

## **APPENDIX J**

### **SOIL PROFILE DESCRIPTIONS FOR EXPERIMENTAL LOCATIONS**

## **Profile 1 - Pamunkey sandy loam (fine-loamy, mixed, thermic Ultic Hapludalfs)**

Northbury Farm, New Kent County, VA.

Ap-- 0 to 25 cm; brown (10YR 4/3) sandy loam; weak fine and medium granular structure; very friable, slightly sticky, slightly plastic; many fine roots; common fine and medium tubular pores; neutral; clear smooth boundary.

Bt1-- 25 to 43 cm; strong brown (7.5 YR 5/6) loam; moderate medium sub-angular blocky structure; friable, slightly sticky, slightly plastic; common fine roots; common fine and medium tubular pores; common fine flakes of mica; common distinct clay films on faces of pedes and clay bridges on sand grains; slightly acid; clear smooth boundary.

Bt2-- 43 to 71 cm; strong brown (7.5 YR 5/6) sandy clay loam; moderate medium sub-angular blocky structure; friable, sticky, plastic; common fine roots; common fine and medium tubular pores; common distinct clay films on faces of pedes; common fine flakes of mica; common medium prominent dark brown (7.5 YR 3/2) mineral stains; slightly acid; clear smooth boundary.

Bt3-- 71 to 91 cm; strong brown (7.5 YR 5/6) fine sandy loam; weak medium sub-angular blocky structure; friable, slightly sticky, slightly plastic; common very fine roots; common fine and medium tubular pores; common fine and medium flakes of mica; common distinct clay films on faces of pedes; slightly acid; gradual wavy boundary.

Bt4-- 91 to 117 cm; yellowish red (5 YR 5/6) fine sandy loam; weak medium sub-angular blocky structure; very friable, slightly sticky, slightly plastic; few fine roots; common fine and medium tubular pores; common fine and medium flakes of mica; common distinct clay films on faces of pedes; slightly acid; gradual smooth boundary.

C1-- 117 to 145 cm; strong brown (7.5 YR 5/6) sand; single grain; loose; few fine roots; common fine and medium flakes of mica; slightly acid; clear wavy boundary.

C2-- 145 to 203 cm; yellowish brown (10YR 5/6) sand; single grain; loose; common fine and medium flakes of mica; slightly acid.

## **Profile 2 - Conetoe loamy sand (loamy, mixed, thermic Arenic Hapludults)**

Northbury Farm, New Kent County, VA.

Ap-- 0 to 13 cm; dark grayish brown (10YR 4/2) loamy sand; weak fine granular structure; very friable, non-sticky, non-plastic; common fine medium and coarse roots; common fine tubular pores; neutral; clear smooth boundary.

E1-- 13 to 25 cm; light yellowish brown (10 YR 6/4) loamy sand; weak fine granular structure; very friable, non-sticky, non-plastic; common fine medium and few coarse roots; common fine and medium tubular pores; neutral; clear smooth boundary.

E2-- 25 to 63 cm; brownish yellowish (10 YR 6/6) loamy sand; few fine faint pale brown (10 YR 6/3) sand stripping; single grain; loose, non-sticky, non-plastic; few fine and medium roots; common fine and medium tubular pores; neutral; clear smooth boundary.

Bt1-- 63 to 79 cm; yellowish brown (10 YR 5/6) fine sandy loam; weak medium and fine sub-angular blocky structure; very friable, slightly sticky, non-plastic; few fine and medium roots; common fine and medium tubular pores; many distinct clay films and clay bridges sand grains; neutral; clear smooth boundary.

Bt2-- 79 to 117 cm; yellowish brown (10 YR 5/6) loamy sand; weak coarse sub-angular blocky structure; friable, slightly sticky, non-plastic; few fine and medium roots; few fine and medium tubular pores; many distinct clay films and clay bridges on sand grains; slightly acid; clear smooth boundary.

BC-- 117 to 140 cm; yellowish brown (10 YR 5/6) sand; weak medium granular structure; very friable, non sticky, non plastic; few fine roots; few very faint clay films and bridging on sand grains; few flakes of mica; slightly acid; gradual wavy boundary.

C-- 117 to 203 cm; yellowish brown (10 YR 5/8) sand; common medium faint light yellowish brown (10 YR 6/4) mottles; single grain; loose, non-sticky; non-plastic; few fine flakes of mica; common black grains of sand; slightly acid.

### **Profile 3 - Suffolk fine sandy loam (fine-loamy, siliceous, thermic Typic Hapludults)**

Windy Knoll Farm, James City County, VA.

Ap-- 0 to 25 cm; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; very friable, many medium and fine roots; many fine and medium pores; slightly acidic; clear smooth boundary.

Bt1-- 25 to 48 cm; strong brown (7.5 YR 5/6) fine sandy loam; common fine faint yellowish brown (10 YR 6/4) mottles; weak medium sub-angular blocky structure and moderate and medium granular structure; friable, common fine and medium roots; common fine and medium pores; few sand grains bridged with clay; slightly acid; clear smooth boundary.

Bt2-- 48 to 81 cm; strong brown (7.5 YR 5/6) sandy clay loam; moderate medium sub-angular blocky structure; friable, common fine and medium roots; common fine and medium pores; thin patchy clay films on faces of peds; moderately acid; clear smooth boundary.

Bt3-- 81 to 102 cm; strong brown (7.5 YR 5/6) fine sandy loam; weak fine sub-angular blocky structure and weak fine granular structure; friable, few fine roots; common fine and medium pores; few sand grains bridged with clay; strongly acid; clear smooth boundary.

C1-- 102 to 127 cm; yellowish brown (10 YR 5/8) loamy fine sand; few fine faint pale brown (10 YR 6/3) mottles; massive very friable; few fine and medium roots; many fine and medium pores; few concretions, slightly acid; abrupt wavy boundary.

C2-- 127 to 163 cm; strong brown (7.5YR 5/6) loamy fine sand; massive; friable; few medium roots; many fine and few medium pores; few very fine dark mineral grains; strongly acid.

#### **Profile 4 - Bojac sandy loam (coarse-loamy, mixed, thermic Typic Hapludults)**

Shamokin Farm, New Kent County, VA.

Ap-- 0 to 25 cm; brown (10YR 4/3) sandy loam; weak fine granular structure; very friable, common fine roots; common fine and medium tubular pores; few fine flakes of mica; slightly acid; clear smooth boundary.

E1-- 25 to 46 cm; dark yellowish brown (10 YR 4/6) loamy sand; moderate medium and fine granular structure; very friable, few fine roots; common fine and medium tubular pores; few fine flakes of mica; slightly acidic; gradual smooth boundary.

Bt1-- 46 to 76 cm; brown (7.5 YR 5/4) fine sandy loam; weak coarse sub-angular blocky structure; very friable, slightly sticky, slightly plastic; few fine roots; common fine and medium tubular pores; many distinct clay films and clay bridges on sand grains; few fine flakes of mica; moderately acid; gradual smooth boundary.

Bt2-- 76 to 107 cm; strong brown (7.5 YR 5/6) fine sandy loam; weak medium and coarse sub-angular blocky structure; very friable, slightly sticky, slightly plastic; few fine roots; common fine and medium tubular pores; common distinct clay films and clay bridges on sand grains; common fine flakes of mica; strongly acid; gradual smooth boundary.

Bt3-- 107 to 132 cm; strong brown (7.5 YR 5/6) fine sandy loam; weak coarse sub-angular blocky structure; very friable, slightly sticky, slightly plastic; few fine roots; common fine and medium tubular pores; common fine flakes of mica; common distinct clay films and clay bridges on sand grains; strongly acid; gradual wavy boundary.

C1-- 132 to 155 cm; mottled strong brown (7.5 YR 5/6) and pale brown (10 YR 6/3) sand; single grain; loose; common fine and medium tubular pores; common fine flakes of mica; 5 percent rounded quartz gravel; strongly acid; clear wavy boundary.

C2-- 155 to 178 cm; yellowish brown (10YR 5/6) sand; common medium faint pale brown (10 YR 6/3) mottles; single grain; loose; common fine flakes of mica; common black grains of sand; 10 percent rounded quartz gravel; strongly acid.

## **Profile 5 - Appling-Cecil complex (Fine, kaolinitic, thermic Typic Kanhapludults)**

T.C. Reems Farm, Amelia County, VA.

Ap-0 to 23 cm; yellowish brown (10YR 5/4) sandy loam; weak fine granular structure; very friable; common fine and medium roots; few pebbles of quartz; slightly acid; clear smooth boundary.

BA--23 to 30 cm; reddish yellow (7.5YR 6/8) sandy clay loam; weak medium sub-angular blocky structure; friable; slightly sticky; common fine roots; common fine and medium pores; few pebbles of quartz; strongly acid; clear smooth boundary.

Bt1--30 to 48 cm; reddish yellow (7.5YR 6/8) clay loam; common medium prominent red (2.5YR 5/8) mottles; moderate medium sub-angular blocky structure; firm; sticky, plastic; few fine roots; common fine and medium pores; few thin distinct clay films on faces of ped; few fine flakes of mica; strongly acid; gradual smooth boundary.

Bt2--48 to 89 cm; strong brown (7.5YR 5/8) clay; common medium prominent red (2.5YR 5/8) mottles; moderate medium sub-angular blocky structure; firm, sticky, plastic; few fine roots; common fine and medium pores; common thick distinct clay films on faces of ped; common fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3--89 to 107 cm; strong brown (7.5YR 5/6) clay loam; common medium distinct yellowish red (5YR 5/6) and few fine distinct yellow (10YR 8/6) mottles; weak medium sub-angular blocky structure; firm, sticky, slightly plastic; few fine pores; few distinct clay films on faces of ped; common fine flakes of mica; about 15 percent saprolite; very strongly acid; gradual wavy boundary.

BC--107 to 117 cm; reddish yellow (5YR 6/8) clay loam; common medium distinct red (2.5YR 5/8) and yellow (10YR 8/6) mottles; weak medium sub-angular blocky structure; friable; slightly sticky; common fine flakes of mica; about 25 percent saprolite; very strongly acid; gradual wavy boundary.

C--117 to 165 cm; reddish yellow (7.5YR 7/6), red (2.5YR 5/8), and yellow (10YR 8/6) saprolite that has a sandy clay loam texture; massive; friable; common fine flakes of mica; few bodies of clay loam; very strongly acid.

## **Profile 6 - Wheeling silt loam (silt loam, mixed, mesic Ultic Hapludalfs)**

Kentland Farm, Montgomery County, VA.

Ap-0 to 25 cm; brown (10YR 4/3) silt loam; weak fine granular structure; friable; slightly acid; clear smooth boundary.

E--25 to 35 cm; yellowish brown (10YR 5/4) silt loam; weak medium and fine sub-angular blocky structure; friable; moderately acid; gradual wavy boundary.

Bt--35 to 86 cm; dark yellowish brown (10YR 4/4) silty clay loam; moderate medium sub-angular or blocky structure; common distinct dark reddish brown (5YR 3/3) clay films on faces of ped; firm; strongly acid; gradual wavy boundary.

BC1--86 to 147 cm; light yellowish brown (10YR 6/4) very fine sandy loam; few distinct streaks and spots of brown (7.5YR 5/4); weak coarse sub-angular blocky structure; firm; few faint dark reddish brown (5YR 3/3) clay films in pores in upper part of horizon; strongly acid; gradual wavy boundary.

2BC2--147 to 152 cm; dark brown (7.5YR 4/2) very gravelly sandy loam; very weak coarse sub-angular blocky structure; friable; few clay films on sand grains with clay bridging; strongly acid; diffuse boundary.

3C--152 to 183 cm; dark grayish brown (10YR 4/2) stratified very gravelly sand composed of sandstone, shale and quartzite; strongly acid.

**Profile 7 - Atlee very fine sandy loam (fine-loamy, mixed, thermic Typic Fragiudults)**

Reggie and Bill Nelson Farm, Henrico County, VA.

Ap- 0 to 30 cm; dark grayish brown (10YR 4/2) very fine sandy loam; weak fine granular structure; very friable, non-sticky; non-plastic; many fine roots; slightly acid; abrupt smooth boundary.

Bt1-- 30 to 56 cm; light olive brown (7.5 Y 5/4) clay loam; weak medium sub-angular blocky structure; friable, sticky, slightly plastic; few fine roots; few fine pores; thin patchy clay films; moderately acid; clear smooth boundary.

Bt2-- 56 to 84 cm; pale yellow (2.5 Y 7/4) and brownish yellow (10 YR 6/8) light clay loam; few medium distinct gray (5 Y 6/1) mottles; moderate, very coarse, sub-angular structure; friable, sticky, slightly plastic; few fine roots; few medium and fine pores; thin patchy clay films; strongly acid; clear smooth boundary.

Bt3-- 84 to 137 cm; light yellowish brown (2.5 Y 6/4) gray (10 YR 6/1) and yellowish red (5 YR 4/6) clay loam; weak coarse sub-angular blocky structure; friable, sticky, slightly plastic; continuous clay films; strongly acid; gradual smooth boundary.

Bt4-- 137 to 168 cm; light yellowish brown (2.5 Y 6/4) gray (10 YR 6/1) and yellowish red (5 YR 4/6) clay; fine angular blocky structure; firm, sticky, plastic; continuous clay films; strongly acid; gradual smooth boundary.

C1-- 168 to 259 cm; light yellowish brown (2.5 Y 6/4) gray (10 YR 6/1) and yellowish red (5 YR 4/6) clay; massive; firm; sticky and plastic; very strongly acid.

C2-- 155 to 178 cm; yellowish brown (10YR 5/6) sand; common medium faint pale brown (10 YR 6/3) mottles; single grain; loose; common fine flakes of mica; common black grains of sand; 10 percent rounded quartz gravel; strongly acid.

**Profile 8 - Kempsville fine loamy sand (fine-loamy siliceous, thermic Typic Hapludults)**

Windy Knoll Farm, New Kent County, VA.

Ap- 0 to 28 cm; brown (10YR 5/3) fine loamy sand; weak fine granular structure; friable, non-sticky, non-plastic; few fine roots; common fine and few medium tubular pores; moderately acid; abrupt smooth boundary.

BA-- 28 to 43 cm; yellowish brown (10 YR 5/6) fine sandy loam; common medium faint light yellowish brown (10 YR 6/4) mottles; weak medium sub-angular blocky structure; friable, sticky, slightly plastic; few fine roots; common fine and medium tubular pores; moderately acidic; clear smooth boundary.

Bt1-- 43 to 76 cm; strong brown (7.5 YR 5/6) sandy clay loam; common coarse distinct light yellowish brown (10 YR 6/4) mottles; moderate medium sub-angular blocky structure; friable, sticky, plastic; few fine roots; few fine and few medium tubular pores; common distinct clay films on faces of ped; moderately acid; gradual smooth boundary.

Bt2-- 76 to 99 cm; yellowish brown (10 YR 5/8) fine sandy loam; common fine and medium distinct pale brown (10 YR 6/3) mottles; weak medium sub-angular blocky structure; very friable, slightly sticky, non-plastic; few fine roots; common fine and medium tubular pores; few distinct clay films on faces of ped and clay bridging between sand grains; moderately acid; clear irregular boundary.

Bt3-- 99 to 135 cm; 60 percent yellowish brown (10 YR 6/3) and 40 percent pale brown (10 YR 6/3) fine sandy loam; weak coarse sub-angular blocky structure; yellowish brown portion is friable, slightly sticky, slightly plastic; pale brown portion is firm and slightly compact in place; common fine vesicular pores in pale brown portion; common fine tubular pores in yellowish brown portion; many distinct clay films and clay bridges on sand grains; moderately acid; gradual irregular boundary.

Bt4-- 135 to 200 cm; yellowish red (5 YR 5/8) fine sandy loam; weak medium sub-angular blocky structure; friable, sticky, plastic; few fine and medium tubular pores; few distinct clay films on faces of ped; moderately acid.