Department for Environment Food & Rural Affairs

**Baroness Hayman of Ullock**
**Parliamentary Under Secretary of State**

Seacole Building
2 Marsham Street
London
SW1P 4DF

T: +44 (0) 3459 335577
E: correspondence.section@defra.gov.uk
W: gov.uk/defra

Crop Science Centre
Department of Plant Sciences
University of Cambridge
93 Lawrence Weaver Road
Cambridge
CB3 0LE

Our ref: 21/R54/01

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**ENVIRONMENTAL PROTECTION ACT 1990, SECTIONS 111 AND 112:**

**CONSENT TO RELEASE GENETICALLY MODIFIED ORGANISMS REFERENCE 21/R54/01**

1. On 7th March 2022, in accordance with Section 111 of the Environmental Protection Act 1990, the Secretary of State for Environment, Food and Rural Affairs granted consent to Cambridge University Crop Science Centre (CU-CSC) to perform the release of the genetically modified organisms described in **paragraph 2**, in accordance with the particulars set out in **paragraph 4**, and subject to the limitations and conditions set out in the **Schedule** attached.

2. I am writing to give notice, in accordance with Section 111(10) of the Environmental Protection Act 1990, that the afore-mentioned consent is varied to include the addition of the following:

a) Two gene-edited lines (that were incorrectly characterised in the original consent application).

b) Three new lines, each with gene-edits in another AMF-associated gene (*RLK5*) not described in the original consent.

c) Three transgenic lines based on the *RLK5* gene-edited lines.

d) Consent Condition 4 which sets out the size and description of the trial sites is varied with respect to Condition 4(3) so as to allow for other GM cereals covered by subsequent consents, including Qualifying Higher Plants (QHP)s, to be grown within the same trial plot as those trialled under this consent. The requirement for an isolation distance around the combined perimeter of the separate trials remains in place.

3. Genetically Modified Organism to be released:
The genetically modified organisms (GMOs) are Barley *Hordeum vulgare* plants, based on the cultivar Golden Promise, that have been both gene edited and genetically modified with respect to symbiosis pathways involved in the perception of arbuscular mycorrhizal fungi (AMF). The lines planned for release were as detailed in the consent application (ref. 21/R54/01 form part A1) but are varied as set out in **paragraph 2** to now include lines that have been independently gene-edited in one of seven genes involved in perception of AMF. The release can also include further lines that have been genetically modified via the

introduction of T-DNA that is also now varied as set out in **paragraph 2** to contain one of the afore-mentioned seven genes.

4. Particulars of the consent to release:

Maximum size of the release: The area sown with the GM barley must not exceed 2500 square metres in each year and may take the form of one or more plots within the trial site.

(a) Purpose of the release:

To investigate the impacts of arbuscular mycorrhizal fungi inoculation on biomass and yield of genetically modified barley lines that have been modified with respect to symbiosis pathways, in the field.

(b) Locations of the release ("trial sites"):

The release must be conducted at experimental farm sites Park Farm, Barkers Top (Duxford) and Noon Folly (map grid references TL42 61, TL 43 62, TL 46 43, TL 47 43, TL 47 44 and TL38 64). All sites being operated by NIAB's Cambridge regional trials centre, Cambridgeshire,

(c) Dates of the release period:

The release, i.e. planting of the GMO, may only take place between 18 March 2022 and 31 December 2027.

4. Before granting this consent, I have: -

(a) taken advice from the Advisory Committee on Releases to the Environment and Natural England, and

(b) agreed the terms, limitations and conditions of this consent with the Food Standards Agency and, in so far as they relate to the protection of human health and safety, with the Health and Safety Executive.

Yours sincerely,

**BARONESS HAYMAN OF ULLOCK**

**MINISTER FOR ANIMAL WELFARE AND BIOSECURITY**

**Schedule to the letter of Consent to release Genetically Modified Organisms Application Reference 21/R54/01**

References in the letter of consent and in this Schedule to:

(a) "GMO" means the genetically modified organism set out in **paragraph 3** of the letter of consent;
(b) "plot" means the area comprising the GMOs and the surrounding pollen barrier;
(c) "volunteer" means plants growing from seed remaining in the soil after harvest;
(d) "holder of the consent" means the party named in **paragraph 1** of the letter of consent or such other or additional party who has been approved by the Secretary of State;
(e) "letter of consent" means the letter granting consent to release the GMO which is subject to these limitations and conditions and "consent" in this schedule shall be construed accordingly;
(f) "release" means planting the GMO within the boundaries of the trial site during the release period;
(g) "release period" means the period specified in **paragraph 4(c)** of the letter of consent.
(h) "termination of the trial" means the completion of the trial period as more particularly described in **Condition 11**;
(i) "trial period" means the period from the first release of the GMO until the termination of the trial;
(j) "trial site" means the area of land to be used for the trial as more particularly described in **paragraph 4** of the letter of consent and **Condition 4** below and situated at the location set out in **paragraph 4(b)** of the letter of consent;
(k) "trial" means the release of the GMO and management of that release in accordance with the limitations and conditions of this consent.

## *CONDITIONS OF CONSENT*

**Condition 1.** The holder of the consent must, during the trial period:

(1) restrict human access to the trial site to named personnel who are familiar with the limitations and conditions of the consent, or those escorted by named personnel, and

(2) allow the GM Inspectorate access to the trial site on request.

**Condition 2.** The holder of the consent must apply to the Secretary of State in writing for any variation to the consent and obtain agreement for this variation prior to sowing of the GMOs in any year during the release period.

**Condition 3.** Where the holder of the consent enters into any agreement with a person or persons who will perform the whole or any part of the trial on the holder's behalf, then:

(1) such an agreement must be in writing, and it must be in keeping with the limitations and conditions of this consent as may be varied by the Secretary of State from time to time in accordance with Section 111(10) of the Environmental Protection Act 1990 and Regulation 22 of the Genetically Modified Organisms (Deliberate Release) Regulations 2002; and
(2) the release of the GMOs must not take place until that agreement or variation of that agreement has received the written approval of the Secretary of State.

**Size and description of the trial sites**

**Condition 4.** The consent holder must ensure that:

(1) in each year of the trial the plot or plots is/are as described in **paragraph 3** of the letter of consent;
(2) a barley pollen barrier of at least 3 metres width surrounding the GMOs at a distance of up to 1 metre from the GMOs, is sown on the same day as the GMOs, at the same sowing density as the GMOs, with the variety Golden Promise within the perimeter of the plot;
(3) during the release period, cereals (other than those cultivated as part of this consent) are not grown in an area of at least 20 metres width surrounding the perimeter of the plot on which the GMOs are planted and that if this area is cropped, it is cropped with a non-cereal crop. This condition is now varied as set out in **paragraph 2(d)** of the letter of consent.

**Condition 5.** The consent holder must provide to the Secretary of State

(1) the six-figure grid reference(s) of the plot(s) within the trial site;
(2) a plan showing the location of the trial site; and

(3) details of the GM barley to be planted

at least one week before the GMOs are sown. Any deviation from the plan referred to in **sub-paragraph (2)** must be notified to the Secretary of State in writing as soon as practicable and in any event before planting of the GMO takes place.

## Management of the site

### Condition 6.

The consent holder must:

(1) ensure that suitable measures are in place to keep birds out of the plots during and after sowing and at the first signs of emergence of barley ears.
(2) control other cereals or grasses before flowering within the plot on which the GMOs are planted and surrounding area of at least 20 metres width referred to in **Condition 4(3)** ("the 20 m border") either by hand pulling or application of a glyphosate herbicide between 1st May and 30th September in each year of the trial.
(3) as far as is practicable, harvest non-GM barley grain after harvesting GM barley grain on each plot; clean the combine on the plot from which the material is harvested after each plot is harvested but before the next plot is harvested.
(4) clean all machinery (including wheels and tyres) used on the trial site thoroughly and over plastic sheeting on the trial site before leaving the trial site.
(5) ensure that all personnel entering the trial site take appropriate steps to minimise transfer of GMOs via clothing and vehicles from the trial site.
(6) ensure that all material (including straw) dislodged during cleaning is removed from the trial site on the same day and ensure that it is transferred for contained use or stored securely whilst awaiting disposal in accordance with **Condition 7**.
(7) when GM and non-GM grain is harvested on a plot, on the same day remove this material from the trial site or store securely on-farm; and in the autumn of the same year, lightly till that plot to a depth of approximately 5 cm. The area should be left fallow over the following winter and lightly tilled to a depth of approximately 5cm in the spring.
(8) when GM and non-GM grain is harvested on a plot, following the harvest, inspect that plot and the 20 metres border for volunteers at least once per calendar week until the end of November of the relevant year and then once per calendar month from 1 March until 31 August in the following two years. Record the number of volunteers detected in each calendar month (approximately if necessary) before they are controlled in accordance with **Condition 6(9)(b)** below.
(9) during the two years following harvest of the GM and non-GM grain from a plot within the trial site:

    a. leave the plot fallow;
    b. treat all volunteers on the plot and the 20 metres border, including volunteers from non-GMOs, with an application of glyphosate herbicide or by hand-pulling prior to inflorescence formation;

(10) refrain from cultivating cereal crops intended to enter the food and/or feed chain on the trial site until monitoring of the plots for volunteers has ended.

**Material removed from the trial site**

**Condition 7**. The consent holder must ensure that **all** harvested grain and material collected during cleaning of machinery removed from the trial site under **Condition 6** is placed in sealed, labelled bags or containers for transfer to conditions under which the Genetically Modified (Contained Use) Regulations 2014 (SI 2014/1663), as amended, apply or to an authorised waste disposal facility for disposal by deep burial or incineration.

**General monitoring requirements**

**Condition 8.** The consent holder must:

(1) inspect the entire trial site and the 20-metre border during the period of cultivation of GMOs at least once a week and if it is observed that the limitations and conditions of this consent have not been met, inform the GM Inspectorate and/or the Secretary of State immediately;
(2) maintain raw data and reports of inspections and provide this information to the Secretary of State on request as soon as possible.

**Reports**

**Condition 9.** The holder of the consent must, within two months of harvesting or terminating the GMOs on a plot within the trial site, submit a report to the Secretary of State in the format outlined in the Annex to Commission Decision 2003/701/EC (O.J. L254, 08/10/2003, p.21). Such report or reports must also include the following information:

(1) an assessment of any risks or actual or potential adverse effects to human health or the environment from the GMO,
(2) whether the release on that particular plot progressed as planned and if it did not:
    i) what occurred;
    ii) any additional measures that were taken;
    iii) any additional measures that will be taken; and
    iv) why these measures were taken.

**Condition 10.** Subject to **Condition 11**, each year the consent holder must submit a report in the format specified in the Annex to Decision 2003/701/EC to the Secretary of State within two calendar months of the post-trial monitoring being concluded. This report must include the following information:

(1) an assessment of the effectiveness of measures to control volunteers, including details of the number of volunteers detected each month in the trial site and the 20 metre borders;
(2) the re-evaluation of monitoring requirements, including whether or not the consent holder proposes to continue monitoring and the reasons for this decision;
(3) any additional precautions considered necessary to minimise the dispersal of the GMO outside of the trial site.

**Condition 11**. The consent holder must continue to submit the reports referred to in **Condition 10** until the Secretary of State has agreed in writing that the trial site and where appropriate, the 20 m borders have been controlled in accordance with **Conditions 6(9)(b)** and **6(10)**, and that the trial is therefore terminated.

**Emergency action**

**Condition 12.** In the event of an emergency, the consent holder must:

(1) take immediate and appropriate preventative and remedial action;

(2) notify the Secretary of State of the emergency as soon as practicable and in any event within thirty-six hours of the matter constituting the emergency, detailing the nature of the emergency and any action that has been taken; and

(3) submit a plan to the Secretary of State for approval as soon as practicable and in any event within forty-eight hours of the matter constituting the emergency, detailing any continued or further action that the consent holder proposes to take to restrict the dispersal of the GMO from the trial site.

**Condition 13.** For the purposes of **Condition 12**, an emergency includes vandalism or any other unauthorised interference with the trial site.

**Condition 14.** None of the provisions of **Condition 12** shall prevent the Secretary of State from taking such action as is reasonably believed to be necessary to prevent, reduce or remedy any risk of harm to human health or of damage to the environment.

Note: The Environmental Protection Act 1990 also requires the consent holder to comply with implied general conditions for consents to release GMOs as set out in section 112(5) and section 112(7) of that Act. These implied conditions have effect subject to the conditions imposed above.