

SOIL LOSS

NURSERY CROPS

TURF CROPS





COMPARE SOILS
IN BALL & BURLAP PRODUCTION
OR TURF PRODUCTION
WITH NEARBY SOILS OF THE SAME
OR SIMILAR SERIES
AGAWAM, ENFIELD, NARAGANSETT
and less well drained analogs

SOILS WITH A LOAMY OR
SILTY MANTLE OVER STRATIFIED
SAND OR SANDY TILL

COMPARE THICKNESS OF MANTLE OF
B&B SOILS OR TURF SOILS WITH SOILS
NEVER IN B&B OR TURF PRODUCTION
TO CONTROL SOILS



ENFIELD v fsl

CONTROL SOILS

SOILS IN B & B FOR 6 YEARS

PEDON DEPTH to SS in In.

PEDON DEPTH to SS in In.

66

28

78

12

87

35

79

17

74

37

80

15

58

25

81

15

59

22

83

13

60

27

84

12

Total

297

Total

377

N

11

N

22

Mean

27.0

Mean

17.1

Variance

18.6

Variance

9.1

SS = Stratified Sand

VINCENT FARM-FIELD 1

Ball and Burlap vs. Control Soils

Total soil loss = 27 in. - 17.1 in. + 9.9 in.

Annual soil loss = 9.9 in./6 years = 1.65 in.

SOIL LOSS per ACRE

One acre-inch of soil = 134 cubic yards

Total soil loss = 9.9 acre-inches = 1326 yards³

Annual soil loss = 326 yd³/6 years = 222 yd³

VINCENT FARM-FIELD 1

Ball and Burlap vs. Control Soils

Assume Soil D_b of 1.3 g/cm^3

SOIL LOSS PER ACRE

Total loss = 1455 tons

Annual soil loss = $1455/6 \text{ years} = 243 \text{ tons}$

Soil loss tolerance-Agawam soil = 3 tons

VINCENT FARM-FIELD 1

Ball and Burlap vs. Control Soils

Assume 1 ton of soil in field = \$5

SOIL VALUE PER ACRE

Total soil value = 1455 tons x \$5 = \$7275

Annual soil value = 243 tons x \$5 = \$1215

RANGE OF MEANS

EIGHT FIELDS ON THREE FARMS

Control Soils-Depth to SS = 25 to 36 In.

B&B Soils-Depth to SS = 12 to 21 In.

B&B Soils -Total Soil Loss = 9 to 20 In.

Years in B&B Production = 6 to 20

B&B Soils -Mean Annual Soil Loss

= 0.5 to 2 In.

FARMLAND PRESERVATION

HOW LONG?

PERPETUITY!

PERPUTETUITY?

Ball & Burlap

37 Inches/1.9 Inches/Year

= 19.5 Years

37 Inches/0.5 Inches/Year

= 74 Years

From AGAWAM

fine sandy loam

To WINDSOR sand

From PRIME FARMLAND

To MARGINAL FARMLAND

TYPICAL PRIME FARMLAND SOIL

LOAMY MANTLE OVER

SAND and/or GRAVELLY SAND

DENSE TILL OR HARDPAN

BEDROCK

WATERTABLE

18 TO 40 INCHES

DEPTH TO STRATIFIED SAND

**SIGNIFICANTLY GREATER
AMONG CONTROL SOILS**

VS.

**B&B SOILS AT THE 0.01
LEVEL FOR ALL 8 FIELDS**

**TOTAL SOIL LOSS PER ACRE
EIGHT FIELDS ON THREE FARMS**

ACRE-INCHES = 8.6 to 20.4

CUBIC YARDS = 1152 to 2734

ASSUME D_b of 1.3 g/cm^3

TONS = 1264 to 2999

**ANNUAL SOIL LOSS PER ACRE
EIGHT FIELDS ON THREE FARMS**

ACRE-INCHES = 0.5 to 1.9

CUBIC YARDS = 67 to 255

ASSUME D_b of 1.3 g/cm^3

TONS = 74 to 278

SOIL TOLERANCE = 3 TONS





TOTAL SOIL VALUE LOSS/ACRE ON EIGHT B&B FIELDS ON 3 FARM

from

$$1152 \text{ Yards}^3 \times \$5 = \$5760$$

to

$$2735 \text{ Yards}^3 \times \$5 = \$13,675$$

Assume One Yard of Soil in Field = \$5

ANNUAL SOIL VALUE LOSS/ACRE EIGHT BB FIELDS ON THREE FARMS

Ranges from

$$67 \text{ Yards}^3 \times \$5 = \underline{\$335}$$

to

$$255 \text{ Yards}^3 \times \$5 = \underline{\$1275}$$

Assume One Yard of Soil in Field = \$5

TURF FARMS

SOIL LOSS

RANGE OF MEANS

THREE FIELDS ON TWO FARMS

Control Soils-Depth to SS = 25 to 33 In.

Turf Soils-Depth to SS = 16 to 22 In.

Years in Turf Production = 22 to 30

Turf Soils -Total Soil Loss = 8 to 11 In.

Mean Annual Soil Loss = 0.35 to 0.37 In.

DEPTH TO STRATIFIED SAND

**SIGNIFICANTLY GREATER
AMONG CONTROL SOILS**

VS.

**TURF SOILS AT THE 0.05 LEVEL
FOR ALL 3 FIELDS.**

**TWO OF THE 3 FIELDS, SIG.
GREATER AT 0.01 LEVEL**

TOTAL SOIL LOSS PER ACRE

3 TURF FIELDS ON 2 FARMS

ACRE-INCHES = 7.8 to 11.1

CUBIC YARDS = 1045 to 1487

TONS = 1147 to 1632

ASSUME D_b of 1.3 g/cm³

**ANNUAL SOIL LOSS PER ACRE
3 TURF FIELDS ON TWO FARMS**

ACRE-INCHES = 0.35 to 0.37

CUBIC YARDS = 47 to 50

ASSUME D_b of 1.3 g/cm^3

TONS = 52 to 64

SOIL TOLERANCE = 3 TONS

PERPUTETUITY?

TURF

36 Inches/0.35 Inches/Year

= 102.9 Years

FROM AGAWAM

fine sandy loam

TO WINDSOR sand

FROM PRIME FARMLAND

TO MARGINAL FARMLAND

FORAGE CROP SOILS

N = 30

VS.

CONTROL SOILS

N = 10

ALLEN FARM

Forage crops vs. Control Soils

Total soil loss = 22 in. - 21 in. + 1.0 in.

Annual soil loss = 1.0 in./200 years = 0.005 in.

SOIL LOSS per ACRE

One acre-inch of soil = 134 cubic yards

Total soil loss = 1 acre-inches = 134 yards³

Annual soil loss = 134 yd³ /200years = 0.67 yd³

ALLEN FARM

Forage crops vs. Control Soils

Assume Soil D_b of 1.3 g/cm^3

SOIL LOSS PER ACRE

Total loss = 143 tons

Annual soil loss = $143/200$ years

= 0.7 tons

Soil loss tolerance-Agawam soil = 3 tons

**NO SIGNIFICANT
DIFFERENCE BETWEEN
FORAGE CROP SOILS
& CONTROL SOILS**