

# #30minworms

On-farm soil health assessment booklet



15/09/18 to 30/10/18

# #30minworms method

Safety information: This is an outdoor activity, digging holes can be strenuous, cover open wounds before handling soils, and wash your hands after the assessment.

## Equipment



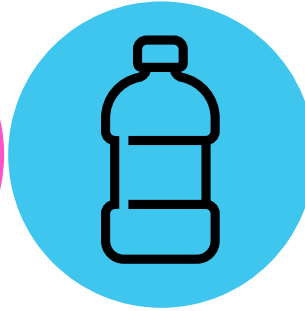
*Spade & ruler*



*Mat*



*Pot for worms*



*Bottle water*



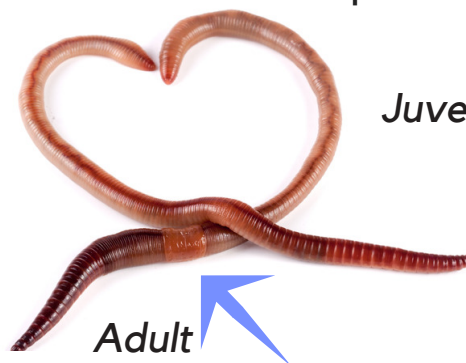
*Booklet & pen*

## Procedure

### 5 soil pits per field using standard W shape field sampling

- 1) Dig out a 20 cm x 20 cm x 20 cm soil pit and place soil on mat (30 sec)
- 2) Hand-sort soil (5-minutes), placing each whole earthworm into the pot. Note if pencil size vertical burrows are present and tick/cross on the results sheet
- 3) Count the total number (adults and juveniles) of earthworms and write down
- 4) Separate earthworms into adults (only a few) and return juveniles to soil pit. May need to rinse worms with water to detect if a saddle is present

*Adult (has saddle)*  
*Saddle is the reproductive ring*  
*Thickened area near head*  
*Often different colour to body*



*Juvenile (no saddle)*

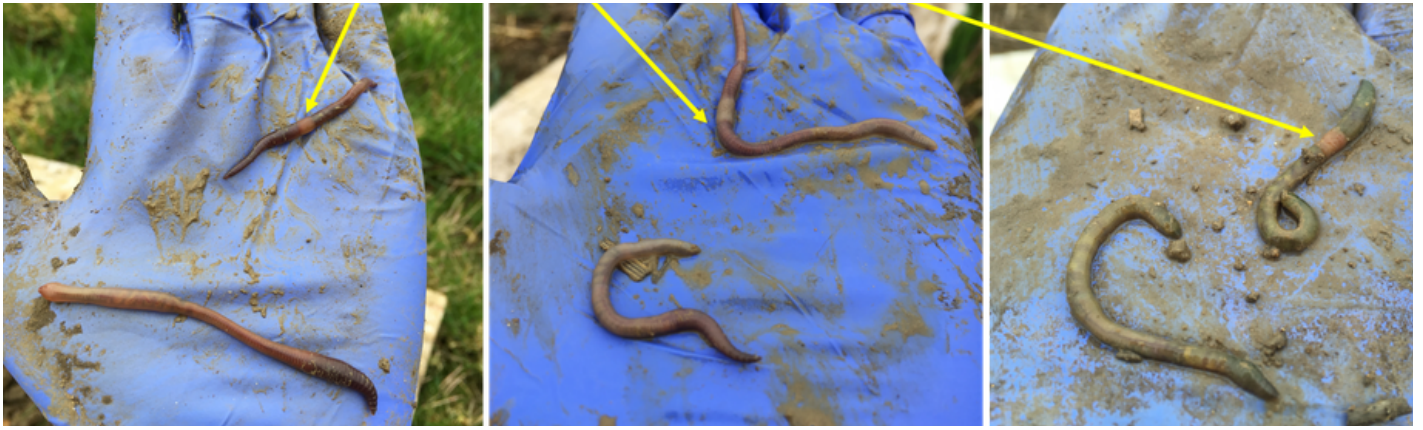
*Adult*

- 5) Count the numbers of each type of adult earthworm (key shown) and write down.
- 6) Return worms to soil pit and back fill with soil
- 7) Check the soil surface for the presence of middens (key shown)
- 8) Repeat steps 1 - 7, until 5 soil pits per field have been assessed
- 9) Please input your data at [www.wormscience.org](http://www.wormscience.org) for results analysis



# ID Step 1 of 2: Separate Adult vs Juveniles

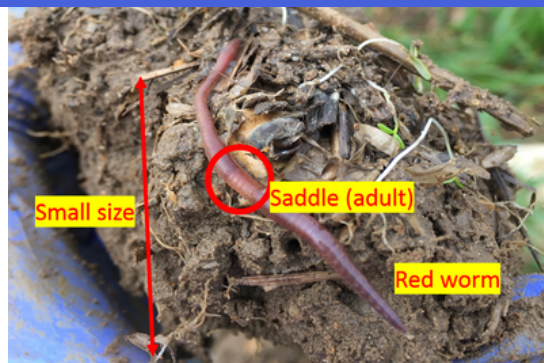
Only adults have a saddle or belt (worm at top of each picture)



## ID Step 2 of 2: Identify adult ecological group

Practice your ID skills on the worm ID quiz at [wormscience.org](http://wormscience.org)

**Type 1: Surface worms e.g. *Lumbricus castaneus*, *Lumbricus rubellus***



**Small (matchstick) size**

<8 cm when not moving

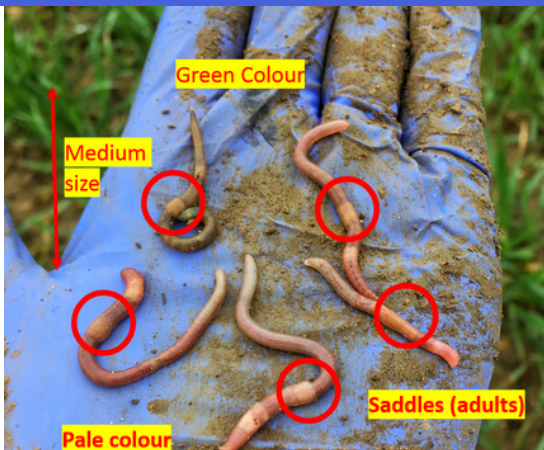
**Red** bodied worm



What do they do? : Breakdown surface litter and good food source for native birds



**Type 2: Topsoil worms e.g. *Aporrectodea caliginosa*, *Allolobophora chlorotica***



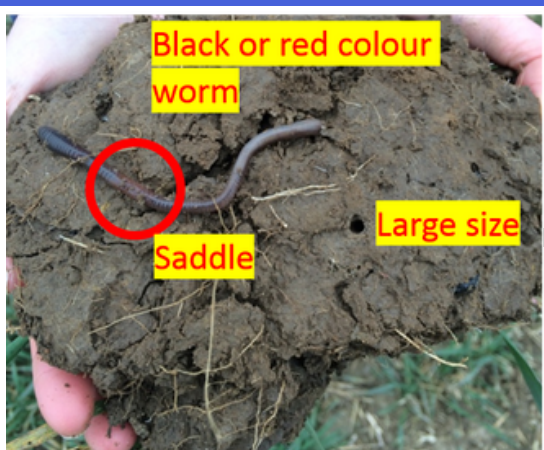
**Small - Medium size**

Pale worms: grey, pink or dark green colour

What do they do? Mix soil & mobilise nutrients for plant uptake, supporting crop productivity



**Type 3: Deep burrowers e.g. *Lumbricus terrestris*, *Aporrectodea longa***



**Large (pencil) size**

Heavily pigmented (**red** or black headed earthworms)

What do they do? These are the 'drainage' worms - can form 2 m vertical burrows, helping with water infiltration and deep plant rooting





# Deep burrowing earthworm presence

Deep burrowers may not be captured in the topsoil so look out for these indicators of their presence and note down on the data table



Pencil size vertical burrow



Midden made by a deep burrowing earthworm. This is a pile of straw or stones overlying a permanent burrow.



## #30minworms data table:

Field name: ..... Field Size (ha): ..... Crop: ..... Date:.....

Was straw retained? YES/NO Tillage ? PLOUGH/MINTILL/NOTILL

Cover crop prior? YES/NO Manure/compost etc. this year?.....

|  | Pit 1                    | Pit 2                    | Pit 3                    | Pit 4                    | Pit 5                    |     |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----|
| Large vertical burrows or middens present? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ✓ ✗ |
| Total number of juvenile AND adult worms   | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | #   |
| Total number of adult surface worms        | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | #   |
| Total number of adult topsoil worms        | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | #   |
| Total number of adult deep burrowers       | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | <input type="text"/>     | #   |

Please enter your data at [www.wormscience.org](http://www.wormscience.org) for results analysis