



# Cornfield to Forest

## 1967 - 2012

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#### INTRODUCTION

In 1967, an abandoned cornfield adjoining South Campus was purchased by West Chester University. In 1973, it became part of the Robert B. Gordon Natural Area for Environmental Studies (GNA). In 1968, Dr. William Overlease, (Department of Biology, 1963-1986, deceased in 2006), students and his wife Edith, began to study and record the abundance and distribution of plants in the area every year until 2005. Each year since 2009, Dr. Hertel (Department of Biology, Stewardship Manager, GNA) and Kendra McMillin (Biology Student) have re-measured the plots.

This poster will highlight;

1. A general description of all species that occurred on the plots between 1968 and 2005, and then in 2009 through 2012
2. When the tree seedlings were first observed in the subplots
3. Number of trees (8 species), that were > one inch in diameter between 1999 & 2009
4. Percentage of crown cover by tree species by 2005
5. Statistics on black locust, the dominant tree species

#### METHODS

A part of the cornfield at the junction of South New Street and Tigue Road was selected for intensive study. A 40 x 40 meter study area was delineated. This area was divided into 16, 10 x 10 meter subplots. The following data were collected;

1. Identify, count, and map all species of plants that occur each year
2. Tree seedlings (after seed sprouts and grows to greater than 1 foot in height) were identified each year
3. Tree diameter (circle of tree at 4.5 feet above the ground) was measured every year after the tree reached 1 inch in diameter
4. Crown cover (tree canopy) the projection of tree coverage by looking down at the tree from the sky like an umbrella & was measured each year.

#### RESULTS

(1) During the course of the study over 165 species of plants were identified. 118 species were herbaceous perennials, 28 species were plants of annual growth form, 18 species were shrubs, and 17 species were trees. The story of this once cornfield will emphasize the tree species that moved into and dominated the area over time.

(2) When did trees seedlings first arrive?

- 1970- black cherry
- 1972- tulip poplar
- 1973- red maple
- 1974- black locust, box elder, bird cherry
- 1975- white ash, crab apple, flowering dogwood
- 1980- black walnut
- 1984- red cedar
- 1989- pin oak
- 1990- Chinese chestnut
- 1993- Chinese elm, red mulberry, Norway maple, honey locust



Figure 1: (3) Number of Live Trees> 1” Diameter in 2009

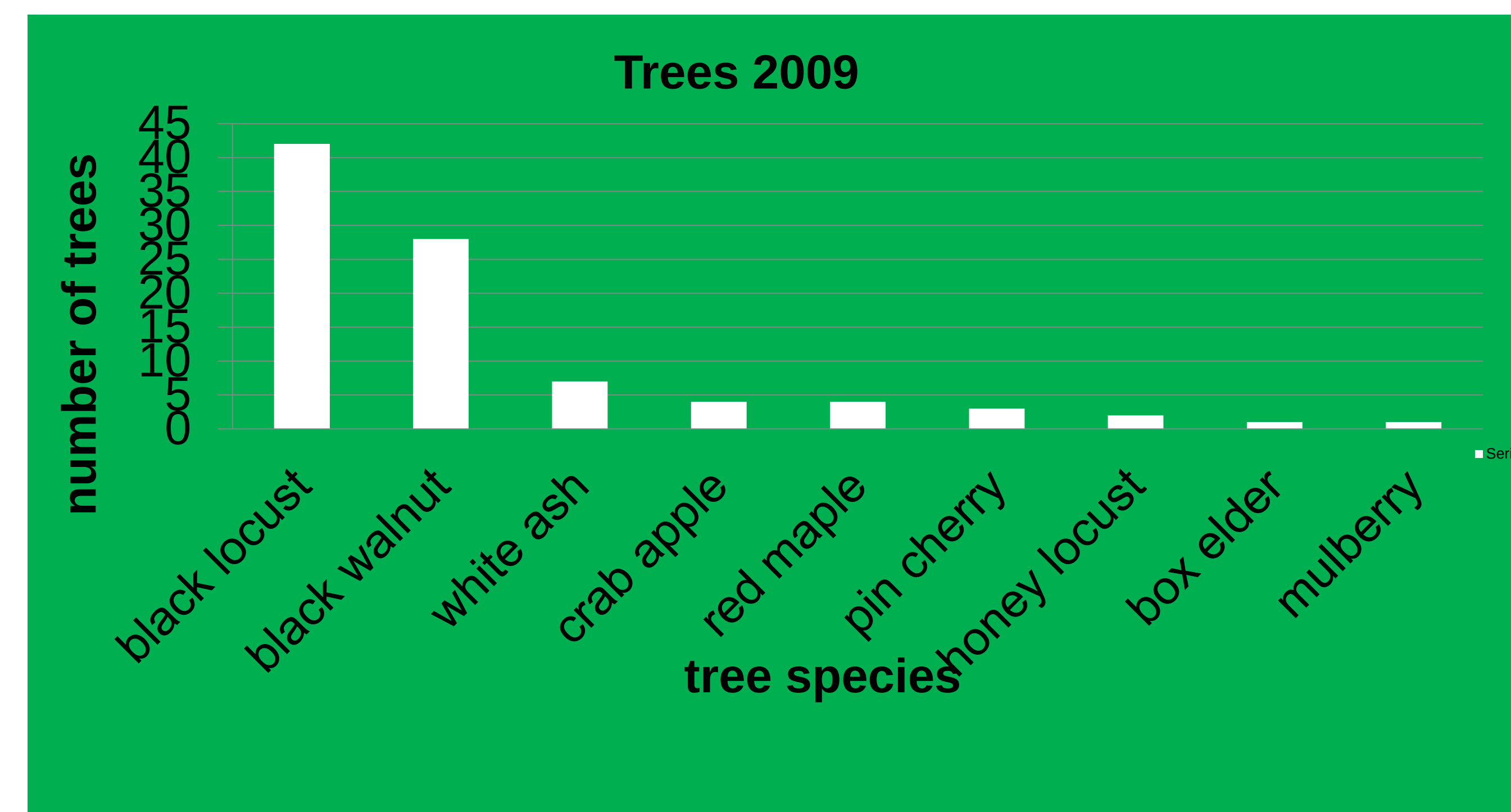


Figure 2: (4) Percent of Crown Cover - 2005

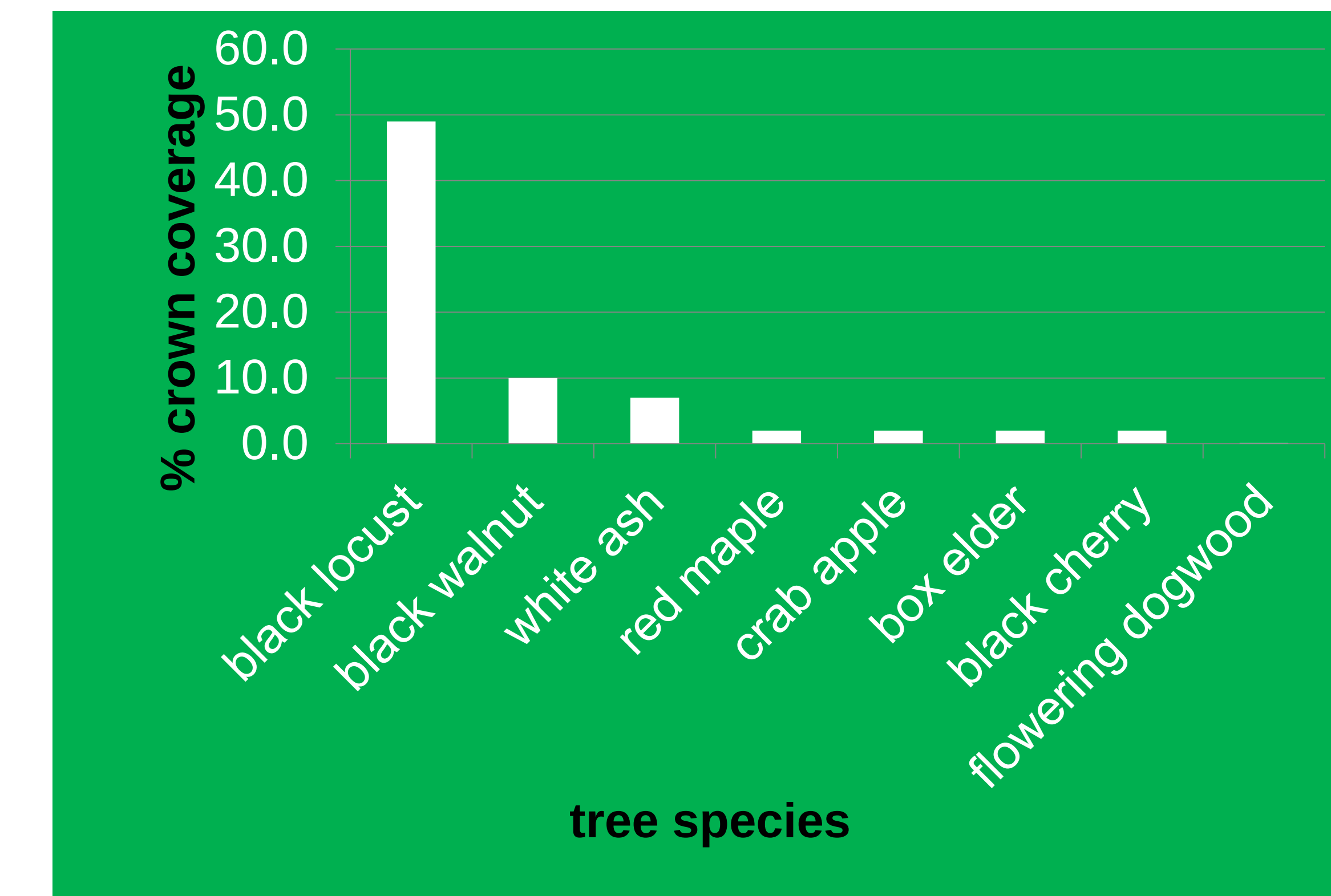
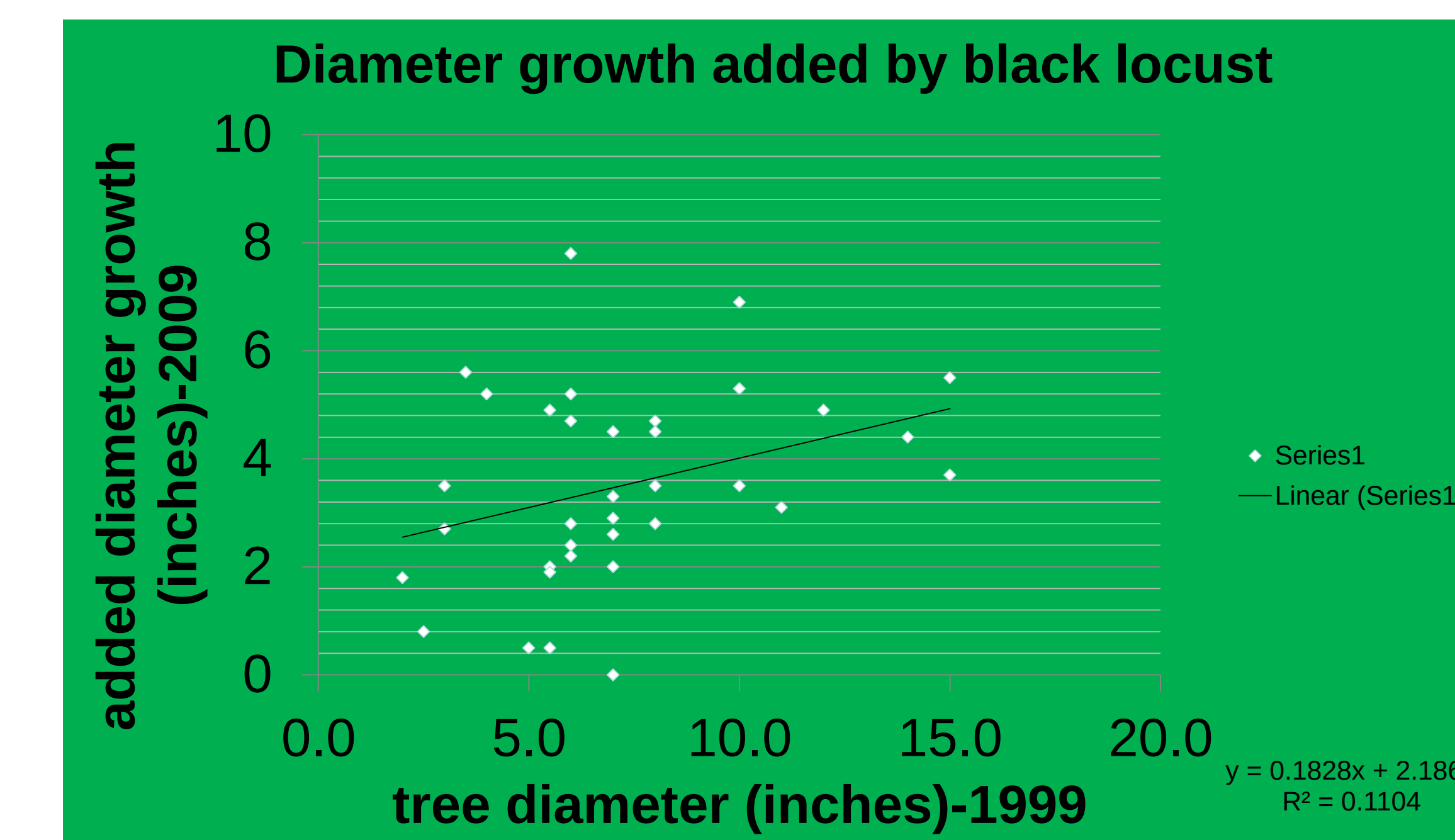


Table 1: (5) Statistics on black locust, the dominate tree species

| Year | # of Live Trees | # of Dead Trees | Average Diameter |
|------|-----------------|-----------------|------------------|
| 1999 | 39              | 0               | 6.9              |
| 2005 | 42              | 3               | 8.1              |
| 2009 | 43              | 4               | 9.7              |

Figure 3: (5) Statistics on black locust, the dominant tree species



#### CONCLUSIONS

A total of 17 different tree species (out of 165) were found between 1968 & 2005. No tree seedlings were found on the study site until the third year (1970) when one black cherry was found. Of the 8 most common species that established themselves on the plots 7 were native species and one, the black locust, was not native. By 2005 trees had dominated the site (83 % cover). The plants in the understory in 2010 are all from Asia and because of deer feeding, there are no young (baby) trees. When the large trees die there will no longer be any trees on the site and all the plants will be non-native.