GROUP 1

	NAME	COUNTRY
1	Brina Arzenšek 9.a	Slovenia
2	Claudia González	Spain
3	Alessio Iannaccone	Italy
4	Vivian Schuurman	The Netherlands
5	Zuzanna Nikiel	Poland

GROUP 2

	NAME	COUNTRY
1	Aleksander Koželj 9.a	Slovenia
2	~~Roberto~~ Roberto Pachón	Spain
3	ALESSANDRO BOVE	Italy
4	Ka Sheng Jiang	The Netherlands
5	Olga Petechaa	Poland

GROUP 3

	NAME	COUNTRY
1	Gaja Turnšek 9.a	Slovenia
2	Viviana Alfano	Spain
3	ALESSANDRO D'ORRICO	Italy
4	Linsey v. Wyngaarden	The Netherlands
5	Izabella Sklarska	Poland

GROUP 4

	NAME	COUNTRY
1	Aljaž Močnik 9.a	Slovenia
2	Daniela Rivero	Spain
3	Marco Luigi	Italy
4	Sven Davids	The Netherlands
5	Wiktor Kietrzin.	Poland

GROUP 5

	NAME	COUNTRY
1	Janja Šolinc 9.b	Slovenia
2	Nayra Hénder	Spain
3	Vincenzo Pio Rosiello	Italy
4	Agata Szurek	~~The Netherlands~~ Poland
5	Julia Zawlik	Poland

Description of the pedological profile Let`s Talk About Soil

1. Location and marks

Nr of Profile	SI	S	O	T	1	0	1	1	Sentrupert

Date	01. 10. 2018	WGS	GK	X	46° 15' 9	Y	15° 04' 9	Altitude	280 9	m

State	location	Name:

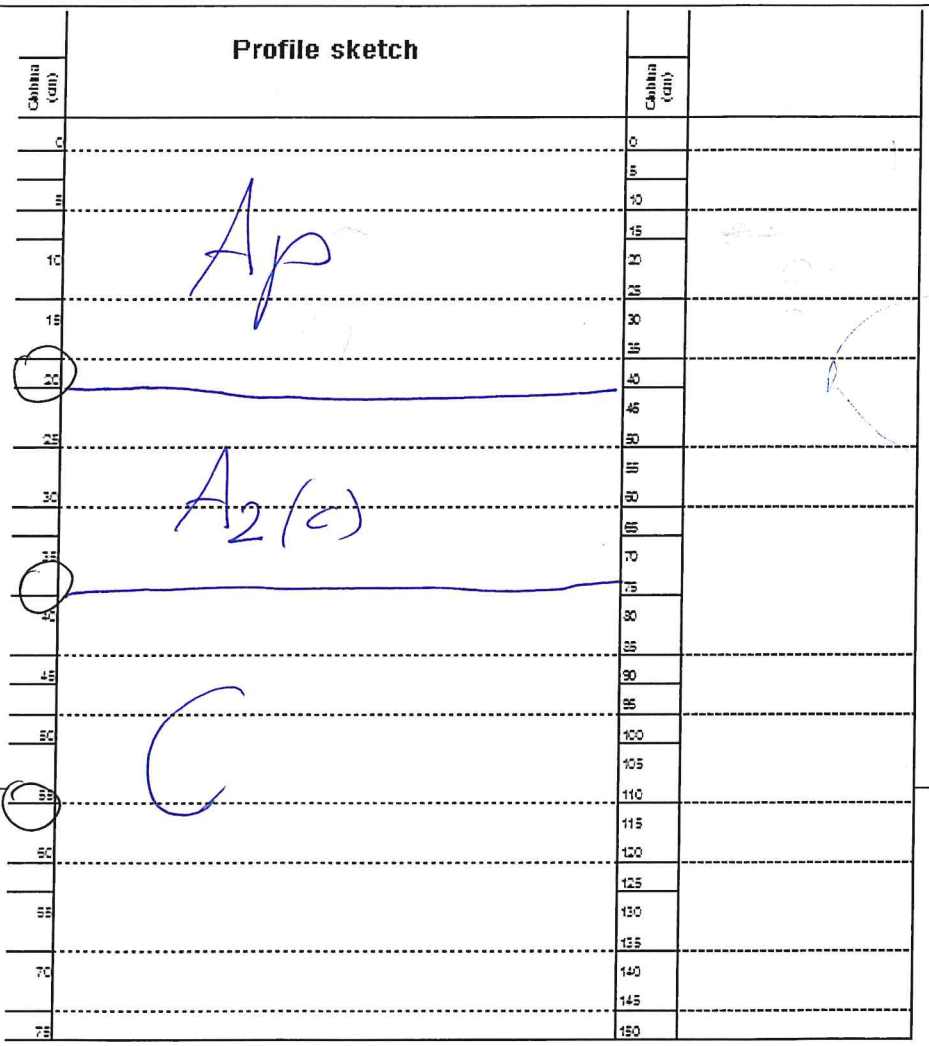
2. Pedogenetic factors

1 Macro relief	DOLINA / valley	Angle of inclination	0	° Cardinal direction	S (N) north
2 FAO use	NJIVA-brownfield (brownfield)	Human influence	STR. OBDELAVA / machine processing		
3 Vegetation	//				

3. Description of the soil profile

Presence of rock	gravel & sand PROD in PESEK
Max. size of rosk (cm)	30cm
4 Type of erosion	/ A
5 Degree of erosion	/ A
Soil humidity	SUHA / dry
Depth of Roots (cm)	35
7 Excavation Difficulty	TEŽAK / difficult

Profile sketch



4. General remarks

Water stagnation	/ A/N
Flooding	Y/N
8 Draining	DA / Yes

5. Photographies

Photo	✓	Photo of the location	N	✓	E	✓	S	✓	W	✓

Notes:

pH: A-horizon: 6,55-6,87-7

NH_4: -//- : 0-10

NO_2 = 0

NO_3 = 25

O6. Layers description

	Horizon Layer	Depth (cm)	Consistence (9)	Stickiness	Plasticity	Humidity (6)	Texture (10)	Structure (11)	Soil organic matter (12)	pH (13)	$CaCO_3$ (14)
1	Ap	0 - 20	R - fine	Y/N	N	dry	Mi - mile CLAY (silt)	- polyedric	DA (Y)	6,5	NE (u
2	A2	20 - 40	R - fine	Y/N	N	dry	Ki - clay	- polyedric	DA (Y)	6,5	blaga reakcija (y
3	C	40 - 80	/ - / - /	Y/N	N	fresh	Pil - sandy clay	- /	malo (a few)	6,9	DA (yes
4	A/B	-	- - -	Y/N	Y/N	9	-	-	A	9,9 / A	A
5	A/B	-	- - -	Y/N	Y/N	9	-	-	A	9,9 / A	A
6	A/B	-	- - -	Y/N	Y/N	9	-	-	A	9,9 / A	A

	Horizon Layer	Munsell soil Colour	Skelleton (31)	Artificial additives (61)	Rottiness (60)			
1	Ap	10YR 3 / 3						
2	A2	10YR 3 / 3						
3	C	/						
4	A/B	10YR 3/5						
5	A/B	10YR 3/5						
6	A/B	10YR 3/5						

- mile or silt

Brina Arzenšek

GROUP 1 – SOIL TEXTURE

Laboratory material:

- tray
- paper napkins
- soil samples

Working instructions:

First watch the video *»Tutorial for root pit soil profile examination«*. Following the instructions from the video, perform a test of each sample and note its sandiness, smoothness and plasticity. Also evaluate the sample's softness, stickiness, crumbility and kneading.

1. The first example of the soil is more wet, sticky. It has a lot of water in it.

2. The second one hasn't got much water in it so it's not that ~~so~~ plasticly. There are a lot of ~~roots~~ roots.
   - HUMUS - ~~this is~~ - veliko odpadnih listov, kroenm.

3. The ~~3~~ third soil was very dry and thick. You can't do anything out of it.
   - SANDY SOIL - PEŠČENA TLA - ne dajo se oblikovati

Tla vsebujejo veliko ilovice, zato jih lahko oblikujemo

Spoznali smo 3 različne tipe tal: - peščena
- humozna
- z ilovico

ALESSANDRO PONTE

GROUP 2– SOIL POROSITY FOR WATER

Instructions for the execution of the experiment:
(note: The experiment may be executed as a demonstration, or even better in groups of two or three students. For group work we must prepare an adequate number of samples.)

For the execution of the experiment we need:

4 funnels,
8 cups with scales labelled in *ml*,
filter paper,
stopwatch,
soil samples (100 g or 100 ml),
distilled water.

We place the filter paper into the funnels. We put the soil samples on the filter paper. The soil samples must not be overly compressed. We put the funnel containing the sample into a cup or we hold it over a cup so that water will leak into it. We pour distilled water into another cup. We label or note the amount of water in the cup.

We slowly pour the water from the cup into the funnel. We must make sure we slowly moisten the soil, because if we pour the water too quickly, we will not get accurate results. When we start pouring the water we start the stopwatch. When water begins running from the soil we stop pouring it in.

When water stops running into the cup we compare the amounts of the poured and the drained water and we compare the results.

SOIL POROSITY FOR WATER

1. Write the results in the table below and calculate the speed of porosity for water (volume of leaked water per second).

SOIL TYPE	TIME (min)	VOLUME OF WATER	RETAINED WATER VOLUME	POROSITY SPEED
Sandy soil	6,55 s	30 ml	2 ml	0,305 ml/s
Humus	12,04 s	30 ml	15 ml	1,246 ml/s
Clay soil	7,59 s	30 ml	21 ml	2,767 ml/s

2. Which soil type did the water leak through the fastest and which soil type the slowest? Explain why!

1) THE FASTEST SOIL IS THE SANDY SOIL
2) THE SLOWEST SOIL IS THE HUMUS
1) BECAUSE THE POROSITY OF SOIL IS VERY FINE
2) BECAUSE THE POROSITY OF SOIL IS VERY ROUGH

3. What were the soil usages at the places where the sandy soil and the clay soil samples were gathered? Explain the difference!

THE SANDY SOIL IS FROM THE FIELD AND THE CLAY SOIL IS FROM THE FOREST. THE SANDY SOIL TAKES UP WATER AND THAT IS GOOD FOR GROWING CROPS. THE CLAY SOIL DOESN'T TAKE UP WATER AND IN THE FOREST THE TREES NEED THAT WATER

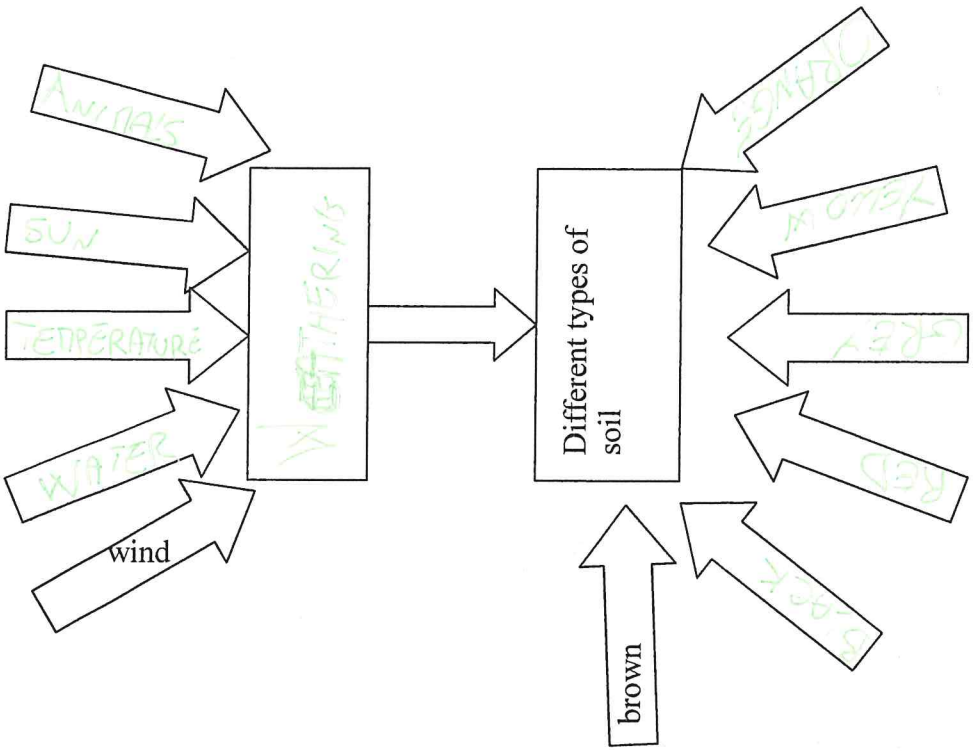
4. In case of a toxic substances emission, where would in your opinion the groundwater be polluted faster? Explain your answer!

IN CASE OF A TOXIC SUBSTANCES EMISSION THE GROUNDWATER BE POLLUTED FASTER IS IN CLAY SOIL, BECAUSE THE MOST WATER RUNS THROUGH THE CLAY SOIL.

ALESSANDRO D'ORRICO. ITÁLIA.

GROUP 3 – COLOUR OF THE SOIL

1. **The Earth's soil developed on the basis of chemical and mechanical weathering of basic rocks. The type and the colour of the soil depends on the characteristics of basic rocks. In the sketch below write in the arrows on the left the factors that affect the weathering of rocks. Write in the arrows on right all the different types of soil you know.**



2. **In the frames below spread part of the soil in such a manner that the colour of the soil can be well seen. There may be only one soil colour in each frame. Write the colour of your soil on the line below the frame. Then answer the question below.**

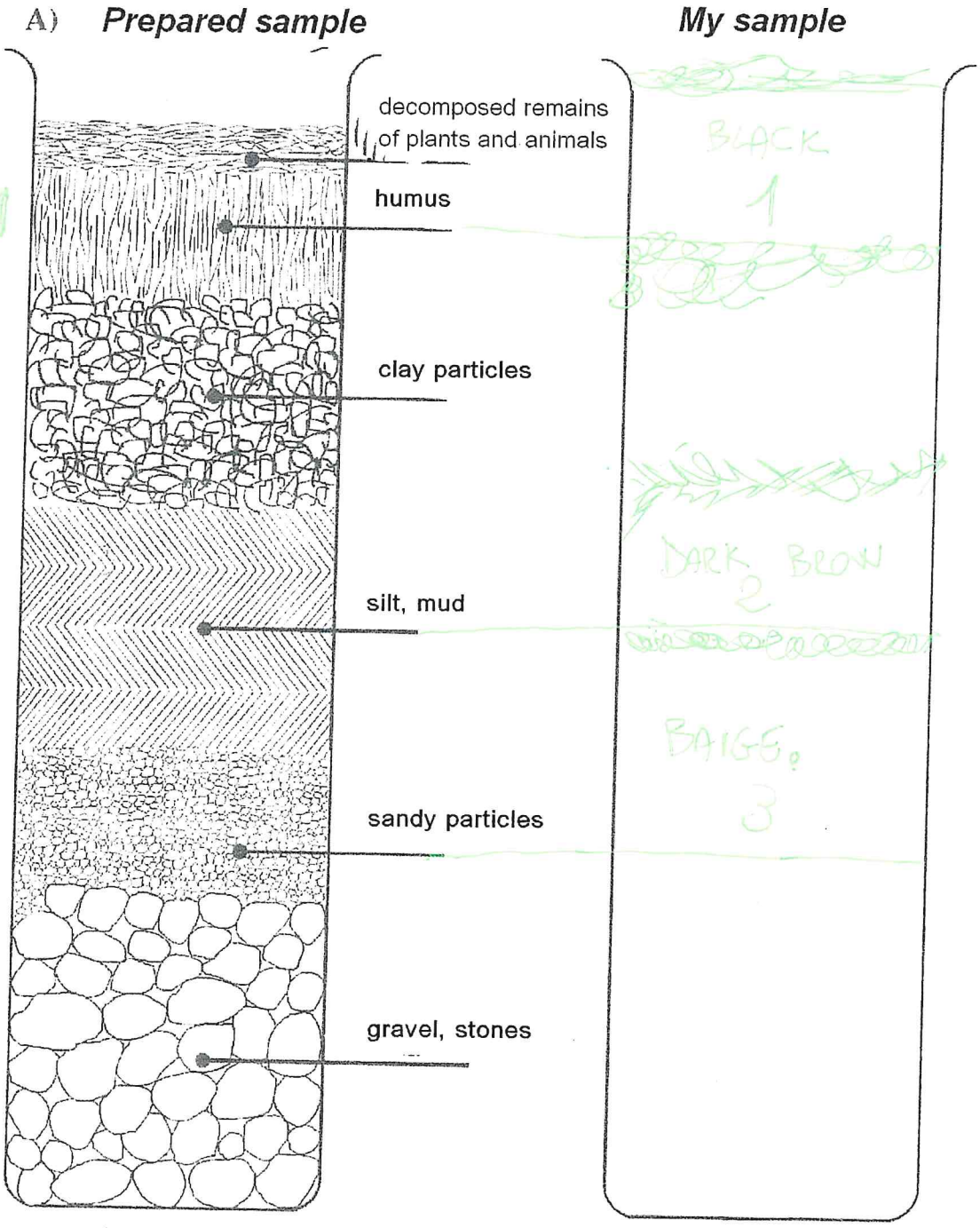
Why is there a difference in the soil colour?

BECAUSE TO WEATHERING

What is the colour of the soil in your home environment?

RED

3. **Determine the structure of fertile soil. Use a handful of your soil sample and mix it with a small amount of water in a glass. Wait for the compound to settle down. Then draw the layers you have noticed in your sample in picture B. Use sketch A as example.**



4. **Underline 5 most important characteristics, fertile soil should have.**

colour, moisture, bedrock, aeration, decomposed rock parts, porosity, mineral substance, age, humus

Sven Davids NLD

GROUP 4 – SOIL pH

Laboratory material:

- cups
- pH paper
- electric pH meter
- filter paper
- funnel
- stand
- litmus paper
- Indicators
- tray
- towels

Working instructions:

Prepare the water solutions of the soil, determine the acidity or alkalinity and measure the soil pH. With the help of the computer define the types of vegetation that grows in such types of soil.

Left

right

	1	2	3
acidity	6,55	6,35	6,87 6,87
alkalinity	7	7	7

Vincenzo Pio Masiello

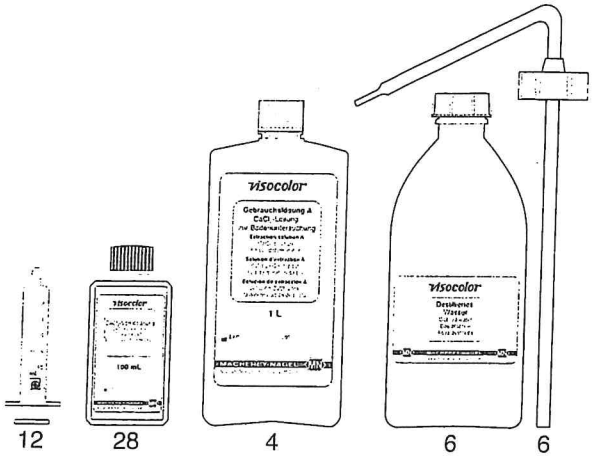
Manual *VISOCOLOR*® reagent case for soil analysis

2.5 Preparation of soil extract A

Soil extract A, which is prepared with extraction solution A (calcium chloride solution, 0.0125 mol/dm³), is used to analyze pH value, ammonium, nitrite and nitrate.

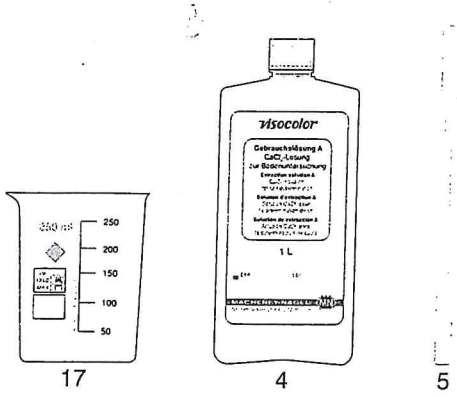
Preparation of the extraction solution:

Using the plastic syringe (12), transfer 10 mL of the $CaCl_2$ stock solution (28) into the bottle for extraction solution A (4) add 1 L of distilled water (6) and mix.

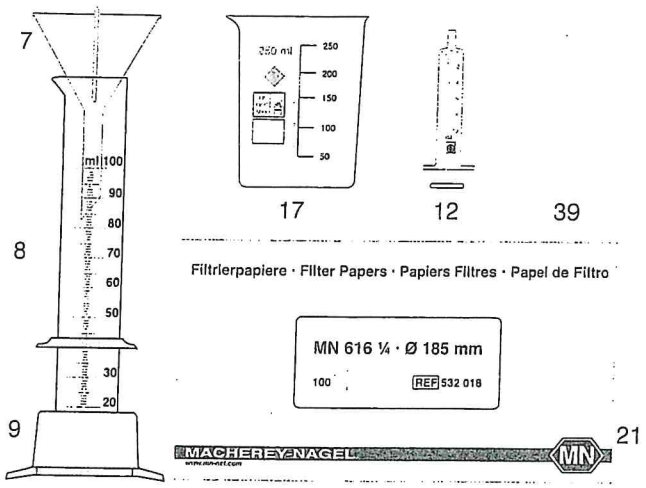


Preparation of the soil extract:

Soil extract A is produced from the **non-dried** soil sample. The soil sample should not be too wet and – if possible – it should be screened. Remove all coarse and untypical constituents. In a plastic beaker (17), weigh out 100 g of the soil sample, which was prepared as described above. Add 100 mL of extraction solution A (4). Stir vigorously with the metal spatula (5) for 2 min, leave to stand for 15 min, while stirring again several times during this period.



Place a funnel (7) on a 100 mL measuring cylinder (8), insert a folded filter MN 616 ¼ (21). Pour the suspension into the folded filter. If the filtrate is too cloudy at the beginning of filtration, pour it back into the filter. With certain soils, slight coloration or clouding is unavoidable. This will not affect the determinations described below. Should it prove impossible to filter particularly problematic soils due to high silt or clay content, we recommend the following procedure: Pour the suspension into the measuring cylinder, leave to stand for a prolonged period (e.g. overnight) and use the clear or slightly turbid supernatant for analysis (remove with syringe 10 mL, fitting the enclosed tube section (39) on the syringe (12) beforehand. Rinse syringe several times with water afterwards).

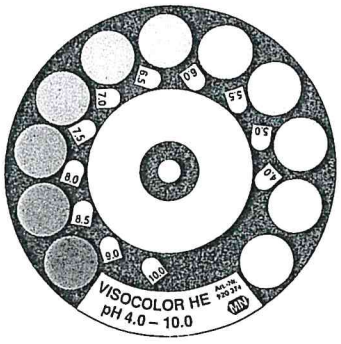


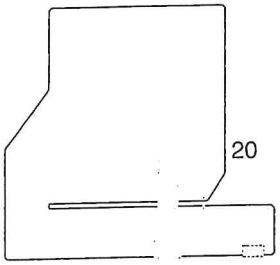
2.6 Determination of the pH value

The pH value is determined in soil extract A using colorimetry or pH indicator strips.

Procedure:

Insert the color disc pH 4.0–10.0 into the *VISOCOLOR® HE* comparator block (20). Fill both measuring glasses (19) up to the ring mark with soil extract A and place them in the comparator block (if the soil extract is colorless, the glass on the left can be filled with clear water). Add 4 drops of pH 4–10 (36) to the right glass, close and mix. Look through the glasses from above, compare the colors of the two glasses and turn the color disc until the colors match. Read off the result from the marking on the front side of the comparator block. Intermediate values can be estimated. After use, rinse both round glasses thoroughly and close.





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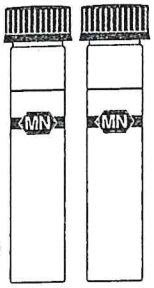

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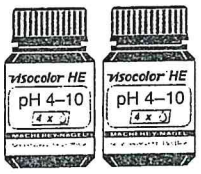
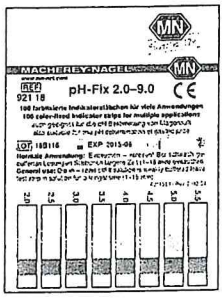


36

When pH values of less than 4.5 are measured, an additional measurement is carried out with pH-Fix 2.0–9.0 test strips (26).

Fill a test tube with ring mark (29) with soil extract A to a height of approx. 3 cm, insert pH test strip in the sample. After 5 min, remove the test strip and compare with the color scale, read off pH value.

Note: For measurements with an electrometric pH meter, a special soil extract A is prepared in the ratio 2 + 5, e.g. 20 g soil + 50 mL extraction solution A. You may also use soil extract AF (see 3.1, page 31).



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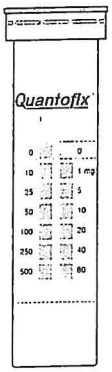
29

2.7 Determination of nitrate and nitrite

The nitrate / nitrite concentration is determined in soil extract A using QUANTOFIX® Nitrate / Nitrite test strips (23).



23

Procedure:

Dip the test strip in soil extract A for approx. 1 s. After 60 s, compare the test field against the color scale. If nitrate or nitrite are present, the test field turns pink.

The outer test field (at the end of the stick) indicates the nitrate content, the inner test field indicates the nitrite content.

Please note: Reclose the package tightly immediately after use. Do not touch the test fields with fingers.

Calculation of results:

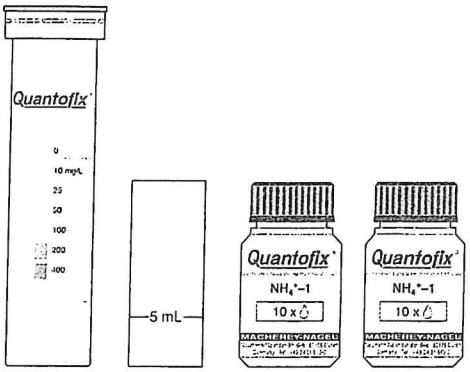
Read off result of nitrate in mg/L NO_3 and multiply with 0.23 to receive the result in mg/kg N.

e.g. 100 mg/L NO_3 x 0.23 = 23.0 mg/kg N

Read off result of nitrite in mg/L NO_2 and multiply with 0.30 to receive the result in mg/kg N.

2.8 Determination of ammonium

The ammonium nitrogen content is determined in soil extract A using QUANTOFIX® Ammonium test strips (24).



24 29 31

Procedure:

Fill the test tube (29) with soil extract A up to the 5 mL mark. Add 10 drops of NH_4^+-1 (31) and swirl carefully. Dip the test strip in the prepared test solution for 5 s. Compare test field with color scale, read off measured value. If ammonium is present, the test paper turns brown.

Close ammonium vial immediately after removing the test strip. Do not touch the test field with fingers.

Calculation of results:

Read off result of ammonium in mg/L NH_4 and multiply with 0.78 to receive the result in mg/kg N.

e.g. 100 mg/L NH_4 x 0.78 = 78 mg/kg N