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1 GFA_Renamer: Utility for renaming consecutive image files based on a set of names

This is a small utility script written for my internship.

While I have tested it extensively and can try to maintain it if users require, understand that there are things which will fall outside the scope of this program.

Simply drag a folder containing ordered image files onto the GUI and follow the Instructions.

1.1 THE GUI

This program consists of two main GUIs, along an About-GUI giving details on used code, version and related information. Relevant images which may help understand the setup of the program can be found at the end of this documentation file.

Figures 1 and 2 show an overview on the two main GUIs.

Figure 3 outlines the ability to modify the name which is to be assigned to a file.

Then enter the required group names and number of pots per group(s) and confirm your choices.

The image files in that folder will then be duplicated into a subfolder GFAR_WD, wherein they will be renamed according to the information provided.

The script additionally provides a log file stating

1. The number of expected files
2. The number of renamed files, and
3. For every file its original and new filename.

The original files will never be altered directly as a precaution.

It is the user's responsibility to decide to delete the original backup files.

1.2 How to deal with missing images

In cases where a certain group has fewer images than the other - as could be the case if you loose a single pot at some point due to damage - simply select the image of the **NEXT** pot and create a copy by pressing Duplicate to shift frame. Refer to figures 8-10 for visual aid on the process outlined in this section.

Refer to figure 8.

If we assume that the image for G14D2 and G14D3 are missing *initially*, aka in the image above the file DSC06473 actually contains the image of G14D4, select DSC06473 and press on Duplicate to shift frame.

If you need to duplicate the same image more than once, **any duplications required to fill subsequent gaps** must be made of the **padded** image. In this example, if you press the button once, you would get an entry with the expected filepath of DSC06473 (padding). As you need to pad twice, you then select the entry of DSC06473 (padding) and repeat the process. If you were to select DSC06473, duplicating it again will not work.

If you would want to bridge a 3-image wide gap, you would duplicate DSC06473 to DSC06473 (padding), then DSC06473 (padding) to DSC06473 (padding) (padding), and finally DSC06473 (padding) (padding) to DSC06473 (padding) (padding) (padding).

The result will look something like this:

Example:

You have a group of plants which get watered at half the normal volume for 14 days, and every group has 7 pots.

The pot G14D4 (14 Days at reduced water supply, then back up to normal) was removed because it got dropped a day before.

In this case, all groups have seven images, but the G14-Group only has six. Thus, imagine you have the following images to work with:

Number	Filename	intended file name/label as	file name without
		seen on pot	frame shift
1	DSC10111.JPG	G14D1	G14D1
2	DSC10112.JPG	G14D2	G14D2
3	DSC10113.JPG	G14D3	G14D3
4	DSC10114.JPG	G14D5	G14D4
5	DSC10115.JPG	G14D6	G14D5
6	DSC10116.JPG	G14D7	G14D6

In this example, DSC10111-DSC10113 are G14D1-G14D3, and DSC10114-DSC10116 are G14D5-G14D7. Thus, the image for G14D4 is missing. If you just run the program, you would falsely rename all files beyond DSC10113 because there would be a frame shift, because the program would assign G14D4 to DSC10114, and then G14D5 to DSC10115 and so on.

To prevent this, create a copy of DSC10113 - it is important that you copy the image of the pot *immediately before the one that is missing*:

Number	Filename	intended file name/plant	file name with frame
		label as seen on pot	shift
1	DSC10111.JPG	G14D1	G14D1
2	DSC10112.JPG	G14D2	G14D2
3	DSC10113.JPG	G14D3	G14D3
4	DSC10113 - Copy.JPG	<Placeholder for the missing pot G14D4>	<Placeholder for the missing pot G14D4>
5	DSC10114.JPG	G14D5	G14D5
6	DSC10115.JPG	G14D6	G14D6
7	DSC10116.JPG	G14D7	G14D7

As the script will read images in the folder based on their name, this method ensures the gap is filled appropriately.

1.3 How to deal with varying group sizes

Sometimes you have experiments with several varying group sizes, e.g. a drought stress setup on two axes - stressed vs unstressed, and ABA-treated vs non-treated, which may not have the same group sizes:

Stress/Treatment	/	ABA
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Stress/Treatment	/	ABA
Stress	Stress (8)	Stress-ABA (5)
UU	UU (8)	UU-ABA (5)

In this case, you would set Stress,Stress-ABA,UU,UU-ABA as groups, and 8,5,8,5 as group sizes (see figure 4).

2 Experimental Playground testset

This repository contains a sample set in the folder assets\Image Test Files. It contains the raw images, as well as the resulting output in the subfolder GFAR_WD. To use the test-set, use the button Set Testset. A message will pop up notifying you if the testset is loaded.

Note that if the testset folder does no longer exist, the program will attempt to download it from the source gist host containing these files. Be aware that this may be blocked by Firewalls, computer settings or a lack of internet connection. The link to the default testset can be found in the About-Section.

This is intended for debugging only; the resulting output files will be deleted at the end.

The renamed files will not be deleted automatically and must be manually pasted and then inspected and deleted.

3 Annex

Please drag and drop the folder you want to use on this window.

Chosen folder:

D:\Dokumente neu\000 AAA Dokumente\000 AAA HSRW
\General\AHK scripts\Projects\GFA_Renamer\assets\Image
Test Files

Enter Group names, delimited by a comma ','.

G14,G21,G28,G35,G42,UU

Please set the number of pots/plants per group.
Value must be an integer.

7

used Stick: Device 'Ultra' could not be found.

v.1.1.2 by ~Gw

Fig. 1 *Main GUI Overview*

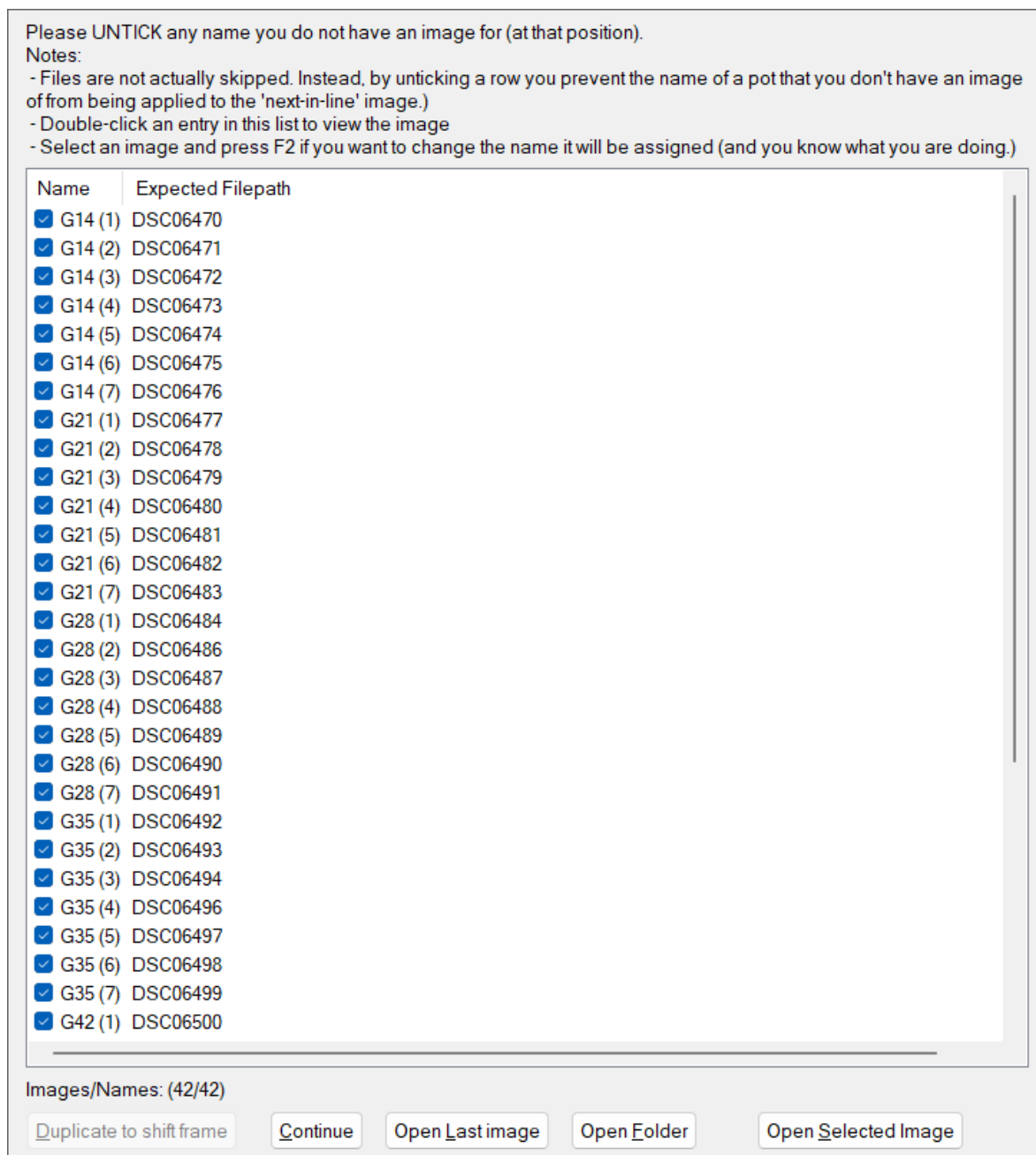


Fig. 2 *Plant-Name Exclusion GUI: Use this to untick NAMES which do not line up with the expected File. Double-click an image to open the image file itself - do so if you want to verify the files being named correctly*

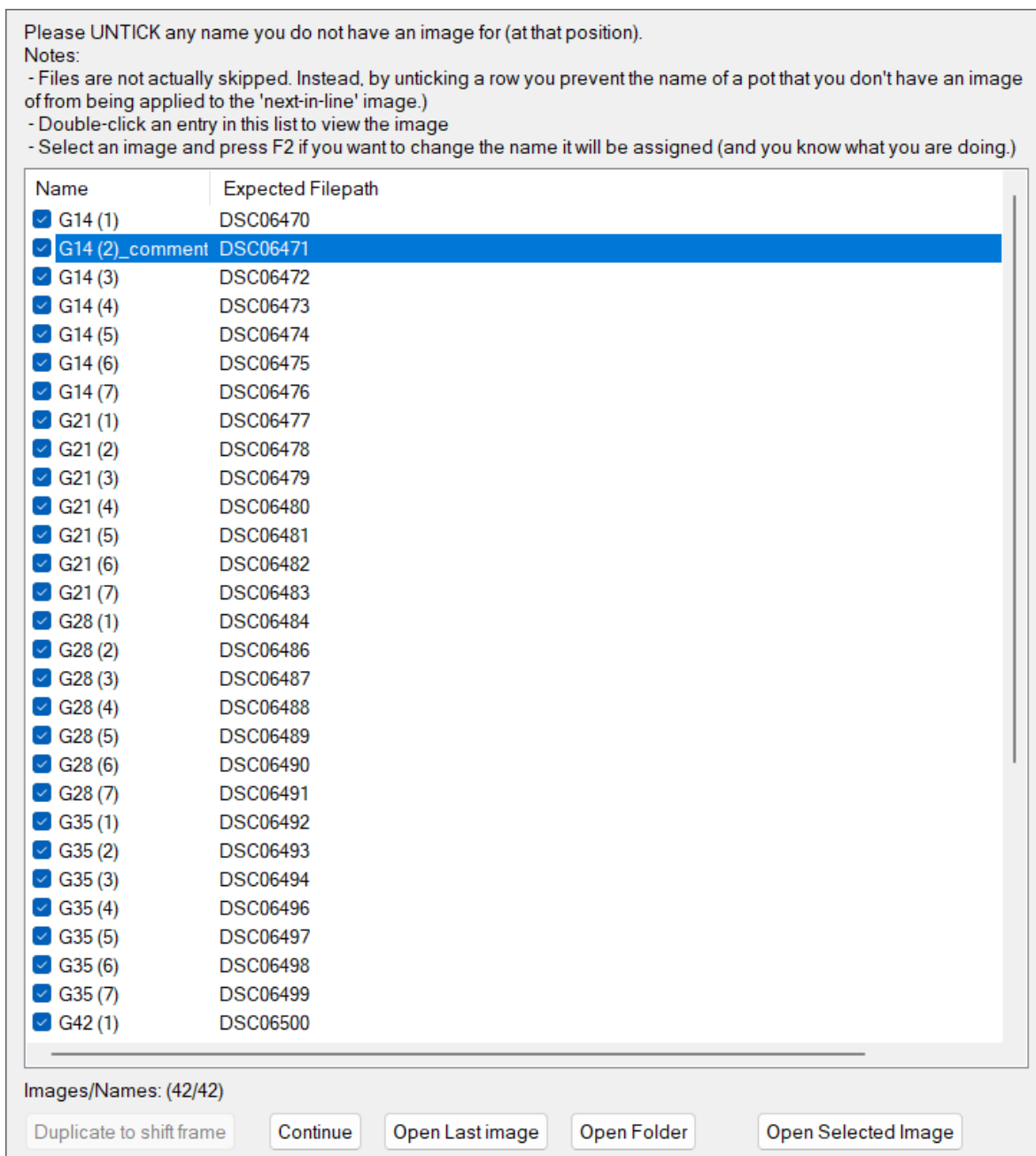


Fig. 3 *By pressing F2, one can change the name of an image. This can be useful to note errors occurring in the image, f.e. a partially covered pink dot that went unnoticed at time of shooting.*

Chosen Folder: (TESTMODE)

D:\Dokumente neu\000 AAA Dokumente\000 AAA HSRW
\General\AHK scripts\Projects\GFA_Renamer\assets\Image
Test Files

Enter Group names, delimited by a comma ','.

Stress, Stress-ABA, UU, UU-ABA

Please set the number of pots/plants per group.
Value must be an integer.

8,5,8,5

Submit Help About Config Set Testset

v.2.1.3 by ~Gw

Fig. 4 *Setting groups of varying sizes*

Please UNTICK any name you do not have an image for (at that position).

Notes:

- Files are not actually skipped. Instead, by unticking a row you prevent the name of a pot that you don't have an image off from being applied to the 'next-in-line' image.)
- Double-click an entry in this list to view the image
- Select an image and press F2 if you want to change the name it will be assigned (and you know what you are doing.)

Name	Expected Filepath
<input checked="" type="checkbox"/> Stress (1)	DSC06470
<input checked="" type="checkbox"/> Stress (2)	DSC06473
<input checked="" type="checkbox"/> Stress (3)	DSC06474
<input checked="" type="checkbox"/> Stress (4)	DSC06475
<input checked="" type="checkbox"/> Stress (5)	DSC06476
<input checked="" type="checkbox"/> Stress (6)	DSC06477
<input checked="" type="checkbox"/> Stress (7)	DSC06478
<input checked="" type="checkbox"/> Stress (8)	DSC06479
<input checked="" type="checkbox"/> Stress-ABA (1)	DSC06480
<input checked="" type="checkbox"/> Stress-ABA (2)	DSC06481
<input checked="" type="checkbox"/> Stress-ABA (3)	DSC06482
<input checked="" type="checkbox"/> Stress-ABA (4)	DSC06483
<input checked="" type="checkbox"/> Stress-ABA (5)	DSC06484
<input checked="" type="checkbox"/> UU (1)	DSC06486
<input checked="" type="checkbox"/> UU (2)	DSC06487
<input checked="" type="checkbox"/> UU (3)	DSC06488
<input checked="" type="checkbox"/> UU (4)	DSC06489
<input checked="" type="checkbox"/> UU (5)	DSC06490
<input checked="" type="checkbox"/> UU (6)	DSC06491
<input checked="" type="checkbox"/> UU (7)	DSC06492
<input checked="" type="checkbox"/> UU (8)	DSC06493
<input checked="" type="checkbox"/> UU-ABA (1)	DSC06494
<input checked="" type="checkbox"/> UU-ABA (2)	DSC06496
<input checked="" type="checkbox"/> UU-ABA (3)	DSC06497
<input checked="" type="checkbox"/> UU-ABA (4)	DSC06498
<input checked="" type="checkbox"/> UU-ABA (5)	DSC06499

Images/Names: (40/26)

Fig. 5 *Renaming groups of varying sizes*

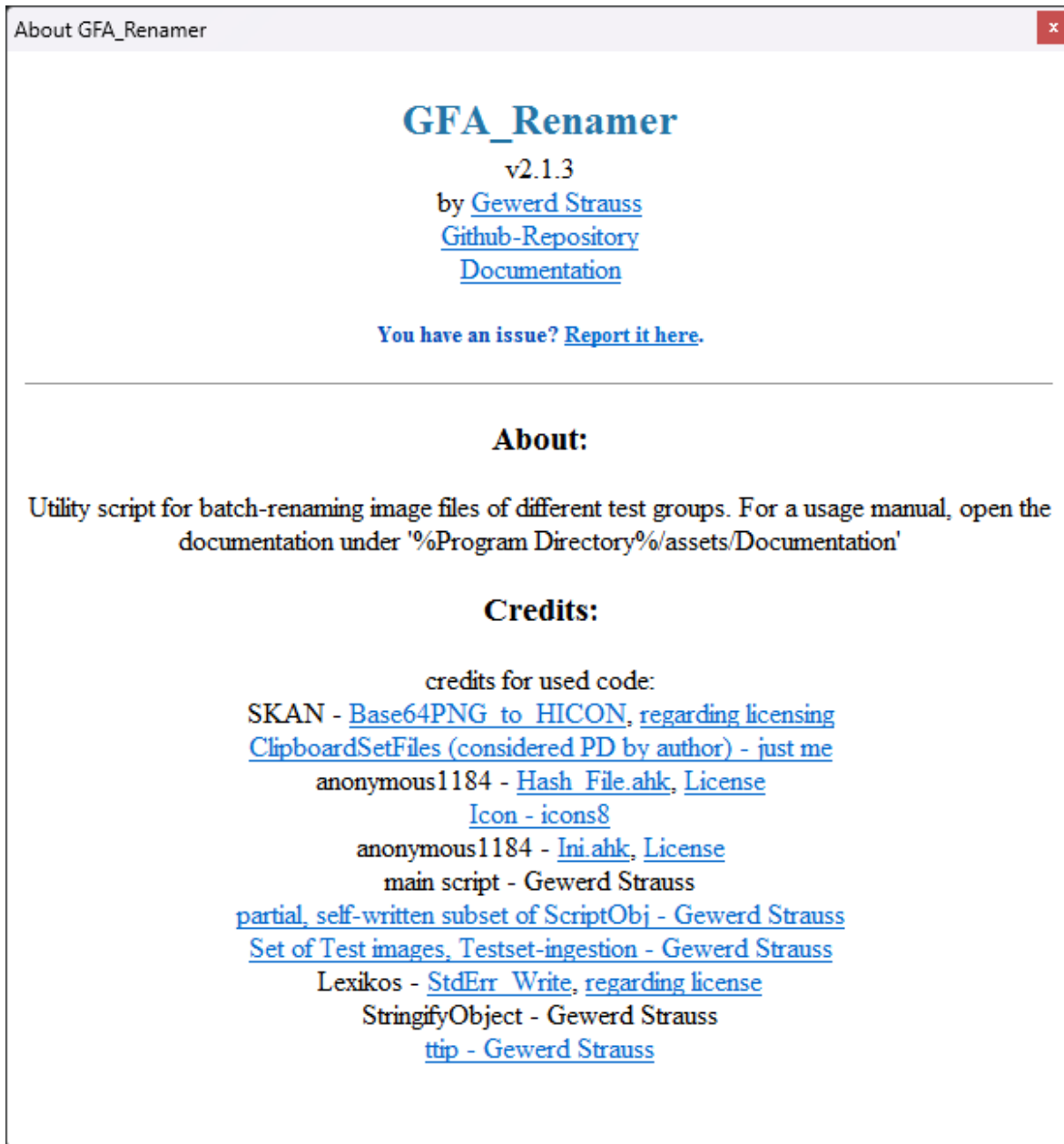


Fig. 6 *About-Window containing links to the Github-Repository, its documentation, as well as links to all code credited to others - and their licensing requirements, if applicable.*

Chosen Folder: (TESTMODE)

D:\Dokumente neu\000 AAA Dokumente\000 AAA HSRW
\General\AHK scripts\Projects\GFA_Renamer\assets\Image
Test Files

Enter Group names, delimited by a comma ','.

G14,G21,G28,G35,G42,UU

Please set the number of pots/plants per group.
Value must be an integer.

7

v.2.1.3 by ~Gw

Fig. 7 Field outlining the folder which the script operates upon. This also delimits the area upon which the user should drop the folder for selecting it.

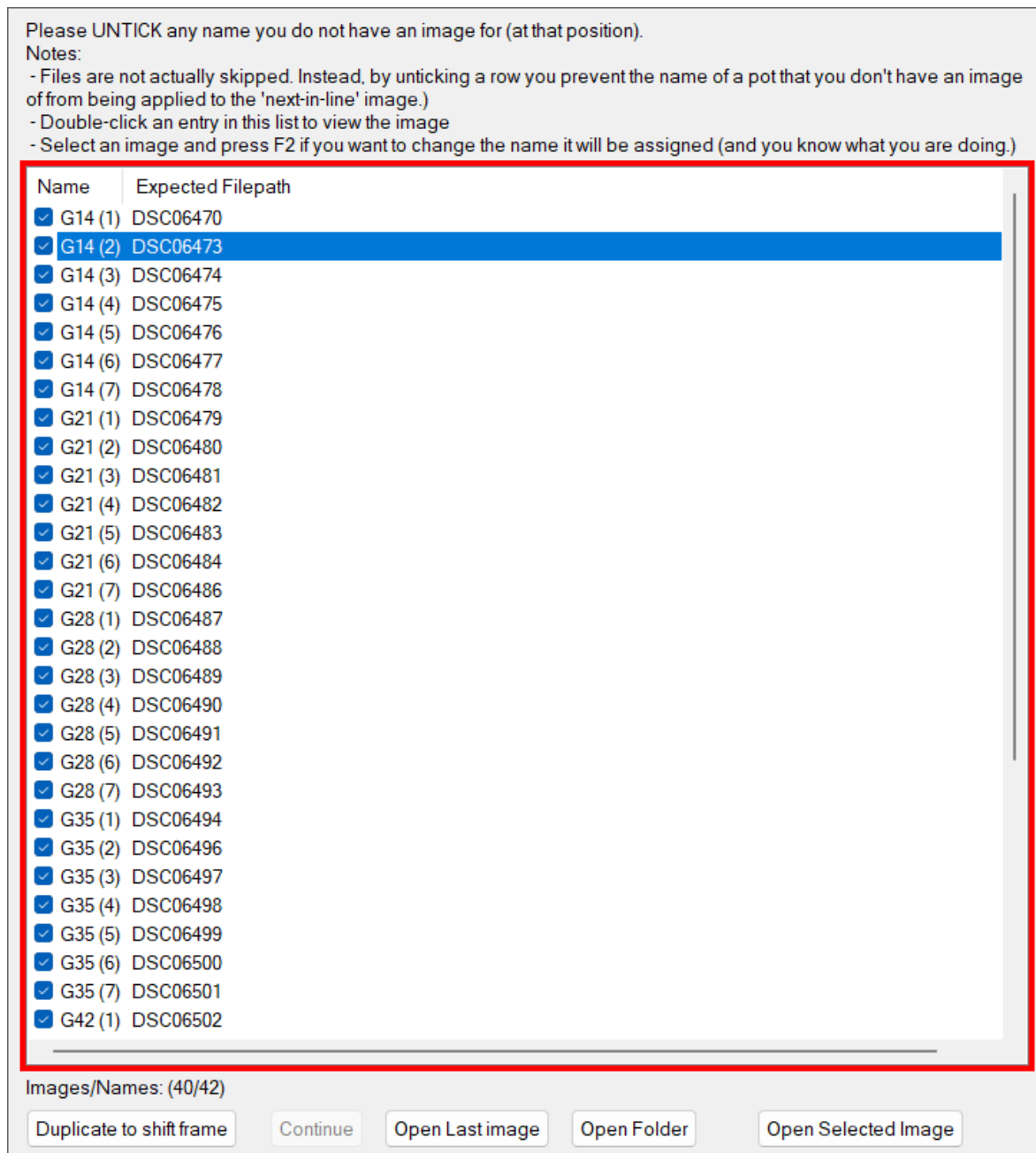


Fig. 8 Images for G14D2 and G14D3 are missing (notice that DSC06470 is followed by DSC06473). We need to bridge the gap to avoid a frameshift.

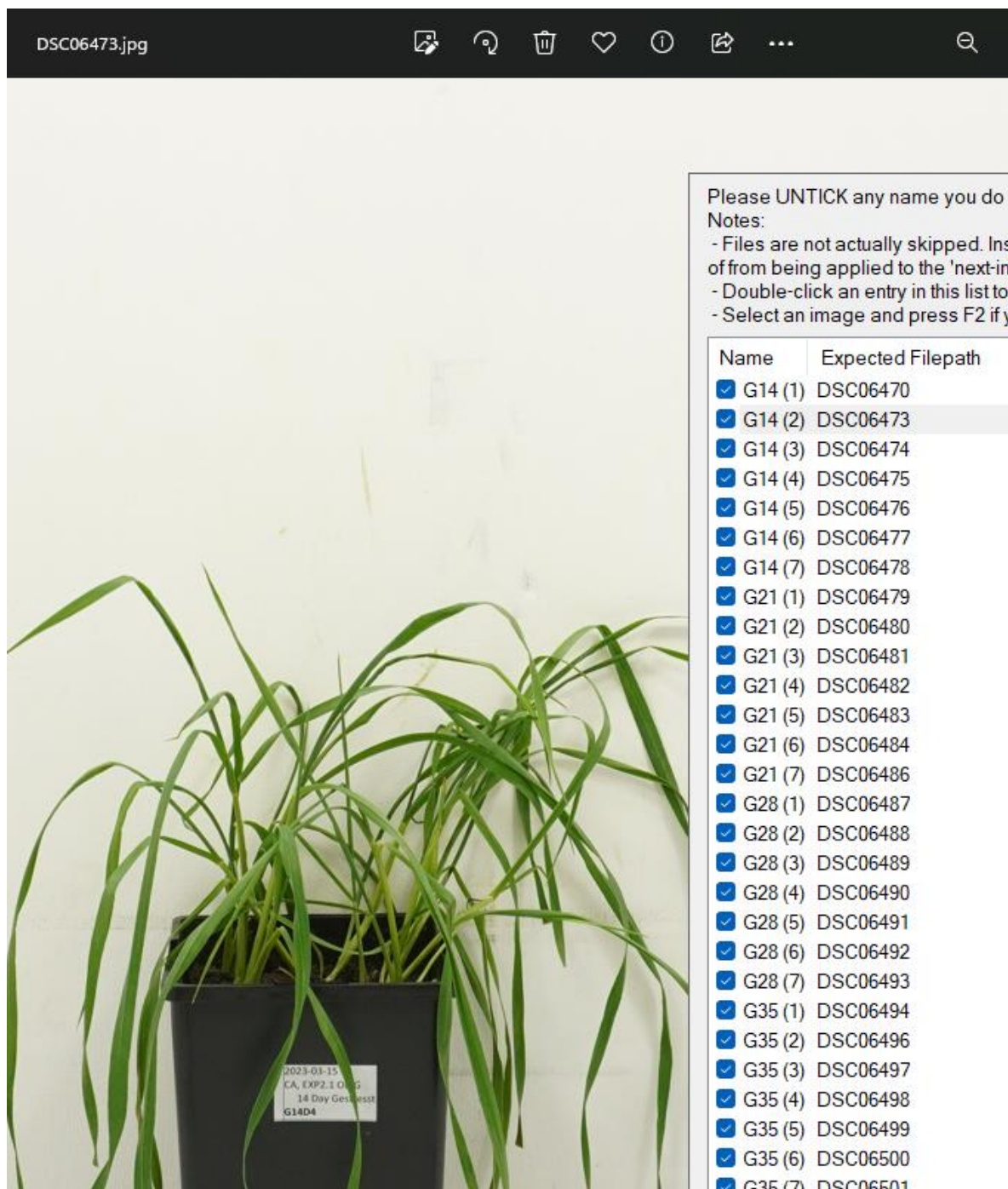


Fig. 9 Closeup of DSC06473 showing that it is indeed the image of Pot G14D4

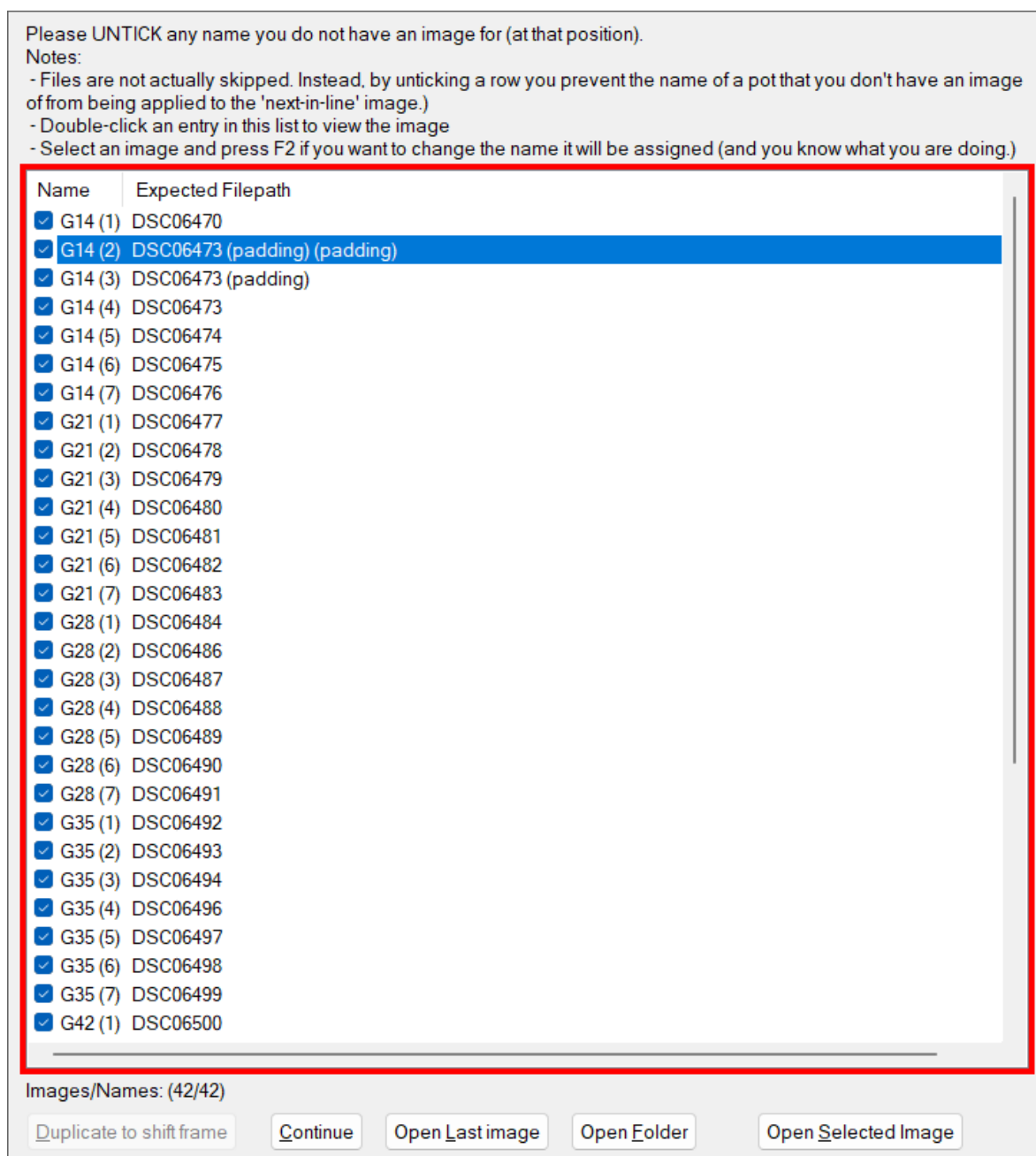


Fig. 10 Using two padded images for the missing entries G14D2-G14D3 to overcome the “frameshift” at these “positions”.



Fig. 11 Notice that while below the Listview we have Images/Names (40/26): We have names for 26 images, but the default testset contains 40 images. Obviously, usually you do not want to have more Image than names, and definitely not less images than names