
• 1989	6,032	0
• 1990	10,794	0
• 1991	18,110	0
• 1992	26,801	200
• 1993	31,282	450
• 1994	33,500	750
→ • 1995	35,102	1,107
• 1996	35,503	1,141

*Currently we have delivered over 40,000 bins!

Bins in Delivered

- 1995 Organics Survey indicated that 23% of eligible households received city compost bins. $.23 * 150,000 = 34,500$
- Our data show 35,102 delivered.
- Pretty close!!

Bins in Use

- Organics Survey indicated that 41% of households compost yard waste.
($150,000 * .41 = 61,254$ households).
- Of the 61,254 household 38% compost in city provided bin. $61,254 * .38 = 23,370$.
- Percentage of folks using bin they received is $23,370/34,500$ or 67%.

Bins in Use

- Survey of Bin recipients contains the following:
 % using bins they received by
 number of years owned the bin

1 yr 90%

2 yr 84%

3 yr 84%

5 yr 74%

7 yr 68%

- We had assumed a long run useage of 70%!

Bin Use Summary

- So two different sources confirm a long run useage number of about 70%.

Total number of Bins in Use

- $35,102 * 70\%$ or 24,571
- Multiplied by the yard waste composted per bin of 562 pounds per household per year = $24,572 * 562 / 2000 = 6,905$ tons per year.

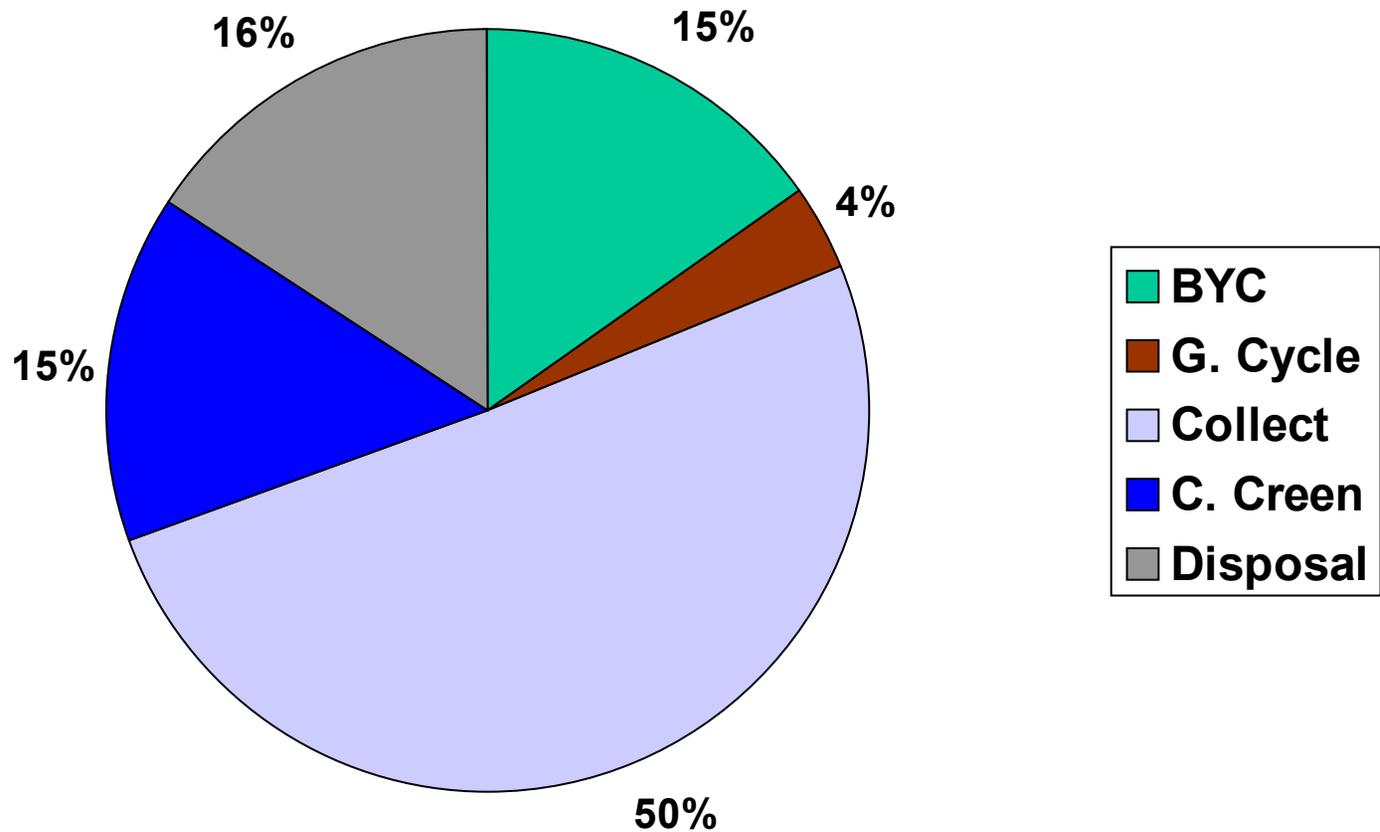
Composting Outside of City Bins

- 1995 Organics survey allows us to estimate composting outside of city bins for the first time. Unfortunately no baseline (or 1988) data on this.
- Survey indicated that 61,254 composted and 38% of those used city bins. That leaves 37,885 additional households composting.
- Being conservative about the pounds per bin, I used about 60% of what city bins get or about 340 pounds per bin. This is an additional 6,440 tons of yard waste composted.

Total Yard Waste Composted

- Tons from backyard composting: 13,445
- Tons estimated from grass cycling: 3,320
- Tons collected for central composting:
44,558 (residential + commercial)
- Tons from drop sites: 13,162
- Tons disposed: 13,886
- Total tons yard waste generated (including commercial) in Seattle: 88,371

Yard Waste Generation



Total yard waste generation including res, com and self haul