

Registration area occupancy greenhouse laboratory center Dürnast

status 03/2021

Send the entire electronic document (preferably in Adobe Acrobat) to: ghl@wzw.tum.de

Signatures can either be inserted directly into the PDF, the signed page can be scanned and sent separately, or the document can be signed later directly at GHL.

Note: Before you are allowed to work independently in the GHL premises, it is necessary for legal reasons to instruct you in the safety guidelines. For this purpose, you have to read the "S1 Guideline for Experimentalists" (Annex-5) on the GHL homepage <https://www.ghl.wzw.tum.de/internal> as well as the information regarding "**Occupational Safety at GHL for Project Partners**" (Annex-10) and tick this on each registration form and confirm it with your signature.

I have read the "**S1 Guide for Trial Investigators**" (status 2021)

I have read the „**Occupational safety at GHL for project partners**“ (status 2021)

place, date

First-Last-name

signature (user)

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In the following questionnaire, please indicate as precisely as possible the requirements of the plant species to be cultivated. During the execution of experiments at the GHL Dürnast it is absolutely necessary that experimenters **maintain regular contact with the respective supervising foreman** or the technical/scientific head of the department, so that any problems that arise can be solved together at an early stage.

Trial-number: GHL

supervising master / scient. employee:

is awarded internally by GHL

position

1-about the user

chair (LS) / working group (FG)

contact person

Tel. / e-mail

Invoice type

single invoice (project)

collective invoice LS/FG

SFB924-project-association

2-plant material and space requirement

plant species

Type of cultivated area

Quant. Plants

/ m² / tables (space)

period of use (from / to)

/

experiment-relevant-plant-material:

flours fruits leaves seeds roots others (please explain)

3-climatic-conditions

analog to GHL-standard-culture instructions
 (then do not answer 3.1 - 4 further)

3.1-temperature: day: night: °C (climatic computer)
 (GWH¹, GWH-KAB², PAR³, KS⁴)

*Temperatures should be adjusted according to light availability, if necessary.
 Depending on the cultivation system and the season, the actual temperatures can deviate very
 the desired temperatures (see: GHG homepage / Internal / GHG cultivation methods).*

3.2-humidity: day: night: % rel. humidity
 (PAR³, KS⁴)

3.3-lightning: Info about the DLI can be found at the end of the form **DLI = PPFR * 0,0036 * Exposure time**

PAR³, KS⁴: PAR: max. 500µmol/m²; KS: max. 300 µmol/m²*s
 PPFR (µmol/m²*s): duration (h/d): DLI (mol/m²d):
 optimal DLI for the culture (mol/m²d):

GWH¹: **Assimilation light (ASL)** (max. 100 µmol/m²s) yes no
 ap. 60% of the outside light If yes:
 ASL-PPFR (µmol/m²*s): during (h/d): DLI (mol/m²d):
 plus 80*- 60** % of the average DLI depending on the season (mol/m²d):
 *summer (direct radiation), **winter (diffuse radiation) optimal DLI for the culture (mol/m²d):
Shading from a light intensity of (light stress)
 klux (outside)

GWH-KAB²: **Assimilation light (ASL)** (max. 200 µmol/m²s)
 ap. 30% of the outside light
 ASL-PPFR (µmol/m²*s): 200 duration (h/d): ASL-DLI (mol/m²d):
 plus 50*-30**% of the average DLI depending on the season (mol/m²d):
 *summer (direct radiation), **winter (diffuse radiation) optimal DLI for the culture (mol/m²d):
Shading from a light intensity of (light stress)
 klux (outside)

4-culture-substrate / culture-vessels / irrigation / fertilization

4.1-soil if others: which

4.2-pots / bowls quantity ; quantity

4.3-irrigation tide drip fertilization yes no

4.4-waterquality

*1: GWH: greenhouse; 2: GWH-KAB: greenhouse-chamber; 3: PAR: climate-chamber (-cold)-raum 4: KS: climate-cabinet

5-plant protection / limitations due to the experimental question no treatment*Only possible in separated culture areas, as risk of spreading to other experiments in case of infestation* treatment only after consultation biological plant protection chemical plant protection**The treatment is carried out exclusively according to BVL guidelines, we ask to take this into account!****In artificial light rooms chemical plant protection is only possible to a very limited extent!****6-measurement data acquisition (calculation according to expenditure)** sensors are installed**What measurement data is needed?****Further information / possibly a short description of the experiment****Agreements / special services:****Is the publication of the title of the experiment and/or the author of the experiment on the GHIL homepage desired?** yes no

You as the experiment organizer are responsible for the safety of our employees if they have to handle special, experiment-specific equipment and substances (fertilizers, pesticides, chemicals, ...) in your experiment. Therefore, you must have extensive knowledge of these hazards and inform us about them.

Do your experiments pose risks to humans and the environment? yes no

Information to lightning

Ass.-Licht-Intensität $\mu\text{mol}/\text{m}^2 \cdot \text{s} \cdot 0,0036 \cdot \text{Beleuchtungsdauer} + \text{DLI}$ (Sonne im GWH (KAB)) 1

$\mu\text{mol}/\text{m}^2 \cdot \text{s}$	1	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
1	0,0036	0,4	0,5	0,7	0,9	1,1	1,3	1,4	1,6	1,8	2,0	2,2	2,3	2,5	2,7	2,9	3,1	3,2	3,4	3,6
2	0,0072	0,7	1,1	1,4	1,8	2,2	2,5	2,9	3,2	3,6	4,0	4,3	4,7	5,0	5,4	5,8	6,1	6,5	6,8	7,2
3	0,0108	1,1	1,6	2,2	2,7	3,2	3,8	4,3	4,9	5,4	5,9	6,5	7,0	7,6	8,1	8,6	9,2	9,7	10,3	10,8
4	0,0144	1,4	2,2	2,9	3,6	4,3	5,0	5,8	6,5	7,2	7,9	8,6	9,4	10,1	10,8	11,5	12,2	13,0	13,7	14,4
5	0,0180	1,8	2,7	3,6	4,5	5,4	6,3	7,2	8,1	9,0	9,9	10,8	11,7	12,6	13,5	14,4	15,3	16,2	17,1	18,0
6	0,0216	2,2	3,2	4,3	5,4	6,5	7,6	8,6	9,7	10,8	11,9	13,0	14,0	15,1	16,2	17,3	18,4	19,4	20,5	21,6
7	0,0252	2,5	3,8	5,0	6,3	7,6	8,8	10,1	11,3	12,6	13,9	15,1	16,4	17,6	18,9	20,2	21,4	22,7	23,9	25,2
8	0,0288	2,9	4,3	5,8	7,2	8,6	10,1	11,5	13,0	14,4	15,8	17,3	18,7	20,2	21,6	23,0	24,5	25,9	27,4	28,8
9	0,0324	3,2	4,9	6,5	8,1	9,7	11,3	13,0	14,6	16,2	17,8	19,4	21,1	22,7	24,3	25,9	27,5	29,2	30,8	32,4
10	0,0360	3,6	5,4	7,2	9,0	10,8	12,6	14,4	16,2	18,0	19,8	21,6	23,4	25,2	27,0	28,8	30,6	32,4	34,2	36,0
11	0,0396	4,0	5,9	7,9	9,9	11,9	13,9	15,8	17,8	19,8	21,8	23,8	25,7	27,7	29,7	31,7	33,7	35,6	37,6	39,6
12	0,0432	4,3	6,5	8,6	10,8	13,0	15,1	17,3	19,4	21,6	23,8	25,9	28,1	30,2	32,4	34,6	36,7	38,9	41,0	43,2
13	0,0468	4,7	7,0	9,4	11,7	14,0	16,4	18,7	21,1	23,4	25,7	28,1	30,4	32,8	35,1	37,4	39,8	42,1	44,5	46,8
14	0,0504	5,0	7,6	10,1	12,6	15,1	17,6	20,2	22,7	25,2	27,7	30,2	32,8	35,3	37,8	40,3	42,8	45,4	47,9	50,4
15	0,0540	5,4	8,1	10,8	13,5	16,2	18,9	21,6	24,3	27,0	29,7	32,4	35,1	37,8	40,5	43,2	45,9	48,6	51,3	54,0
16	0,0576	5,8	8,6	11,5	14,4	17,3	20,2	23,0	25,9	28,8	31,7	34,6	37,4	40,3	43,2	46,1	49,0	51,8	54,7	57,6
17	0,0612	6,1	9,2	12,2	15,3	18,4	21,4	24,5	27,5	30,6	33,7	36,7	39,6	42,8	45,9	49,0	52,0	55,1	58,1	61,2
18	0,0648	6,5	9,7	13,0	16,2	19,4	22,7	25,9	29,2	32,4	35,6	38,9	42,1	45,4	48,6	51,8	55,1	58,3	61,6	64,8
19	0,0684	6,8	10,3	13,7	17,1	20,5	23,9	27,4	30,8	34,2	37,6	41,0	44,5	47,9	51,3	54,7	58,1	61,6	65,0	68,4
20	0,0720	7,2	10,8	14,4	18,0	21,6	25,2	28,8	32,4	36,0	39,6	43,2	46,8	50,4	54,0	57,6	61,2	64,8	68,4	72,0
21	0,0756	7,6	11,3	15,1	18,9	22,7	26,5	30,2	34,0	37,8	41,6	45,4	49,1	52,9	56,7	60,5	64,3	68,0	71,8	75,6
22	0,0792	7,9	11,9	15,8	19,8	23,8	27,7	31,7	35,6	39,6	43,6	47,5	51,5	55,4	59,4	63,4	67,3	71,3	75,2	79,2
23	0,0828	8,3	12,4	16,6	20,7	24,8	29,0	33,1	37,3	41,4	45,5	49,7	53,8	58,0	62,1	66,2	70,4	74,5	78,7	82,8
24	0,0864	8,6	13,0	17,3	21,6	25,9	30,2	34,6	38,8	43,2	47,5	51,9	56,2	60,5	64,8	69,1	73,4	77,7	82,1	86,4
		0-5	5-10	10-15	15-20	20-25	30-35	35-40	40->											

Richtwerte DLI

Kultur	DLI (mol/m²d)
Stecklinge frühe Phase	4
Stecklinge späte Phase	6
Sämlinge frühe Phase	6
Sämlinge späte Phase	10
Blattgemüse und Kräuter	12
Kopfsalat	12
Gurke	15
Paprika	15
Aubergine	15
Tomate	15
Mais	20

Sonne: DLI (mol/m²d) DWD-2013-17 1

Monat	Freiland	GWH (60%)	GWH-KAB (30%)
Januar	4.77	2.86	1.72
Februar	7.38	4.43	2.66
März	14.46	8.67	5.20
April	16.58	9.95	5.97
Mai	23.74	14.25	8.55
Juni	28.63	17.18	10.31
Juli	29.96	17.98	10.79
August	25.66	15.40	9.24
September	15.75	9.45	5.67
Oktober	9.59	5.75	3.45
November	5.01	3.00	1.80
Dezember	4.03	2.42	1.45

GHL-Leuchten: DLI (mol/m²d) 2

Leuchten am GHL	$\mu\text{mol}/\text{m}^2 \cdot \text{s}$	DLI bei 12 h/d	DLI bei 16 h/d	DLI bei 20 h/d
HID alt GWH	< 50	2.16	2.88	3.60
HID/CDM neu GWH	max 100	4.32	5.76	7.20
HID/CDM neu GWH-KAB	max 200	8.64	11.52	14.40
PAR/PKR-LED	max 500	21.60	28.80	36.00

Further information or culture data