Annual report on Activities Performed by the UK NRL for GMOs in Food and Feed

FSA Contract Reference Number: FS616029
Provision of UK National Reference Laboratory Services for Genetically Modified Organisms in food and feed

Period covered: 1st April 2021 – 31st March 2022

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Glossary

CRM - Certified Reference Material

DNA - Deoxyribonucleic acid

EFSA - European Food Safety Authority

ENGL - European Network of GMO Laboratories

EURL - EU Reference Laboratory for GMOs in food and feed

FSA - Food Standards Agency

GE – Gene Editing

GMM - Genetically Modified Microorganisms

GMO - Genetically Modified Organism

JRC – Joint Research Centre (Italy, Ispra)

NRL - National Reference Laboratory (appointed under (retained) Regulation (EC) 2017/625)

OL – Official Laboratory based in the UK

PA - Public Analyst

PCR - Polymerase Chain Reaction

SC – Steering Committee

WG – Working Group

Role of the National Reference Laboratory

The Food Standards Agency (FSA) and Food Standards Scotland (FSS) are respectively designated as the Competent Authority (CA) for Official Feed and Food Controls within their area of responsibility. The UK has a legal obligation to appoint National Reference Laboratories (NRLs) pursuant to retained European Commission Regulation (EU) 2017/625. This regulation relates to official controls designed to ensure the verification of compliance with feed and food law, animal health and animal welfare rules. NRLs provide advice and support to food and feed enforcement laboratories and CAs to ensure a harmonised approach to food and feed enforcement. NRLs are responsible for setting standards for routine procedures and reliable testing methods in the regulated areas of food and feed. This delivers consumer protection and effective, risk-based and proportionate regulation and enforcement.

NRLs play an important role following EU transition (1st January 2021) as they incorporate some of the activities previously performed by their lab counterparts in the EU (the European Reference Laboratories). This includes sharing and developing new and emerging disease intelligence, methodologies, reference materials and training. Following EU transition, NRLs continue to play a pivotal role in the UK enforcement process.

NRL GMO Services

As the duly appointed laboratory, LGC carries out the provision of services for the UK National Reference Laboratory for GMOs. The NRL GMO provides support to the UK official laboratories for GMO control and identifies and participates as an independent expert at international GMO meetings and networks to further harness expertise and knowledge in the area.
The NRL liaises with and provides advice to the Competent Authority appointed laboratory responsible for the scientific assessment and validation of detection methods for GMOs in food and feed as part of the UK GMO authorisation of regulated products procedure.

The basic duties of National Reference Laboratories include:

(a) Co-operate internationally in their area of competence, including collaborating and participating inter-laboratory comparative tests organised by international laboratories (where appropriate);
(b) Co-ordinate, for their area of competence, the activities of Official Laboratories (OLs) responsible for the analysis of official controls samples to ensure the verification of compliance with feed and food law;
(c) Where appropriate, organise comparative tests between the official national laboratories and ensure an appropriate follow-up of such comparative testing;
(d) Ensure the dissemination of any information required by the CA;
(e) Provide scientific and technical assistance to the CA, especially for the implementation of Multi Annual National Control Plans;
(f) Participate in relevant national and international networks, workshops and training courses and, where necessary, conduct training courses for the staff of OLs;
(g) Upon request by the appropriate authority, actively assist in relevant foodborne incident and outbreak situations, should be equipped with, or have access to, the necessary equipment to perform their tasks in emergency situations and in cases of non-compliance of consignments, by carrying out confirmatory analysis;
(h) Carry out research, evaluation and development of new and existing methods for the analysis of UK regulated and officially monitored foods and feed and emerging new risks to UK food safety;
(i) Provide advice and expertise on standardisation of methods at CEN and ISO;
(j) Obtain and maintain accreditation for official reference and other relevant regulatory methods for food and feed within the NRL area of competence;

(k) Be responsible for carrying out other specific duties as required by the CA, where appropriate and by prior agreement;

LGC has maintained the position for the UK National Reference Laboratory for Genetically Modified Organisms (GMOs) in food and feed since the inception of the position in 2009, following open competitive tenders in 2009, 2013, 2017 and 2021. LGC's appointment by the Food Standards Agency is pursuant to UK legislation (retained Regulation (EU) 2017/625). As the National Reference Laboratory for GMOs, LGC conducts the following activities, as specified in the contract with the FSA:

Core Function
Objective 01 – Secretariat services
Objective 02 – Advice and representation within the UK and internationally
Objective 03 – Production of standard operating procedures, codes of practice, guidance documents and databases
Objective 04 – Compliance assessment via audits, ring trials and provision of reference materials
Objective 05 – Co-ordination within the UK of international initiatives
Objective 06 – Liaison and support work on GMO food/feed authorisation
Objective 07 – Communication of results and data use

Core Function

Production of the NRL annual report

This report details the activities carried out during the 13th year of the NRL operation (April 2021-March 2022) in relation to the duties of the NRL.

Objective 01 – Secretariat services

Tasks:

a) Disseminating relevant information/advice to the OLs, CA, when required, and other relevant laboratories in a timely and effective manner;
b) Co-ordinating the activities of OLs and other relevant laboratories in food and feed below;
c) Creating and maintaining an efficient two-way channel of communication with OLs and relevant laboratories and international organisations, including information on analytical methods and relevant legislation;
d) Providing regular updates to the CA on NRL activities, and up-to-date information on UK OLs and other relevant laboratories to the CA as requested;
e) Creation and maintenance of a dedicated website for communication of the work of the NRL including provision of advice and support to OLs, information on methods of analyses, Standard Operating Procedures (SOPs), latest developments and other background information.

Example activities in relation to these Tasks:

- Contacted all UK Official Laboratories (OLs) to inform them of the UK GMO NRL and GB GMO Authorisation positions at LGC;
- Organised an updated contact list of all OLs;
- As a first stage review, updated and revised the GMO NRL webpages to improve the user interface, set topics out clearly, and visually improve upon the experience;
- Published the GMO NRL Annual report (2020/2021) on the NRL webpages;
- Published the GMO NRL Annual Workplan for 2020/2021 on the NRL webpages;
- Kept the FSA informed of the following topics:
    - Publication of the long-anticipated European Commissions (EC) on new genomic techniques;
    - Discussions and support for forming a new UK network of analytical laboratories to discuss topical GMO issues, in lieu of withdrawal of access to EU Reference Laboratory (EURL) services;
    - Publication of an open access database containing information on EU applications for food enzymes;
    - Publication of the Regulatory Horizons Council (RHC) report on Genetic Technologies;
    - Kept the FSA abreast of general developments regarding eight samples that were referred to the Government Chemist referee function for testing for GMOs in rice and rice products originating from China, during the reporting period;
    - Made the FSA aware that the European Commission has launched its consultation on a roadmap for products as a result of new genomic techniques. This was an open consultation, regarding the EC roadmap for proposing a legal

framework for plants obtained by targeted mutagenesis and cisgenesis, and for their food and feed products;

  - Discussed with the FSA the minutes to the 31st ENGL plenary session which took place in November 2021;

- Notified FSA and OLs of the press release from UK government on a roadmap for regulation of gene edited products in the UK;
- Circulated a communication to the FSA and OLs regarding publication of the ENGL guidance document on application of multiplex PCR for GMO analysis.

Objective 02 - Advice and representation within the UK and internationally

Tasks:

a) Provide details of analytical methods including reference methods to OLs and co-ordinate application of these methods through proficiency testing (see 4c);
b) Provide impartial expert advice as requested to the CA, OLs and other relevant laboratories on analytical methodology in the context of official controls and risk assessment;
c) Represent the UK at relevant international meetings, networks and working groups, consulting the CA on objectives and requirements before each meeting and providing the CA with an internal report of the meeting within 10 working days of each meeting;
d) Participate in activities organised by international organisations and contributing to the scientific input at international meetings and in manner which supports UK policy based on best available scientific knowledge;
e) Provide advice to the CA, OLs and other relevant laboratories on best scientific practice in testing for official controls purposes and undertaking activities in consultation with the CA that facilitate and promote their application in the UK within the policy aims of the CA;
f) Keep abreast of and advise the CA, OLs and other relevant laboratories of research and development for the sampling, testing and detection of GMOs;
g) Identify and inform the CA, OLs and other relevant laboratories of emerging analytical issues or developments at a national or international level and recommending action to address them;
h) Provide technical assistance to the CA in cases of contested results of analyses;
i) Where appropriate, partake and/or keep abreast of standardisation activities (e.g. CEN, ISO, etc.) relevant to the work area.

Example activities in relation to these Tasks:

- Provision of bespoke advice to the FSA:
    - Discussed with the FSA the outcome and likely impact of the EC publication on new genomic techniques;
    - A project review, funded by the FSA and the GC, entitled “Towards a harmonised GMO screening approach in support of UK control and enforcement” was submitted to the FSA. This 40 page report reviewed the current state-of-the-art with respect to GMO screening approaches within the UK and the EU. The report identified key criteria needed for an effective screening approach, reviewed currently available approaches, and recommended two main options for consideration for deployment of a harmonised screening approach within the UK for GMO sampling and controls;
    - The NRL responded to a request from the FSA to provide advice and assistance regarding current opinions and views on gene edited (GE) products in the EU;
    - Provided advice and input into FSA/Defra discussions on “GMO Free” status and labelling;
    - The NRL responded to a request for advice from the FSA for priority commodities to focus on as part of the FSA retail surveillance sampling programme 2022/23. Based on recent national/international intelligence, the NRL recommended targeting rice and rice based products.

- Following requests from four OLs for support and assistance, provided the following in the framework of advice/ training under the NRL function:
    - Acquisition and maintenance of GMO analytical capability including ISO 17025 flexible scope of accreditation;
    - Advantages of flexible scope of accreditation;
    - Potential framework when going out to tender for the relevant PCR reagents and kits;
    - List of suppliers of qPCR kits and reagents;
    - Development and demonstration of qPCR method competency;
    - Information on validated methods for GMO analysis;
    - Use and availability of appropriate reference materials;
    - Availability of proficiency test (PT) schemes;
    - Inclusion in method validation collaborative trials as part of the GMO authorisation function;
    - Offer of assistance to assess and address continuing training requirements;
    - Bespoke assistance in evaluation of draft documentation and quality documents as contributory evidence for applying for ISO 17025 accreditation for GMO analysis.

- Discussions and communications with other EU NRLs:
    - Exchange of best measurement practice advice in reporting units;
    - Provided advice regarding support on flexible scope of accreditation and provision of evidence to incorporate a commercially available analytical kit into scope of accreditation;
    - Sharing of experiences and best measurement practice advice for dPCR;
    - Responded to a request to provide advice and opinions on emerging technologies associated with the area of digital PCR;
    - Communications established with the newly appointed Northern Ireland GMO NRL (Austrian Agency for Health and Food Safety (AGES));
    - Discussed with EU colleagues a review of the current approach for testing for GMOs in rice and rice products originating from China.

- Attendance at UK based meetings:
    - An MS Teams meeting organised by Defra to discuss options for EURL and UK NRL interactions for the future;
    - Attended the FSA/FSS/UKAS MoU & Lab 33 seminar, entitled “Assessment and Accreditation of UK Official Food and Feed Laboratories and National Reference Laboratories”.

- Organisation of UK based meetings:
    - The joint Feed Additives NRL and GMO NRL network meeting was organised for Tuesday 5th April 2022. The purpose of the network meeting was to afford

both NRL functions the opportunity to provide any relevant updates on methods, enforcement, training and other applicable activities to OLs, as well as providing a suitable forum for exchanging information and for participants to raise any further training needs and support requirements. The FSA will also be in attendance to provide an update on relevant scientific and policy areas. This meeting was postponed at the request of the FSA.

- Attendance and input at the following European Network of GMO Laboratories (ENGL) Working Groups (WGs) as a recognised independent scientific expert:
    - Attended ENGL Working Group (WG) meetings on DNA extraction (DNAex);
    - Attended ENGL Working Group (WG) meetings on Genetically Modified Microorganisms (GMM);
    - Attended ENGL Working Group (WG) meetings on DNA sequencing (DNA seq);
    - Attended ENGL Working Group (WG) meetings on Definition of Minimum Performance Requirements for Analytical Methods of GMO Testing – Part 2 (MPR(2)).

- Attendance at the following other international meetings, seminars and working groups discussing best measurement practice guidance on GMO analysis:
    - Attended PlantEd meeting and series of seminars entitled "From research to innovation with new breeding techniques";
    - Attended the 2nd PlantEd conference (online) in September 2021. The conference facilitated open scientific sessions dedicated to genome editing technology in plants;
    - Held communications with the Chief Executive Officer of the National Biosafety Authority of Kenya, regarding networking and sharing best practice guidance on GMO sampling and controls;
    - Attended a seminar series on "Gene editing: what does proportionate Regulation Look Like?", organised by the London Office of the US Department of State.

- General dissemination activities:
    - Provided a presentation entitled "Towards effective solutions for GMO analysis" at the 2021 Government Chemist Conference. Whilst this mainly focussed on showcasing Government Chemist (GC) input into these solutions, it also acknowledged the NRL function in providing input into EC guidance documents, NRL Comparative Tests, the GMO screening review, and a gene editing review;
    - Named input on views and advice captured in the published UK parliament POSTnote four page briefing on "Gene Edited Food Crops".
    - Input into, and publication of the FSA/GC advisory note on sampling for GMOs in rice/rice products originating from China, focussing on the correct procedure to follow to produce a three part sample at the point of entry into the UK. A link to the article was distributed to the FSA and Official Laboratories.

- Miscellaneous advisory activities:
    - Input into peer review of an international paper for the detection of Genetically Modified Microorganisms (GMM);
    - Provided advice on GM detection methods to a UK based industrial partner for due diligence testing.

Objective 03 - Production of standard operating procedures, codes of practice, guidance documents and databases

Task:

a) Contribute to the development of standardised operating procedures, relevant codes of practice and guidance documents for use by OLs and other relevant laboratories, as requested by the CA.

b) Where required, develop a database to store relevant information in relation to GMO official control testing, e.g. GMO methods, SOPs, codes and guidance

Activities in relation to these Tasks:

- Input into discussions and writing of draft guidance documents for the following European Network of GMO Laboratories (ENGL) Woking Groups, as an invited independent scientific expert:
    - DNA extraction (DNAex) – aimed at providing advice and guidance associated with all aspects of practical DNA extractions from simple/complex matrices for GMO analysis;
    - Genetically Modified Microorganisms (GMM) – aimed at describing a practical workflow for the detection and identification of GMM;
    - DNA sequencing (DNA seq) – aimed at providing advice on sequencing strategies for the traceability of GMOs (inclusive of Next Generation Sequencing), with a focus on methods and related quality aspects;
    - Definition of Minimum Performance Requirements for Analytical Methods of GMO Testing – Part 2 (MPR(2)) – aimed at providing guidance and acceptance criteria for methods for the detection of GM animals, products as a result of New Genomic Technologies, and performance requirements for application of dPCR for GMO analysis.
- Initial meetings held with IT experts and plans agreed to scope out preparing an online GB centric “GMO Compendium of methods”, housing information on validated methods for the detection of GMOs.

Objective 04 - Compliance assessment via audits, ring trials and provision of reference materials

Tasks:

a) Ensure consistency and quality of testing approaches applied by UK OLs and other relevant laboratories, including advising on corrective action following adverse reports on OLs from UKAS;
b) Source and provide suitable reference materials and testing kits to OLs;
c) Plan and coordinate GMO proficiency testing for UK OLs and other relevant laboratories as appropriate (taking into account the number of relevant laboratories), analysing and evaluating the outcome, informing the CA and OLs of the results and advising on appropriate follow-up action;
d) Co-ordinate the participation of UK OLs and other relevant laboratories in international method validation studies and other initiatives, informing the CA and OLs of the results and advising on further action;
e) Where relevant, participate in proficiency tests and method validation studies organised by international organisations, informing the CA of the results and implementing any corrective measures required;
f) Co-ordinate training exercises for OLs and other relevant laboratories to promote best laboratory practice in respect of GMO analysis;
g) Provide OLs with advanced notification of proficiency testing rounds to enable OLs to implement such activities in a timely manner.

Example activities in relation to these Tasks:

GMO analytical capability

- Attended a meeting with the FSA to discuss UK based GMO analytical capability, focussing on the increased number of samples requiring testing for the presence of GMOs in rice / rice products originating from China;
- As a result of this, specific sections in the GMO NRL Annual Questionnaire 2021 for distribution to OLs, included questions on GMO analytical capability and requests for feedback on support needed to maintain GMO analytical capability;
- The "GMO NRL – UK GMO analytical capability questionnaire" was circulated to all OLs and received a 100% completion rate from all laboratories;
- There was a general positive response for acquiring and then maintaining GMO capability and accreditation, should the necessary support be available;
- Specific support requests were received for instrument and staff training, maintaining technical instrumentation, acquisition of PCR consumables and maintenance of staff expertise;
- A series of follow up meetings were held with the FSA to discuss the results of the GMO NRL 2021 questionnaire;
- Follow up actions to these meetings were agreed including providing further generic support to OL's for all technical aspects of GMO analysis, coupled with bespoke and tailored advice and assistance for specific analytical issues and queries;
- Based on the responses received, a lot of valuable feedback mentioned requests for training and support in technical areas: specifically training on understanding results and their interpretation, instrument training, specialist staff training and understanding qPCR assays and emerging technologies. An e-mail was sent to all OL's, making them aware of the range of open access e-seminars available from links on the Food Authenticity Network website, as funded through previous FSA, Defra and Joint Knowledge Transfer Framework (GC/FSA/Defra/FSS) activities. This included e-

seminars on DNA extraction, designing qPCR assays, optimising qPCR assays, validation of qPCR assays, DNA sequencing, digital PCR (dPCR) and Next Generation Sequencing (NGS).

ISO 17025 flexible scope of accreditation

- Successfully applied for and was awarded an official extension to scope to LGC's ISO/IEC 17025:2017 flexible scope of accreditation for GMO analysis, to include the Maxwell RSC automated DNA extraction instrument;
- The Applied Biosystems QuantStudio 7 Flex Real-Time PCR System received a software update from v1.3 to v1.7.1. The software was validated within the framework of ISO 17025 as being fit for purpose for GMO analysis.

Proficiency test rounds

- Participation and submission of results for GeMMA round U97 proficiency test round for detection and quantitation of soya event 40-3-2;
- Two sets of results were generated, estimating the GM content based on manual and automated CTAB extractions, and successfully submitted prior to the deadline. Results are pending.

Objective 05 - Co-ordination within the UK of international initiatives

Task:

a) Where appropriate, co-ordinate the recommendations of international organisations related to the standardisation of testing methods.

Example activities in relation to these Tasks:

- The NRL continues to maintain a dedicated physical and electronic register for control materials received prior to EU exit on the 1st January 2021, held in a secure cold room;
- The full list of the registered ENGL plasmid control materials is provided in Annex 2;
- Discussed with the FSA the EU post-transition arrangements in the context of approaching the EURL to facilitate a positive outcome for further interactions;
- Additional and alternative GM networks were successfully identified and approached, including PlantEd (COST Action 1811), and Indian and African GMO networks;
- Attended the 2nd PlantEd conference which took place over three days, with open scientific sessions dedicated to genome editing technology in plants. PlantEd provides a network for research on plant genome editing across Europe and beyond, and the conference provided an opportunity for dissemination, discussions and connections, and to stay updated regarding current research and innovation in this area. Key seminars included views on the use of molecular biology approaches to detect products arising from New Genomic Techniques, and regulatory adaptation to support the future regulatory status of precision breeding products in non-EU countries.

Objective 06 - Liaison and support work on GMO food/feed authorisation

Tasks:

a) Liaise with the FSA appointed laboratory on GMO food/feed authorisation process and applications.

b) Where necessary, provide support/advice to the FSA appointed laboratory for GMO authorisation on the validation of methods of analyses, reference materials.

Example activities in relation to these Tasks:

- The GMO NRL and GMO Authorisations (method validation services) positions are both operated by LGC;
- Staff from both areas are kept fully abreast of developments within each position, augmenting both areas in terms of delivery priorities whilst also providing cost saving opportunities due to synergistic activities within both positions.

Objective 07- Communication of results and data use

Tasks:

a) The Contractor shall ensure that the CA receives regular updates of any developments related to the core functions of the NRL;
b) The Contractor shall notify the CA immediately by email of any deviations or significant unexpected situations which may affect the cost, specifications and timing of the annual work programme;
c) The Contractor shall notify the CA immediately by email of any unusual occurrences resulting from any of the core functions of the NRL;
d) The Contractor shall provide annual reports of work summarising all activities completed as part of their annual work programme, to the CA by 31st March each year. Annual reports will be approved by the CA prior to publication by NRLs on NRL dedicated websites. If requested by the CA, the Contractor may also need to provide interim reports during the annual work programme;
e) Any results or reports arising from the work of the NRL will not be communicated to any external parties without the written permission of the CA;
f) The use of the data for presentations and/or papers will not be permitted unless written permission has been sought and given by the CA;
g) The Contractor will maintain records. Retention periods will be agreed and defined in the contract and if necessary the contractor will assist with transfer of archived reference material; in other work related to the core functions of the NRL, the specified deadlines agreed between the CA and the Contractor should be met;
h) If necessary, at the end of the Contract all information and data gained from, and required for, NRL function over the course of the Contract will be handed over to the CA. This will include assisting with transfer of archived reference materials;
i) Provide an internal report of meetings with other organisations within 10 working days of the meeting.
j) The Contractor will engage in quarterly dialogues with the CA to review contract management requirements and update on progress against work programme. Informal monthly check-ins with the CA may also be organised to ensure any potential or evolving issues are flagged and work is kept on track;
k) The Contractor will organise regular network meetings, as appropriate and on at least an annual basis to update their official controls networks and CA on method updates, enforcement, training and other relevant information issues and to discuss PT programmes and results;
l) The Contractor will review NRL finances regularly and communicate spending, including a break-down of costs, with the CA on a monthly basis.

Example activities in relation to these Tasks:

- The GMO NRL 2020/2021 annual report and the GMO NRL Annual Workplan 2021-2022 were successfully published on the NRL webpages;
- Monthly logs, providing detailed descriptions of all activities engaged in as part of the GMO NRL function, are provided on a monthly basis to the FSA;
- Two GMO NRL Quarterly Review Meetings were held with the FSA in October 2021 and January 2022;
- The GMO NRL Annual Network Meeting, in combination with Feed Additives NRL position, had been organised for 5th April 2022, due to unforeseen circumstances the meeting has been postponed to a later date. This Network Meetings are an opportunity for the NRLs to provide relevant updates on methods, enforcement, training and other

activities, as well as providing a forum for exchange of information and for participants to raise any further training needs and support requirements. It is also an opportunity for the FSA to provide a brief update on relevant scientific and policy areas;

- The UK NRL is in constant contact with the FSA by e-mail, phone and MS Teams in relation to queries, updates, developments and deliverables;
- The UK NRL is available for provision of advice on GMO analysis to all UK OLs by e-mail, phone, MS Teams and face-to-face meetings where appropriate.

Annex 1: Additional links to NRL annual reports, work programmes and advisory notes

Copies of previous reports, work programmes and advisory notes can be found on the NRL webpages at the following location:
https://www.lgcgroup.com/what-we-do/quality-assurance/national-laboratories-and-science/national-reference-laboratories/

Annex 2: List of ENGL Control materials housed by the NRL

GM	Species	ENGL plasmid no.
Event 558 (GMM)	Bacillus Subtilis	pENGL-00-EM-01/18-01
281-24-236	Cotton	pENGL-00-14/05-01
3006-210-23	Cotton	pENGL-00-14/05-01-B
COT102	Cotton	pENGL-00-05/16-01
DAS 81910-7	Cotton	pENGL-00-06/16-01
GHB119	Cotton	pENGL-00-04/11-01
GHB614	Cotton	pENGL-00-14/07-01
GHB811	Cotton	pENGL-00-04/18-01
LL25	Cotton	pENGL-00-13/04-01
MON1445	Cotton	pENGL-00-15/04-01
MON15985	Cotton	pENGL-00-24/04-01
MON531	Cotton	pENGL-00-16/04-01
MON88701	Cotton	pENGL-00-01/13-01
MON88913	Cotton	pENGL-00-05/07-01
T304-40	Cotton	pENGL-00-05/11-01
GM Strain AG3139	E.coli	pENGL-00-04/08-01
GM Strain 19E	E.coli K-12	pENGL-00-06/08-01
3272	Maize	pENGL-00-03/06-01
5307	Maize	pENGL-00-07/11-01
59122	Maize	pENGL-00-03/05-01
Bt11	Maize	pENGL-00-10/07-01
Bt11	Maize	pENGL-00-12/05-01
BT176	Maize	pENGL-00-18/04-01
DAS-40278	Maize	pENGL-00-10/10-01
DP-4114	Maize	pENGL-00-02/14-01
GA21	Maize	pENGL-00-15/05-01
GA21	Maize	pENGL-00-29/04-01
LY038	Maize	pENGL-00-01/06-01
MIR162	Maize	pENGL-00-08/08-01
MIR604	Maize	pENGL-00-04/05-01
MON810	Maize	pENGL-00-25/04-01
MON863	Maize	pENGL-00-01/04-01
MON87403	Maize	pENGL-00-02/15-01
MON87411	Maize	pENGL-00-01/15-01
MON87419-8	Maize	pENGL-00-02/17-01
MON87427	Maize	pENGL-00-03/12-01 MON87427
MON88017	Maize	pENGL-00-16/05-01
MON89034	Maize	pENGL-00-06/06-01
MZHG0JG	Maize	pENGL-00-04/16-01
MZIR098	Maize	pENGL-00-04/17-01

GM	Species	ENGL plasmid no.
NK603	Maize	pENGL-00-27/04-01
T25	Maize	pENGL-00-08/04-01
T25	Maize	pENGL-00-08/04-01
TC1507	Maize	pENGL-00-02/04-01
VCO	Maize	pENGL-00-07/12-01
DP73496	Oilseed rape	pENGL-00-02/12-01
MON88302	Oilseed rape	pENGL-00-09/11-01
Ms1	Oilseed rape	pENGL-00-11/04-01
Ms11	Oilseed rape	pENGL-00-03/16-01
Ms8	Oilseed rape	pENGL-00-06/04-01
Oxy-235 genomic DNA	Oilseed rape	Oxy-235 oilseed rape
Rf1	Oilseed rape	pENGL-00-09/04-01
Rf2	Oilseed rape	pENGL-00-10/04-01
Rf3	Oilseed rape	pENGL-00-07/04-01
RT73	Oilseed rape	pENGL-00-26/04-01
T45	Oilseed rape	pENGL-00-14/04-01
Topas 19/2	Oilseed rape	pENGL-00-12/04-01
EH92-527-1	Potato	pENGL-00-09/05-01
Bt63	Rice	pENGL-00-EM02/06/01
40-3-2	Soybean	pENGL-00-08/05-01
A2704-12	Soybean	pENGL-00-13/05-01
A5547-127	Soybean	pENGL-00-01/08-01
CV127	Soybean	pENGL-00-01/09-01
DAS44406-6	Soybean	pENGL-00-01/12-01 DAS44406-6
DAS-68416-4	Soybean	pENGL-00-11/10-01
DAS81419-2	Soybean	pENGL-00-03/13-01 DAS81419-2
DP-305423-1	Soybean	pENGL-00-07/07-01
DP-356043-5	Soybean	pENGL-00-04/07-01
FG72	Soybean	pENGL-00-04/10-01
GMB151	Soybean	pENGL-00-01/18-01
MON87460	Soybean	pENGL-00-04/09-01
MON87701	Soybean	pENGL-00-05/09-01
MON87705	Soybean	pENGL-00-01/10-01
MON87708	Soybean	pENGL-00-02/11-01
MON87751	Soybean	pENGL-00-03/14-01
MON87769	Soybean	pENGL-00-07/09-01
MON89788	Soybean	pENGL-00-05/06-01
SYHT0H2	Soybean	pENGL-00-04/12-01
H7-1	Sugar beet	pENGL-00-28/04-01
MON71200	Wheat	pENGL-00-EM-02/18-01