

PHYSICAL CHARACTERISTICS REPORT FOR THE PROPOSED SAND AND GRAVEL SITE AT MANOR FARM, UFFINGTON

Introduction

Following the request for detailed information on the physical characteristics of soil at Manor Farm, the RPG visited the site in November 1990. An ALC survey was undertaken and soils augered to 100 cms and soil pits dug to determine the physical characteristics.

Topsoil had been stripped from part of the site on the area destined to form part of the Shrewsbury by-pass, and the soil has been stored on the adjoining land. Information collected in a previous survey was of particular value for these parts of the site.

Location, Attitude and Relief

The site lies 2 km east of Shrewsbury, close to the River Severn, with the Shrewsbury - Telford railway line close to the southern boundary of the site. Altitude varies between 50 metres and 55 metres, and is gently undulating, although more pronounced in the south-west of the site.

Climate and Rainfall

The main parameters used in the assessment of the climatic limitations are average annual rainfall (AAR) and accumulated temperature (ATO). For this site these figures are 650 mm and 1429°C respectively, indicating that there are no climatic limitations on the site. The field capacity days figure for the site is 137 days. The mean last frost is in early May.

Geology and Soils

The soils are derived from river terrace sand and gravels which produce soils of a predominantly sandy loam topsoil texture, overlying a somewhat heavier, but more variable subsoil. These soils are generally slightly stony throughout with stonier subsoils below about 60 cms.

Flooding

Flooding is non-limiting in the classification of this site.

Land Use

At the time of survey winter cereals were being grown on the site.

AGRICULTURAL LAND CLASSIFICATION

Grade 2 land occupies hectares and accounts for 39.3% of the site. It is widespread on the north of the site, and although it does occur elsewhere, many areas are too small to be mapped separately at this scale.

These soils generally have a sandy loam topsoil which overlies a variable subsoil of either loamy sand, sandy loam, or sandy clay loam, which often overlies a stony layer by about 60-70 cms. Droughtiness is the main limitation to the agricultural use of this land.

Sub-grade 3a land occupies 24.14 hectares and accounts for 60.7% of the site. It covers the remainder of the site. The soils are more variable than on the grade 2 land. Sandy loam or sandy clay loam topsoils overlies stony subsoils of loamy sand, sandy loam or sandy clay loam. The main differences from the grade 2 land are the presence of mottling and gleying within the soils, indicating its imperfect drainage status, and/or gravel rich layers encroaching within the top 60 cms and locally within the top 45 cms, further increasing the drought risk.

Breakdown of ALC Grades

Grade	Area (ha)	% of site
2	15.66	39.3
3a	<u>24.14</u>	<u>60.7</u>
Total	<u>39.80</u>	<u>100.0</u>

SOIL UNITS

Two soil units have been identified on site. They are both derived from the second river terrace and exhibit some internal variation though variation within soil units is less than the variation between units.

Soil Unit 1 occurs in the north-west of the site, immediately east of the flood plain. The soils typically have a slightly stony sandy loam or fine sandy loam topsoil, overlying sandy loam or loamy sand to at least 65 cm and frequently 75-80 cm before hitting a stony layer, though in some places as little as 40-45 cms of soil lay above the stony layer. This variation is, however, too small to map separately at this scale. There are signs of impeded drainage below 75 cm which are indicative of a ground water clay.

Soil Unit 2 occurs on the remainder of the site. Topsoils are generally sandy loam or occasionally sandy clay loam. These textures extend below the topsoil to a depth of about 60 cm, but this may be as little as 30 cm. This layer is underlain by a variable thickness of sandy clay loam or even clay loam, before passing into a gravel rich layer. These soils are slightly to moderately stony, with stone content increasing at depth.

Resource Planning Group
Wolverhampton RO
November 1990

SOIL NOTES FOR UFFINGTON, SHREWSBURY ON 10 DECEMBER 1985.

- 1 0-30 cm brown sandy loam, 30-60 cm yellow brown sandy loam, 60-85 cm+ yellow brown gritty coarse sandy loam/sandy clay loam with small pebbles. Too hard to auger below 85 cm. Level. 2
- 2 0-30 cm brown sandy loam, 30-80 cm+ red brown gritty coarse discoloured sandy loam/sandy clay loam with small pebbles. Too hard to auger below 80 cm. Gentle slope. 3a/2
- 3 0-25 cm red brown silty clay loam, 25-30 cm red brown silty clay loam with small pebbles, 30-100 cm red brown silty clay with strong ochreous mottles. Moderate slope. Surface stones up to 15 cm, average 5-10 cm, sub angular, 5-8%. 3b
- 4 0-27 cm brown sandy loam, 27-45 cm yellow brown sandy loam, 45-60 cm yellow brown fine sandy clay loam with no mottles. Level, on slightly higher ground. ? 2
- 5 0-34 cm brown well bodied sandy loam, 34-60 cm yellow brown well bodied fine sandy loam, 60-100 cm discoloured yellow brown moist coarse sandy loam/sandy clay loam and sandy matrix. Level. 2
- 6 0-32 cm brown sandy loam, 32-42 cm yellow brown discoloured sandy clay loam with ochreous mottles and pebbles. Too hard to auger below 42 cm. 3 borings attempted. Level, in very large depression. 3a
- 7 0-30 cm brown sandy loam, 30-45 cm red brown sandy loam and pebbles. Too hard to auger below 45 cm. Level, on ridge top. Stony in profile. 3a/2
- 8 0-35 cm brown sandy loam, 35-45 cm brown coarse gritty discoloured sandy loam with small pebbles, 45-60 cm brown sand and gravel. Too hard to auger below 60 cm. Level, on ridge top. Stony in profile. 3a
- 9 0-37 cm brown fine sandy loam, 37-60 cm yellow orange discoloured fine sandy clay loam with ochreous mottles, 60-80 cm yellow orange grey sandy clay loam with pebbles. Too hard to auger below 80 cm. Level, in large depression. 3a
- 10 0-30 cm brown fine sandy loam, 30-38 cm yellow brown fine sandy clay loam with slight ochreous mottles, 38-60 cm yellow brown discoloured fine sandy clay loam with strong ochreous mottles and manganese concretions, 60-100 cm yellow olive sandy clay loam with some weathered sandstone. Level. 3a
- 11 0-30 cm brown fine sandy loam, 30-55 cm yellow brown fine sandy loam/sandy loam, 55-100 cm yellow brown coarse sandy loam/sandy clay loam with small pebbles. Level. 2
- 12 0-32 cm brown sandy loam, 32-39 cm red brown coarse sandy loam with pebbles, 39-70 cm red brown sand and gravel. Too hard to auger below 70 cm. Level, on higher ground. 3a
- 13 0-30 cm brown well bodied very fine sandy loam, 30-50 cm red brown well bodied fine sandy loam, 50-100 cm red brown fine sandy clay loam. Level at top of gentle slope. 2

- 14 0-35 cm brown fine sandy loam, 35-80 cm red brown fine sandy loam, 80-100 cm red brown fine sandy loam with no mottles. Level, near river. 1
- 15 0-32 cm brown very fine sandy loam, 32-100 cm red brown fine sandy loam with no mottles. Level, near river. 1
- (16) 0-35 cm brown silty loam, 35-65 cm yellow brown very fine sandy loam, 65-100 cm yellow brown sand and gravel matrix. Level, on slightly higher ground. 2
- (17) 0-28 cm brown sandy loam, 28-40 cm red brown sandy loam with occasional pebbles, 40-55 cm red brown fine sandy clay loam with occasional mottles, 55-100 cm red brown sand and gravel matrix. Level, on slightly higher ground. 2/3a
- (18) 0-34 cm brown well bodied fine sandy loam, 34-50 cm red brown gritty fine sandy clay loam with ochreous mottles, 50-70 cm bands of red brown fine sandy loam with layers of pebbles, 70-80 cm red brown coarse sandy loam/sandy clay loam with pebbles. Too hard to auger below 80 cm. Level. 3a/2
- 19 0-40 cm brown fine sandy loam, 40-60 cm yellow orange brown fine sandy clay loam with strong ochreous mottles, 60-80 cm yellow orange brown sandy clay loam with brown staining and weathered sandstone. Too hard to auger below 80 cm. Level. 3a
- 20 0-29 cm brown sandy loam, 29-45 cm yellow brown fine sandy clay loam with ochreous mottles, 45-100 cm discoloured grey sandy clay loam with strong ochreous mottles. Level, in very large depression. 3a/b
- 21 0-35 cm brown gritty sandy loam, 35-55 cm red brown gritty sandy loam and pebbles. Too hard to auger below 55 cm. Gentle slope. 3a
- 22 40 cm brown slightly stony sandy loam over 5 cm brown gritty fairly coarse well bodied sandy loam over 5 cm greyish brown gritty well bodied sandy loam. No further penetration possible due to stony, gravelly layer. Site on low ridge at back of river terrace, oilseed rape. 3a
- 22a 30 cm brown fine sandy loam over at least 18 cm yellowish brown gritty fairly coarse sandy clay loam. Distinct ochreous and rusty mottles below 30 cm. Site at back of river terrace, oilseed rape. 3a/b
- 23 28 cm brown sandy loam over 7 cm yellowish brown sandy clay loam over at least 65 cm of greyish brown well bodied fine sandy loam with occasionally heavier and coarser lenses below 75 cm. Soil slightly stony throughout, mainly small rounded quartzite pebbles. Distinct ochreous and rusty mottles below 28 cm. Level, oilseed rape. 3b
- 24 50 cm reddish brown fine sandy loam over 30 cm pale brown sandy loam with occasional loamy sand lenses below 65 cm over at least 20 cm orange brown sandy clay loam. Numerous distinct ochreous and rusty mottles below 80 cm with some grey colours. Soil slightly stony throughout with a fairly gritty layer between 50 and 75 cm. Level, oilseed rape. 2

- 25 2 borings attempted at this site both revealed the following soil profile - 40 cm brown well bodied fine sandy loam over 10 cm pale yellowish brown sandy loam over at least 10 cm gritty yellowish brown sandy clay loam. Top soil slightly stony (about 5%) mainly small and medium rounded quartzite pebbles. Distinct ochreous and rusty mottles below 40 cm becoming much more numerous with depth. Level, oilseed rape. 3a
- (26) 50 cm brown fine sandy loam over at least 50 cm of paler brown fine sandy loam. Numerous distinct grey mottles and occasional manganese concretions below 50 cm. Very slightly stony throughout (less than 5%). Level, patchy oilseed rape. 2
- (27) 42 cm brown well bodied sandy loam over at least 58 cm pale greyish brown sandy loam. Slightly stony throughout (about 5%), mainly medium with some small and occasional large stones. Numerous distinct ochreous and rusty mottles below 42 cm becoming slightly worse with depth. Level, patchy oilseed rape. 3a/2
- (28) 38 cm reddish brown well bodied fine sandy loam over 42 cm pale brown fine sandy loam over at least 20 cm pale brown gritty fairly coarse sandy loam. Occasional faint grey mottles and manganese concretions below 75 cm. Very little stone throughout the top 80 cm. Level, patchy oilseed rape. 1
- 28a 58 cm well bodied reddish brown fine sandy loam over 7 cm paler brown slightly gritty well bodied sandy loam. No further penetration possible due to gravelly layer. No mottles seen throughout. Slightly stony throughout (between 5 and 10% of medium and small pebbles). 2
- 29 2 borings attempted at this site.
- 29a 30 cm dark brown gritty silty loam over gravel layer, no further penetration possible due to stones.
- 29b 45 cm dark brown slightly gritty silty loam over gravel layer, no further penetration possible due to stones. Topsoil slightly stony (about 10% of small stones). Site on gentle slope descending to floodplain. 3a
- X 30 38 cm reddish brown very fine sandy loam over 37 cm pale brown fine sandy loam over at least 25 cm greyish brown sandy clay loam. Numerous fine grey mottles with occasional grey manganese concretions below 38 cm becoming much worse below 75 cm. Virtually stoneless throughout. Level, floodplain and oilseed rape. 3a
- 30a 45 cm reddish brown fine sandy loam over 15 cm pale brown fine sandy loam over at least 40 cm pale greyish brown very fine sandy loam with silty loam lenses. Numerous distinct grey mottles below 60 cm with occasional manganese concretions. Virtually stoneless throughout. Level, floodplain under oilseed rape. 2/1
31. 38 cm dull brown very fine sandy loam over 47. cm grey silty loam becoming heavier with depth over at least 15 cm grey silty clay loam. Distinct grey mottles below 38 cm. Level, riverside field under oilseed rape. 3a

- 31a At least 100 cm reddish brown very fine sandy loam. No mottles or stones encountered throughout. Level, adjacent to river. 1
- 32 42 cm reddish brown well bodied sandy loam over 28 cm slightly gritty paler brown sandy loam over 5 cm gravelly loamy sand over gravel. No further penetration possible. Soil slightly stony throughout (about 5-10% mainly small pebbles). Level, oilseed rape. 2
- 33 35 cm reddish brown fine sandy loam over 40 cm pale brown very fine sandy loam over 5 cm gritty sandy loam over gravel. No further penetration possible due to gravel. No mottles seen throughout. Virtually stoneless to 75 cm. Level, oilseed rape. 1/2
- 34 40 cm brown fine sandy loam over 30 cm pale yellowish brown fine sandy loam over 5 cm greyish brown gravelly sandy loam over gravel. No further penetration possible. Occasional very faint fine ochreous mottles below 40 cm becoming slightly worse with depth. Level, very patchy oilseed rape. 3a/2
- 35 35 cm brown fine sandy loam over 25 cm paler brown fine sandy loam over 10 cm pale brown gritty sandy loam over 5 cm greyish brown gritty sandy clay loam. No further penetration possible due to gravel layer. A few distinct ochreous and grey mottles below 50 cm becoming much more numerous below 60 cm. Level, well established oilseed rape. 2
- 36 30 cm brown well bodied loam over 32 cm greyish brown fine sandy clay loam becoming heavier with depth over 18 cm grey brown clay loam over 8 cm greyish brown very gritty sandy clay loam over gravel layer, no further penetration possible. Distinct grey and ochreous mottles below 30 cm. Level, oilseed rape. 3a/b
- 37 38 cm dark reddish brown fine sandy loam over 34 cm paler brown fine sandy loam becoming slightly lighter in texture with depth. No further penetration possible due to gavel layer. Occasional faint rusty mottles below 40 cm not becoming worse with depth. Topsoil very slightly stony becoming gravelly below 70 cm. Level, oilseed rape. 2/ 3a
- 38 35 cm dark brown well bodied fine sandy loam over at least 65 cm fine sandy clay loam. Ochreous and rusty mottles below 35 cm becoming grey below 60 cm. Soil slightly stony throughout becoming very gravelly below 85 cm. Level, oilseed rape. 3a
- 39 40 cm well bodied sandy loam over 20 cm gritty fairly coarse sandy loam over 5 cm grey brown gritty loamy coarse sand. No further penetration possible due to gravel layer. Numerous grey mottles below 55 cm. Site on low bank at back of floodplain, oilseed rape. 3a/2
- 40 2 borings attempted at this site both revealed the following profile - 32 cm dark reddish brown well bodied fine sandy loam over at least 15 cm reddish brown sandy clay loam. No further penetration possible due to gravel layer. No mottles seen throughout. Soil slightly stony throughout becoming gravelly below 40 cm. Level, oilseed rape. 3a/2

- 41 38 cm brown fine sandy loam over at least 62 cm yellowish brown fine sandy clay loam becoming slightly heavier with depth. Numerous distinct ochreous and grey mottles below 38 cm. Soil slightly stony throughout becoming gritty below 48 cm though no proper gravel layer encountered within the top metre. Level, oilseed rape. 3a
- 42 58 cm brown well bodied loam over gravel, no further penetration possible. Soil slightly stony throughout (about 5-10%) mainly small rounded pebbles. Soil gritty below 50 cm. Level, oilseed rape. 2/3a
- 33 cm reddish brown fine sandy loam over 32 cm paler brown fine sandy loam becoming slightly heavier with depth over gravel layer. No further penetration possible. No mottles seen throughout. Topsoil very slightly stony (5-10%). Soil gritty below 55 cm and on to the gravel layer at 65 cm. Level, oilseed rape. 2/3a
- 44 32 cm brown fine sandy loam over 13 cm pale brown very fine sandy loam over 20 cm fairly coarse greyish brown sandy clay loam with occasional sandy loam lenses over gravel layer, no further penetration possible. Distinct ochreous and rusty mottles below 32 cm becoming more numerous and with pronounced grey colours below 55 cm. Soil slightly stony throughout becoming gravelly below 55 cm. Level, oilseed rape. 3a
- 45 38 cm brown well bodied fine sandy loam over 40 cm yellowish brown fine sandy clay loam over gravel layer, no further penetration possible. Numerous distinct ochreous mottles below 40 cm becoming more numerous and prominent with depth and with numerous manganese concretions. Soil gravelly below 65 cm. Very little stone in the topsoil. Level, oilseed rape. 3a
- 46 35 cm brown fine sandy loam over 25 cm pale brown fine sandy loam over 15 cm greyish brown fine sandy clay loam over gravel, no further penetration possible. A few faint ochreous mottles below 45 cm becoming worse with depth. Soil slightly stony throughout becoming fairly gravelly below 60 cm. Level, oilseed rape. 2/ 3a
- 47 35 cm dark reddish brown fine sandy loam over 8 cm pale brown well bodied fine sandy loam over 32 cm pale yellowish brown fine sandy clay loam over gravel layer, no further penetration possible. Distinct ochreous mottles below 35 cm becoming worse with depth. Soil gravelly below 65 cm. Level, oilseed rape. 3a
- 48 37 cm dark reddish brown fine sandy loam over 36 cm paler reddish brown fine sandy loam becoming increasingly heavy with depth over gravel layer. No further penetration possible below 73 cm due to gravel. No mottles seen throughout. Topsoil slightly stony (about 10%) mainly small with a few medium size rounded pebbles. Soil gritty below 55 cm. Level, fairly patchy oilseed rape. 2/3a
- 49 38 cm reddish brown fine sandy loam over 20 cm pale orange brown fine sandy loam over 12 cm orange brown fine sandy clay loam over gravel, no further penetration possible. Numerous ochreous mottles with manganese concretions below 38 cm becoming slightly worse with depth. Soil slightly stony throughout (about 5-10%) mainly small with some medium size pebbles. Soil gravelly below 60 cm and gravel layer encountered at 70 cm. Site on gently slope above floodplain, patchy oilseed rape. 3a

- 49a 35 cm dark reddish brown fine sandy loam over at least 65 cm pale reddish brown fine sandy loam becoming slightly heavier below 85 cm. No mottles or stones seen throughout. Level, floodplain under oilseed rape. 1
- 50 0-37 cm brown very fine sandy loam, 37-100 cm red brown very fine sandy clay loam with ochreous mottles and brown staining. Level, at top of gentle slope. 3a
- 50a 0-30 cm brown well bodied fine sandy loam, 30-100 cm red brown very fine sandy loam with no mottles. Level, near river. 1
- 51 0-36 cm brown sandy loam, 36-60 cm discoloured yellow brown fine sandy clay loam with ochreous mottles, 60-70 cm yellow brown sandy clay loam with ochreous mottles and pebbles. Too hard to auger below 70 cm. Level. 3a
- 52 0-33 cm brown sandy loam, 33-52 cm yellow orange brown fine sandy clay loam with ochreous mottles, 52-70 cm yellow brown sandy clay loam with ochreous mottles and brown staining. Rock at 70 cm. Gentle slope. 3a
- 53 0-34 cm brown well bodied fine sandy loam, 34-65 cm red brown sandy loam and pebbles. Too hard to auger below ~~100~~₆₅ cm. Level. 3a
- 54 0-30 cm brown very fine sandy loam, 30-72 cm red brown fine sandy loam, 72-100 cm yellow red brown discoloured fine sandy clay loam with slight ochreous mottles. Level. 1
- 55 0-32 cm brown fine sandy loam, 32-80 cm yellow brown fine sandy clay loam with ochreous mottles, 80-100 cm yellow brown discoloured sandy clay loam with ochreous mottles and pebbles. Level. 3a
- 56 0-30 cm brown well bodied fine sand loam, 30-65 cm yellow brown fine sandy clay loam with strong ochreous mottles, 65-100 cm yellow grey brown discoloured sandy clay loam with ochreous mottles and pebbles. Level. 3a
- 57 0-32 cm brown very fine sandy loam, 32-40 cm yellow brown fine sandy clay loam with strong ochreous mottles. 40-60 cm yellow orange sandy clay loam with strong ochreous mottles, 60-70 cm yellow orange gritty sandy clay loam. Too hard to auger below 70 cm. 3a
- 58 0-28 cm brown very fine sandy clay loam, 28-60 cm yellow brown clay loam with ochreous mottles, 60-80 cm yellow brown discoloured sandy clay loam with ochreous mottles, 80-100 cm discoloured yellow coarse sandy clay loam with pebbles. Level. 3b
- 59 0-33 cm brown sandy loam, 33-42 cm yellow brown discoloured clay loam, 42-100 cm yellow brown discoloured sandy clay loam with pebbles. Level. 3a
- 68 0-34 cm brown fine sandy loam, 34-100 cm yellow brown fine sandy clay loam with ochreous mottles and rusty staining. Gentle dip. 3a
- 68a 0-25 cm brown fine sandy loam, 25-100 cm red brown very fine sandy loam with no mottles. Level, near river. 1

**SOIL NOTES FOR UFFINGTON PROPOSED SAND AND GRAVEL SITE BY
R M RALLINGS**

- 59a. 0-29 cm brown loam, 29-60 cm yellow orange grey clay loam with ochreous mottles, 60-100 cm yellow orange sandy clay loam with very strong discolouration and ochreous mottles. Level. Oil seed rape. 3b
60. 0-29 cm dark brown silty loam, 29-50 cm grey brown silty clay loam with strong ochreous mottles, 50-80 cms discoloured and grey sandy clay loam with ochreous mottles, 80-100 cms grey clay with ochreous mottles. Level. Oil seed rape. 3b
61. 0-32 cms dark brown fine sandy loam, 32-45 cms yellow brown discoloured sandy clay loam with ochreous mottles, 45-80 cms yellow orange discoloured fine sandy clay loam with ochreous mottles, 80-100 cms yellow brown very strongly discoloured sandy clay loam with ochreous mottles. Level. Oil seed rape. 3a
62. 0-34 cms dark brown fine sandy loam, 34-65 cms yellow orange brown sandy clay loam with ochreous mottles. 65-100 cms yellow orange grey fine sandy clay loam with ochreous mottles. Level. Oil seed rape. 3a
63. 0-35 cms dark brown gritty sandy loam, 35-50 cms orange brown light sandy clay loam with ochreous mottles, 50-100 cms discoloured yellow orange brown compacted sand with layers of sandy loam and occasional clay loam. Level. Oilseed rape. 3a
64. 0-38 cms brown sandy loam, 38-65 cms dark yellow brown sandy loam with strong discolouration, 65-100 cms yellow brown light sandy clay loam with strong rusty mottles. Level. Oil seed rape. 3a
65. 0-35 cms brown sandy loam, 35-55 cms yellow brown gritty sandy loam with pebbles and strong rusty mottles. Too hard to auger below 55 cms. Level. Oil seed rape. 3a
66. 0-34 cms brown sandy loam, 34-60 cms yellow red brown sandy loam with strong rusty mottles, 60-100 cms yellow discoloured loamy sand. Level. Oil seed rape. 3a
67. 0-28 cms brown sandy loam, 28-44 cms red brown loamy sand, 44-55 cms yellow orange sand, 55-100 cms yellow orange sand and fine sandy clay loam matrix with strong discolouration. Level. Oil seed rape. 3a
69. 0-36 cms brown sandy loam, 36-50 cms red brown sandy clay loam with ochreous mottles. 50-100 cms yellow brown strongly discoloured sandy clay loam. Level. Oil seed rape. 3a

70. 0-30 cms dark brown gritty sandy loam 30-60 cms red brown gritty sandy clay loam with pebbles. Too hard to auger below 60 cms. Level. Oil seed rape. 3a
71. 0-28 cms brown fine sandy loam, 28-50 cms yellow discoloured sandy clay loam with ochreous mottles, 50-70 cms yellow orange brown strongly discoloured gritty sandy clay loam with pebbles. Too hard to auger below 70 cms. Level. Oil seed rape. 3b
72. 0-27 cms dark brown fine sandy loam, 27-60 cm yellow brown sandy clay loam with ochreous mottles, 60-100 cms yellow orange grey sandy clay loam with pebbles becoming greyer and sandier at depth. Level. Oil seed rape. 3b
73. 0-33 cms brown sandy loam, 33-50 cms yellow brown fine sandy clay loam with ochreous mottles. 50-80 cms yellow brown fine sandy clay loam with strong discolouration, 80-100 cms yellow orange brown sandy clay loam with ochreous mottles. Level. Oil seed rape. 3a