INTERIM REPORT

PROJECT TITLE: "USING RAMIAL WOOD CHIPS TO IMPROVE FERTILITY IN A FRUIT TREE NURSERY" **FNEO4-507**

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PROJECT GOALS: To determine if soil fertility can be improved by applying ramial wood chips. Ramial wood chips are produced by chipping deciduous trees that are less than 7 cm in diameter.

FARM INFORMATION: The farm where the research is taking place is located in Northern Maine. With a mixed stand woodlot and 20 acres of cleared fields, the farm was out of production for 40 years. The farm, now, produces a diversity of greenhouse seedlings, perennial plants and ornamentals, vegetables and nursery trees (apple and pear trees, mostly). The nursery bed is in an area where the soil is sandy loam with low organic matter and low fertility. Soil improvement has been the greatest challenge for raising nursery stock. With the availability of wood chips on the farm, this could be a very sustainable solution to soil fertility problems.

COOPERATORS: To date, there has not been a lot of input from cooperators. The research advisor has helped with the acquisition of scion wood from the University of Maine's experimental orchard. There have been telephone contacts and advice on how to gather data for reporting results, but the project is only in the first stages of completeness.

PROJECT UPDATE: In the fall of 2004, Alder and Poplar saplings not exceeding 7 cm in diameter were harvested from an abandoned gravel pit on the farm. With a rented chipper, several cubic yards of wood chips were produced. The chips were spread 2 inches thick in the experimental area, excluding the control area. With a PTO driven tiller behind a tractor, the chips were incorporated into the soil 4-5 inches deep. Surplus chips were piled for use in the spring.
In March of 2005, 250 dormant "Antanovka" apple rootstocks were delivered to the farm for grafting. Scion wood for MacIntosh and Cortland varieties were obtained from the University of Maine experimental orchard in Monmouth, Maine. During March, 3 people were grafting scion wood onto the rootstocks and these were held in cold storage until the weather allowed planting.
During the last week of April 2005, dormant nursery trees were moved from storage to the prepared area and planted. The treatments were replicated for the two varieties, Macintosh and Cortland.
The replications were as follows:
Treatment 1: 25 trees planted 1 foot apart with bloodmeal sidedressing.
Treatment 2: 25 trees planted 1 foot apart with bloodmeal sidedressing and 2 inches of ramial wood chips around the base of each tree.

Treatment 3: 25 trees planted 1 foot apart with no bloodmeal and 2 inches of ramial wood chips around the base of each tree.
Treatment 4: 25 trees in the control area (this area received no ramial wood chips in the fall or spring) These trees were ,however, sidedressed with bloodmeal.
(the reason that bloodmeal is used is that the ramial wood chips may actually draw nitrogen from the soil as they begin to break down and there may be a drain on soil nitrogen and young trees can not tolerate such a loss.)

JUNE THROUGH SEPTEMBER 2005
Trees were weeded several times. No additional amendments were added to the soil in the treatment area. Trees were monitored for good graft unions and insect problems that may affect the results. Some graft unions were not successful and, therefore the number of trees in any given treatment may not be 25. My original intent was to use the extra 50 trees that were grafted in March to fill in the spaces where these poor grafts existed. I do not think that will be possible now that I have worked through the process.

September 2005: Soil samples were taken from each treatment for testing. These results are not available yet as they have not been sent to the soil lab. This is due to the fact that the soil lab has a reduced rate for testing services during the slow season from January to March.

September 2005 : Shoot growth was measured for all the treatments. Average shoot growth for each treatment is as follows:
Variety: Cortland
Treatment 1: 24.4
Treatment 2: 30.8
Treatment 3: 26.3
Treatment 4: 29.6

Variety: MacIntosh
Treatment 1: 25.8
Treatment 2: 21.1
Treatment 3: 22.0
Treatment 4: 24.6

Measurements of stem diameter were not applicable the first year because the rootstocks were all approximately one quarter inch in diameter and there was not deviation from that diameter in the first year of growth.

FUTURE WORK TO COMPLETE PROJECT:
Spring 2006: Treatments will be repeated as for spring 2005.
July 2006: Leaf tissue analysis will be completed on leaves from each treatment.
September 2006: Shoot measurements completed.
Soil samples taken for comparison.

November 2006: Completion of project results will be submitted.