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THE BIOSAFETY ACT
(*No.2 of 2009*)

IN EXERCISE of the powers conferred by sections 51 of the Biosafety Act, the Minister for Higher Education, Science and Technology makes the following Regulations

THE BIOSAFETY (CONTAINED USE) REGULATIONS, 2011

PART I- PRELIMINARY PROVISIONS

Citation.

1. These Regulations may be cited as the Biosafety (Contained Use) Regulations, 2011.

Interpretation.

2. In these Regulations unless the context otherwise requires-

accident means any incident involving a significant and unintended release of genetically modified organisms in the course of their contained use which could present an immediate or delayed hazard to human health and the environment;

applicant means a person making an application pursuant to these Regulations;

Authority means the National Biosafety Authority established under section 5 of the Act;

Biosafety Clearing-House means a mechanism for exchange of scientific, technical, environmental and legal information and experience with genetically modified organism;

confined field trial means any activity undertaken within a field which involves genetically modified organisms that are controlled by specific measures to ensure safety for humans and the environment;

contained use means any activity undertaken within a facility, installation or other physical structure, which involves genetically modified organisms that are controlled by specific measures;

contained use premises includes a facility, field, installation or other physical structure in which contained use is undertaken;

Institutional Biosafety Committee means a committee established under regulation 5 of these Regulations;

genetically modified organism means an organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology techniques;

Modern Biotechnology includes the application of-

(a) in-vitro nucleic acid techniques including the use of recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles; or

(b) fusion of cells beyond the taxonomic family, that overcome natural physiological, reproductive and recombinant barriers and which are not techniques used in traditional breeding and selection.

research institution includes a university, or any other research institution in Kenya, established under a written law, carrying out research involving genetically modified organisms;

screening for completeness means the evaluation of an application

to ensure that all the administrative as well as technical requirements are met.

Objective.

3. The objective of these Regulations is to ensure that potential adverse effects of genetically modified organism are addressed to protect human health and the environment when conducting contained use.

Exceptions.

4. These Regulations shall not apply-

(a) genetically modified organisms that are pharmaceuticals for human use ;

(b) where genetic modification is obtained through the use of the techniques or methods listed in the First Schedule to these Regulations;

(c) to the storage, culture, transport, destruction, disposal or use of genetically modified organisms which have been released into the environment in accordance with the Regulations on Environmental Release; or

(d) modified plasmids or vectors used as tools for modern biotechnology subject to approval by the relevant regulatory agency.

PART II- CONTAINMENT MEASURES

Classification of containment levels.

5. (1) The Authority shall ensure that all appropriate measures are taken to avoid adverse effects on human health and the environment, which might arise from the contained use of a genetically modified organism.

(2) The Authority in consultation with the relevant regulatory agency shall assess the suitability of a contained use premises to conduct contained use activity involving genetically modified organism.

(3) Upon carrying out assessment, the Authority in consultation with the relevant regulatory agency shall determine the containment level of the contained use premises in accordance with the provisions of Second Schedule to these Regulations.

(4) These containment levels under this Regulation apply to laboratory, greenhouse or screen house activities.

Institutional Biosafety Committee.

6. (1) A research institution undertaking contained use activities shall establish an Institutional Biosafety Committee

(2) An Institutional Biosafety Committee shall consist of-

(a) biosafety officer(s);
(b) scientist(s) in the relevant field;
(c) representative(s) of technical staff;

(d) representative(s) of laboratory management;
(e) representative(s) of the community where the premises are situated;
(f) representative(s) of the relevant regulatory agency.

(3). The functions of an Institutional Biosafety Committee shall be-

(a) to prepare applications for contained use activities and refer the applications to the Authority for approval;

(b) to advise the research institutions on matters relating to biosafety;

(c) to assist their institutions in the establishment of the appropriate monitoring mechanisms for risk assessments and risk management;

(d) to ensure that the conditions stipulated in the approval are adhered to;

(e) to review and ascertain the suitability of both physical and biological containment and control procedures appropriate to the level of assessed risk involved in research, development and application activities;

(f) to advice their relevant Institutions and Principle investigators on mitigations measures to be undertaken in case of an accident.

(4) A person shall not carry out contained use activity under these Regulations unless such activity is carried out within, or in collaboration with a research institution.

(5) A person who contravenes sub regulation (4) commits an offence.

Application for contained use.

7. (1) A person shall not undertake contained use without the written approval of the Authority.

(2) An application for contained use shall be made to the Authority through an Institutional Biosafety Committee;

(3) An application for contained use shall be in the appropriate form set out in the Third Schedule to these Regulations and shall be accompanied by the prescribed fee.

(4) A person who contravenes sub regulation (1) commits an offence.

Consideration of

8. (1) Upon receipt of an application under Regulation 7, the

application.

Authority shall screen for completeness and circulate to the relevant regulatory agencies for further information, comments or reasoned objections.

(2) The Authority shall examine-

(a) the conformity of an application with the requirements of these Regulations;

(b) the accuracy and completeness of the information given;

(c) the risk assessment submitted by the applicant;

(d) the level of contained uses; and

(e) where appropriate, the suitability of the containment and other protective measures, the waste management, and contingency measures.

(3) The Authority may-

(a) require the applicant to provide further information; or

(b) require the applicant to modify the conditions of the proposed contained use, or to amend the level assigned to the contained use; or

(c) limit the time for which the contained use should be permitted or subject it to certain specific conditions.

(4) The Authority shall communicate its final decision within one hundred and fifty days of receipt of the application but not earlier than ninety days of such receipt.

(5) For the purpose of calculating time, any period of time during which the Authority is awaiting any further information that it may have requested from the applicant shall not be taken into account.

Approval.

9. (1) An approval for contained use shall be in the form set out in the Fifth Schedule to these Regulations.

(2) An approval granted under these Regulations shall be valid for the period of the activity.

(3) An Approval for the contained use is not transferable.

Validity of the approved activity.

10. (1) An approval under these Regulations shall be for the period of the activity.

(2) A person granted an approval under these Regulations shall submit a report on the progress of the activity every four months during the period of the approved activity.

Suspension or revocation of approval.

11. (1) The Authority may suspend or revoke an approval granted under these Regulations, where a person granted an approval is in contravention with the provisions of these Regulations.

(2) The Authority shall, before suspending or revoking an approval, give a written notice to the person granted the approval to put in place such appropriate containment measures or other protective measures.

Handling of new information.

12. (1) A person who has been granted an approval ,and subsequently becomes aware of information which could have significant consequences for the risks posed by it, shall inform the authority of such information as soon as possible.

(2) A person who withholds any information which could reasonably be expected to change the evaluation of the risk posed by the activity, commits an offence and is liable on conviction to a fine not exceeding two million shillings or imprisonment for a term not exceeding ten years, or both.

(3) Where information subsequently becomes available to the Authority, which could have significant consequences for the risks, posed by the contained use, the Authority may require the person to whom an approval has been granted to modify the conditions of, or suspend or terminate, the contained use.

(4) A person who has been granted an approval, who wishes to modify the contained use, may make a written request to the Authority and the Authority shall within thirty days acknowledge receipt of the request.

(5) The Authority shall review the request and where it considers that-

(a) the modification does not require risk assessment, the Authority shall communicate its decision within thirty days from the date of the receipt of the request; or

(b) the modification may have material effect on the outcome of the risk assessment upon which the decision was based, the Authority shall, if is satisfied that a change is warranted, make a decision within one hundred days from the date of the receipt of the request.

Contingency plans.

13. The Authority shall ensure that before contained use commences-

(a) the applicant draws up a contingency plan for contained use to mitigate against risk, whether immediate or delayed, to humans outside the premises or to the environment as a result

of failure of the contained use measures;

(b) information on such contingency plans, including the relevant safety measures to be applied, is supplied in the application form, to the relevant regulatory agency for purposes of monitoring for compliance.

Contents of contingency plans.

14. Every contingency plan shall be in the form set out in the Sixth Schedule to these Regulations.

Emergency measures.

15. (1) In the event of an accident, a person granted an approval shall inform the Authority immediately and shall provide the following information-

(a) the circumstances and location of the accident;

(b) the identity and quantities of the genetically modified organisms concerned;

(c) any information necessary to assess the effects of the accident on human, animal and the environment; and

(d) the measures taken.

(2) Where information is given pursuant to sub regulation (1), the Authority shall-

(a) ensure that any necessary measures are taken;

(b) where possible, collect, information necessary for a full analysis of the accident; and

(c) where appropriate, make recommendations to avoid a similar accident in the future and to limit the effects thereof.

(3) A person who contravenes sub regulation (1) commits an offence.

PART III- MISCELLANEOUS

Information sharing and records.

16. (1) The Authority shall maintain a register which shall contain -

(a) a copy of the -

(i) applications received for contained use;
(iii) risk assessment documents;
(iv) decision documents;
(v) approval documents;

(vi) accidents and emergency plans;

(b) a list of institutional biosafety committees; and

(c) any other information that the Authority may deem necessary.

(2) The register shall be open for inspection by any person upon payment of a prescribed fee.

(3) The Authority shall establish a procedure for the exchange of information and experiences gained.

Registration of decisions in the National Biosafety Clearing House.

17. The Authority shall register all decisions made under these Regulations in the National Biosafety Clearing House within thirty days of making the decision.

Confidential information.

18. (1) An applicant may indicate which information in the application should be treated as confidential and shall give verifiable justification in such cases.

(2) The Authority shall decide, after consultation with the applicant which information may be kept confidential and shall inform the applicant of its decision.

(3) The following information shall not be considered confidential-

(a) name and address of the applicant;

(b) the general characteristics of the genetically modified organism;

(c) class of contained use and measures of containment; and

(d) the evaluation of foreseeable effects, in particular any harmful effects on human health and the environment.

(4) The Authority shall not divulge to third parties any confidential information and shall protect intellectual property relating to the data received.

(5) Where an applicant withdraws an application, the Authority shall respect the confidentiality of the information declared.

Good containment measures.

19. (1) An applicant shall apply the general principles and the appropriate containment and other protective measures set out in Part II of the second Schedule to these Regulations corresponding to the class of the contained use so that a high level of safety is ensured.

Penalties

20. A person who contravenes any of the provisions of these Regulations commits an offence and is liable on conviction to a fine not exceeding twenty million shillings or to imprisonment for a term not exceeding ten years, or both.

FIRST SCHEDULE ..... (r.4)

TECHNIQUES WHICH DO NOT LEAD TO GENETICALLY MODIFIED ORGANISM

The following technical procedures shall not be considered to amount to formation of genetically modified organisms without concurrent use of recombinant heritable genetic material or without the use of genetically modified organisms formed through as a result of the following techniques-

(a) in vitro fertilization;

(b) bacterial conjugation, transformation, transduction and similar natural processes;

(c) polyploidy and haploidy induction.

SECOND SCHEDULE ..... (r. 5)

PART I
CLASSIFICATION OF CONTAINMENT LEVELS

Level 1 Activities with no or negligible risk of adverse effect on human health, the environment and biological diversity.

Level 2 Activities with low risk of adverse effect on human health, the environment and biological diversity that can easily be eliminated using generally known procedures for which the level of containment and protective measures are laid down

Level 3 Activities with a moderate risk of such adverse effect on human health, the environment and biological diversity that can only be eliminated by especially demanding interventions for which the level of containment and protective measures are laid down

Level 4 Activities with high risk of adverse effect on human health, the environment and biological diversity for which the level of containment and protective measures are laid down,

PART II
GENERAL REQUIREMENTS FOR GOOD CONTAINMENT MEASURES

A: CHECKLIST FOR INSPECTION – ANIMAL UNITS

	Specification	Containment level			
		1	2	3	4
1	isolation of animal unit	optional	yes	yes	yes
2	animal facilities separated by lockable doors	optional	yes	yes	yes
3	animal facilities designed to facilitate decontamination (waterproof and easily washable material, cages etc.)	optional	optional	yes	yes
4	floor and/or walls easily washable	optional	floor	floor and walls	floor and walls
5	floor to wall, wall to ceiling and wall to wall junctions should be rounded for easy cleaning	yes	yes	yes	yes
6	all joints between door frames and wall should be sealed	yes	yes	yes	yes
7	animal facilities have to be cleaned regulary. Sinks have to be disinfected regulary.	no	yes	yes	yes
8	surfaces have to be disinfected after work	no	yes	yes	yes
9	used cages have to be decontaminated	yes	yes	yes	yes
10	material to be sterilised or incinerated as well as used cages have to be transported so that the environment is not contaminated	yes	yes	yes	yes
11	hands have to be decontaminated and washed if there is the possibility of contamination and after handling animals and waste	yes	yes	yes	yes
12	access to animal facilities is restricted	yes	yes	yes	yes
13	an animal unit shall install devices to detect fires, ventila-tion and heating failures and the intrusion of unauthorised personnel	yes	yes	yes	yes
14	where appropriate, an inspection window should be fitted in the door	yes	yes	yes	yes
15	animal facilities have to be aerated appropriate	yes	yes	yes	yes
16	wild forms of the animals inside the facility should not be able to enter the facility. Separate male and female of the species to avoid reproductive transmission, unless repro-ductive studies are part of the experiment	yes	yes	yes	yes
17	measures to control undesired species such as insects and rodents	yes	yes	yes	yes
18	drains and any other services that enter through the walls or floor should prevent the ingress of rodents and insects	yes	yes	yes	yes
19	accidents, bites and scratches caused by animals have to be reported to the project leader who makes a written report	yes	yes	yes	yes

20	personnel has to be trained in the handling of the animals	yes	yes	yes	yes
21	there have to be written records about the transfer of foreign genes, about the breeding experiments and the disposal of animals	yes	yes	yes	yes
22	transgenic animals have to be identified easily. The insert can deal as an additional marker	yes	yes	yes	yes
23	food and tobacco has to be stored so that it cannot come in contact with transgenic animals	yes	yes	yes	yes
24	protective clothing and shoes have to be worn. They have to be changed or cleaned when the facility is left.	yes	yes	yes	yes
25	protective clothing has to be stored separated	no	yes	yes	yes
26	rodent-barrier in front of doors should be installed, alter-native doors should be self-closing, to rooms where ani-mals are housed and handled to prevent the escape of animals	yes	yes	yes	yes
27	animal species shall be housed in appropriate cages, runs, pens suitable for their requirements	yes	yes	yes	yes
28	no animals should be admitted other than for experimental purposes	yes	yes	yes	yes
29	biohazard sign	no	yes	yes	yes
30	doors have to be closed if infected animals are held. There must be a sign indicating the kind of work	no	yes	yes	yes
31	the laboratory should contain a washbasin with taps that should be of a type that can be operated without being touched by hand, facilities for hand disinfecting shall be provided	no	yes	yes	yes

	Specification	Containment level			
		1	2	3	4
32	use of safety cabinets where aerosols are released	no	yes	yes	yes
33	an autoclave should be available when genetically modi-fied micro-organisms are used in experiments	yes	yes	yes	yes
34	in experiments where genetically modified micro-organisms are used contaminated material and waste should be inactivated	yes	yes	yes	yes
35	if genetically modified organisms can be transmitted, working tools and equip-ment has to be sterilised	no	yes	yes	yes
36	waste contaminated with genetically modified organisms must only be transported in suitable containers	no	yes	yes	yes
37	Genetically modified organisms must only be transported in breakproofed and closed containers	no	yes	yes	yes
38	where risk assessment indicates the animal room and contents will need to be fumigated the room should be capable of being sealed by appropriate means and consideration should be given to the means of removing or extracting the fumigant	no	yes	yes	yes
39	Hygiene plan	no	yes	yes	yes
40	the animal facility has to be entered via a lock equipped with two self closing doors, hand washing basin, disin-fection dispenser and shower	no	no	yes	yes
41	acceptability of windows that open	yes	yes	no	no
42	emergency power supply for safety relevant equipment such as ventilation system	no	no	yes	yes
43	where mechanical ventilation is provided, the airflow should be inwards. Air should not be recirculated to any part of the building.	no	yes	yes	yes
44	the ventilation system should be designed to prevent accidental reverse flow and positive pressurisation in any part of the animal unit	no	no	yes	yes
45	in case of work with airborne pathogens negative pressure relative to the pressure of the immediate surroundings, extract air should be HEPA* filtered	no	no	yes	yes
46	HEPA* filters should be sited so that they are accessible for testing and allow their safe removal. HEPA filters have to be sterilised on site or immediately sealed in an airtight plastic sack for later sterilisation	no	no	yes	yes
47	animals infected with risk group 3 micro-organisms shall be housed in cages in isolators with ventilation passing through HEPA* filtration to the exterior. Alternatively, animals shall be housed in cages within ventilation units with ventilation exhausts placed behind cages.	no	no	yes	yes

48	carcasses have to be sterilised prior to disposal. If this is not possible inside the facility, carcasses have to be trans-ported in closed, leakproofed and disinfected containers	no	no	yes	yes
49	waste water has to be sterilised	no	no	yes	yes

*High-efficiency particle arresting

B: CHECKLIST FOR INSPECTIONS (CONTAINED USE – GLASSHOUSES AND GROWTH-ROOMS)

Specification		Containment level			
		1	**2**	**3**	**4**
1	Greenhouse: permanent structure	No	Yes	Yes	yes
2	Internal walls, ceilings and floors shall be resistant to penetration by liquids and chemicals to facilitate cleaning and decontamination of the area. All penetrations into these structures and surfaces shall be sealed (e.g. cables, pipes)	No	Optional	Yes	yes
3	Control of contaminated run-off water	Optional	Minimise run-off	Prevent run-off	Prevent run-off
4	There must be a suitable program been worked out to control plant pests, weeds, insects and rodents	Yes	Yes	Yes	yes
5	Measures to control undesired species such as weed, insects, rodents, arthropods*	Yes	Yes	Yes	yes
6	Procedures for transfer of living material between the glasshouse/growth-room, protective structure and laboratory shall control dissemination of	minimise dissemination	Minimise dissemination	Prevent dissemination	Prevent dissemination

	genetically modified micro-organisms				
7	Transport of GMOs in suitable closed non-breakable container	No	Yes	Yes	yes
8	The container shall be decontaminated if organisms outside are present within the effective dissemination distance of the experimental organism, e.g. by fumigation	No	No	Yes	yes
9	The ground of the greenhouse can be of gravel or other greenhouse-typical material. At least the pavement should be solid, e.g. of concrete.	Yes	Yes	Yes	yes
10	The ground of the greenhouse should be of water impermeable material. Gravel and other porous material under the planting tables is suitable if there is only a minor possibility that reproducible biological material can be transmitted through the soil. In this case earth beds are also possible.	No	Yes	Not applicable	Not applicable
11	If part of the ground consists of gravel, appropriate treatments should be made periodically to eliminate, or	No	Yes	Not applicable	Not applicable

	render inactive, any organisms potentially entrapped by the gravel				
12	The ground of the greenhouse is made of water impermeable material with provisions to collect and sterilise wastewater.	No	No	Yes	yes
13	Escape of GMOs	Minimised	Prevent	Prevent	Prevent
14	Windows shall be closed and sealed	No	No With insect nets	Yes	Yes
15	All glazing shall be resistant to breakage	No	No	Yes	Yes
16	Biohazard sign at entry	No	Yes	Yes	Yes
17	A sign shall be posted indicating: - That a restricted experiment is in progress - Name of responsible individual - Plants (organisms) in use - Special requirements for using the area	No	Optional	Yes	Yes
18	Access is limited to the project leader and personnel authorised by him	No	Yes	Yes	Yes
19	Protective clothing shall not be worn outside the greenhouse	Yes	Yes	Yes	Yes
20	Separate facilities for storing protective and street clothing shall be available	No	Yes	Yes	Yes
21	Protective clothing	No	No	Yes	Yes

	has to be sterilised before laundry				
22	Gloves shall be worn at work	No	No	Yes	Yes
23	Injuries have to be reported immediately to the project leader	Yes	Yes	Yes	Yes
24	There must be written instructions for greenhouse practices and procedures	Yes	Yes	Yes	Yes
25	Hand disinfection apparatus and wash basin	No	Yes	Yes	Yes
26	Greenhouse to be entered via a lock with self-closing doors and hand disinfection apparatus and touch-free hand washing basin.	No	No	Yes	Yes
27	Air intake screening and motorised or gravity-driven exhaust fan louvers	Yes	Yes	Not applicable	Not applicable

Specification		Containment level			
		1	**2**	**3**	**4**
28	The glasshouse has to be held under negative pressure compared to the surrounding	No	No	Yes	Yes
29	If there is the danger of the dissemination of airborne pathogens, exhaust air has to be filtered through HEPA-filters	No	No	Yes	Yes
30	Before disposal genetically modified plants have to be made unable to reproduce, e.g. by cutting off blossoms	Yes	Not applicable	Not applicable	Not applicable
31	Equipment which was in contact with GMOs has to be sterilised before cleaning, if the contact may lead to the transmission of GMOs	No	Yes	Yes	Yes
32	Autoclave inside the glasshouse	No	No, but available	Yes	Yes
33	The glasshouse has to be surrounded by a security fence or equal protection system	No	No	Yes	Yes

C: CHECKLIST FOR INSPECTIONS (CONTAINED USE – LABORATORY ACTIVITIES)

I. Physical Control Measures

a) Facility design

	Specification	Containment level			
		1	2	3	4
1	Process with viable micro-organisms separated from the environment (closed system)	yes	yes	yes	yes
2	Laboratory suite isolation	no	no	yes	yes
3	Restricted access to the facility (e.g. electronic cards, camera)	no	yes	yes	yes
4	laboratory sealable for fumigation	no	no	yes	yes
5	Acceptability of windows that open	yes	yes	no	no
6	Biohazard sign on the door	no	yes	yes	yes
7	Signs at laboratory entrance: - special hazard signs if an organism containing rDNA needs special provision for persons entering the laboratory - names of occupants who have access to the laboratory	no	yes	yes	yes
8	Ventilation system	no	no	yes	yes

b) Containment equipment

	Specification	Containment level			
		1	2	3	4
1	Surfaces resistant to water, acids, alkalis, solvents, disinfectants, decontamination agents and easy to clean	yes	yes	yes	yes
2	Check the suitability of equipment used for safety purposes	no	yes	yes	yes
3	Check the suitability of any chemical disinfectants in use	optional	yes	yes	yes
4	Check position of the autoclave with respect to the genetically modified organism installation	on site	in the building	in suite	in lab, double closed
5	Autoclave that the autoclave provides a print-out showing the temperature and time of sterilisation	no	no	yes	yes
6	Wash hand basin or sink that can be used for hand washing with: - dispenser containing soap - dispenser containing hand disinfectant - paper towels	yes	yes	yes	yes
7	Check position and design of biological safety hoods	optional	yes	yes	yes

8	Check design of the equipment for the safe storage of genetically modified organisms	yes	yes	yes	yes
9	Check design of waste transport containers	optional	yes	yes	yes
10	Check design of containers for the transport of genetically modified organisms inside the facility	optional	yes	yes	yes
11	Check design of centrifuge buckets	yes	yes	yes	yes
12	Entry to lab via airlock	no	no	optional	yes
13	Air lock with two doors which are interlocked	no	no	yes	yes
14	Air lock equipped with a hand washing basin (touch free) and hand disinfectant dispenser	no	no	yes	yes
15	Negative pressure relative to the pressure of the immediate surroundings	no	no	optional	yes
16	Ventilation system is alarmed to indicate a failure to generate a negative pressure	no	no	yes	yes
17	Ventilation system connected to an emergency power supply	no	no	yes	yes
18	Switch for ventilation system should be accessible from outside of the laboratory in case of fumigation	no	no	yes	yes
19	Extract and input air from the laboratory should be HEPA* filtered	no	no	extract air	input and extract air
20	Filters have to be sterilised on site or instantly sealed in a plastic bag for later sterilisation	no	yes	yes	yes
21	Alarm systems for workers working alone	no	no	yes	yes
22	Shower for the occupants before leaving the laboratory	no	no	optional	yes
23	An observation window or alternative is to be present so that occupants can be seen	optional	optional	optional	yes

II. Safety Management

a) Work procedures

	Specification	**Containment level**			
		1	**2**	**3**	**4**
1	Engineering control measures have to be exercised at source and supplement these with appropriate personal protective clothing and equipment where necessary	yes	yes	yes	yes
2	Control measures and equipment have to be tested adequately and maintained	yes	yes	yes	yes

3	Doors and windows closed while working	only doors	yes	yes	yes
4	Access to the laboratory must be restricted when experiments are in progress	no	yes	yes	yes
5	Workers should be given adequate information on safety matters and be suitably trained. Training should include the following points: a) the existence and application of written work procedures b) the procecures for using particular pieces of equipment c) spillage control and other emergency procedures	yes	yes	yes	yes
6	Check at which process steps hazardous quantiof aerosols are formed	optional	yes	yes	yes
7	Prevention of aerosol formation	yes	yes	yes	yes
8	Genetically modified organisms are only to be transported within the facility in closed, robust and leakproof containers	yes	yes	yes	yes
9	Work surfaces must be decontaminated daily and after a spillage	yes	yes	yes	yes
10	Effective disinfectants and specified desinfection procedures in case of spillage of genetically modified organisms	yes	yes	yes	yes
11	Inactivation of genetically modified organisms in contaminated material and waste	optional	yes	yes	yes
12	Inactivation of genetically modified organisms in effluent from the hand washing sinks or drains and showers and similar effluents	no	no	optional	yes
13	Benches should be free from clutter	yes	yes	yes	yes
14	The identity of genetically modified organisms should be regulary checked to avoid the culturing of incorrect stains. The time between these checks should dependent upon the potential hazard.	optional	yes	yes	yes
15	Corrective actions following the results of the controls and way to register them	yes	yes	yes	yes
16	Users should ensure that the performance of safety equipment is validated (e.g. autoclaves and safety hoods) - validation of equipment (e.g. autoclaves, safety hoods) - maintenance of the equipment - markers used to verify the efficiency of autoclaves	yes	yes	yes	yes
17	Prohibition of mouth pipetting	yes	yes	yes	yes

18	Prohibition of eating, drinking, smoking, applying cosmetics or the storing of food for human consumption in the work area	yes	yes	yes	yes
19	Skin contact with rDNA material must be avoided	yes	yes	yes	yes
20	Hands must be washed after handling rDNA and before leaving the laboratory	yes	yes	yes	yes
21	Protective clothing	yes	yes	yes and optional footwear	yes, complete change of clothing & footwear
22	Decontaminate protective clothing before laundering	yes	yes	yes	yes
23	Protective clothing and street wear must be kept separate	yes	yes	yes	yes
24	Gloves	no	optional	yes	yes
25	Implementation of an insect and rodent control pro-gramme	optional	yes	yes	yes
26	Keep the workplace and environmental exposure to any physical, chemical or biological agent to the lowest practicable level	yes	yes	yes	yes
27	Tests, when necessary, for the presence of viable genetically modified organisms outside the primary physical containment	yes	yes	yes	yes
28	Use of sharps should be avoided	yes	yes	yes	yes
29	Contaminated syringes / sharps must be disposed of in a Sharps bin and incinerated	yes	yes	yes	yes
30	where appropriate make vaccines available	no	yes	yes	yes
31	Establish Insitutional Biosafety Committees or sub-committees as required	yes	yes	yes	yes

	Specification	Containment level			
		1	2	3	4
32	Animals must not be allowed to enter into the laboratory	yes	yes	yes	yes
33	Where appropriate serum samples must be taken from workers and stored to provide baseline information in the event of an unexplained illness	no	optional	optional	optional
34	Sample collection, addition of materials to closed system and transfer of viable micro-organisms to another closed system, should be performed appropriate	yes	yes	yes	yes
35	Safe storage of biological agents	yes	yes	yes	yes
36	Safe storage of contaminated laboratory equipment and materials, when appropriate	yes	yes	yes	yes

b) Institutional matters and documentation relating to the safe handling of genetically modified organisms

	Specification	Containment level			
		1	2	3	4
1	Keep adequate records (drawing ups)	yes	yes	yes	yes
2	Hygiene plan	no	yes	yes	yes
3	Provide written standard operating procedures where appropriate to ensure safety	yes	yes	yes	yes
4	Provide documentation of: - the appointment of the BioSafety Officer (BSO)	yes	yes	yes	yes
5	The appointment of project leader	yes	yes	yes	yes
6	A description of the tasks of the BioSafety Officer (BSO) with respect to safety; internal control; accident/incident; response and preparedness; internal counselling, advice and education; and, reporting	yes	yes	yes	yes
7	A description of the tasks of the project leader with respect to: - everyday management - drawing-up and executing work-protocol	yes	yes	yes	yes
8	A clear description of the separation of responsibilities and tasks between the BioSafety Officer and the project leader	yes	yes	yes	yes
9	The status of the BioSafety Officer should be defined	yes	yes	yes	yes
10	There should be written procedures that cover the following: - undertaking risk assessments - the training of new staff - emergency procedures including the treatment of spillages with disinfectants - cleaning and disinfection of equipment	yes	yes	yes	yes

	- transport of GMOs - operation, testing and maintenance of containment equipment - measures for limiting access to facilities - health surveillance of workers				
11	Written instructions should be in both national languages	yes	yes	yes	yes
12	Documents that should be centrally held within an institution undertaking contained use: a) records indicating working areas and their containment levels (these records may include plans of buildings) b) all of the documents listed in point 10 above c) these records should also cover any sites for storage Genetically modified organisms outside of containment facilities d) records of internally organised inspections e) records of accidents, including evaluation and any remedial action f) a list of other data and documents that are held at other locations within the institution	yes	yes	yes	yes
13	Documents that can be held separately from the main records (see 12 above): a) records of staff involved in contained use indicating their experience and training and the type of projects in which they have been employed b) results of procedures for checking the purity and identity of the genetically modified organisms c) results of the testing of containment equipment (e.g. autoclaves and safety cabinets) d) a list of stored genetically modified organisms for each storage facility e) work protocols for particular expermental procedures	yes	yes	yes	yes

NB: Risk assessment of the genetically modified organisms that will be handled in every facility will be evaulation during application to the Authority.

III – Contingency Plan

	Specification	**Containment level**			
		1	**2**	**3**	**4**
1	Check contigency plans for protection of the environment and the public outside of the facility	no	no	optional	yes
2	Check information on accidents (reporting of accidents and near misses and records of corrective actions that have been taken)	yes	yes	yes	yes
3	Provide written procedures for: - a procedure for internal notification of incidents (e.g. spillages) - a procedure for external notification in case of serious risk - a procedure accident response (measures, reporting, evaluation) - emergency preparedness actions and counter-measures in case of accidents or incidents	no	yes	yes	yes

THIRD SCHEDULE ..... (r. 7 (3))

This schedule comprises of application forms for contained use activities. The forms are as follows:

1. Laboratories , Green houses and Growth chambers
2. Confined field trials for Animals, animal health inputs and microorganisms
3. Confined field trials for plants.

NATIONAL BIOSAFETY AUTHORITY

Part I

APPLICATION FORM FOR CONTAINED USE ACTIVITY (LABORATORY, GREENHOUSE AND GROWTH CHAMBERS)

GENERAL REQUIREMENTS FOR THE APPLICATIONS

This application form must be completed for each individual genetically modified organism for the intended contained use activity. The application may include more than one experiment (genetic modification of that particular species) or protocols and all sections must be completed. Additional pages can be attached if the space provided is not sufficient. Applications for new and renewal of previously authorized contained use should be submitted separately.

1.0 Name and Contact Address of Applicant			
1. 1 Date of Submission:			
1.2 Name of applicant		1. 3 Name of Institutional Biosafety Committee (IBC)	
1.4 Institution of applicant		1.5 Registration Status in Kenya	
		1.6 Affiliating institution (if institution of applicant is not registered in Kenya)	
1.4.1 Address of applicant s institution		1.6.1 Address of affiliating institution	
1.4.2 Telephone	1.4.3 Facsimile /email	1.6.2 Telephone	1.6.3 Facsimile/email

2.0 Nature and purpose of contained use

2.1 Brief Description of Proposed contained use activity
2.2 Purpose of contained use - character of the activity that will be carried out by applicant (e.g. research, laboratory control, manufacture)

2.3 If the contained use work is successful, indicate whether a general release of the GMO is planned
2.4 Total period of contained use and date of its expected starting-up

3.0 Risk assessment

3.1 Summary of the risk assessment for the genes and species of GMO involved.
3.2 Description of potential risks associated with the transformed organism, transformation genes or gene elements.
3.3 Description of potential risks associated with the activities to be undertaken

4. 0 Location where contained use activities are to be undertaken

4.1 Contained Use Facility: Laboratory and growth chambers

4.1.1 Facility Location	4.1.2 Approval No. or reference	4.1.3 Number of other contained use activities currently approved within the same facility
4.1.4 Biosafety level assigned to facility during approval (Level1, or level 2, or level 3 or level 4)		
4.1.5 Layout of premises and of the location of main facilities (Attach additional annex if more space is required)		
4.1.6 Code of practice of a workplace (Indicate type)		
4.1.7 Emergency Response Plan in the event of an accident		
4.1.8 Characteristics of the workplace (Tick as appropriate)		
4.1.8.1 Microbiological laboratory	4.1.8.2 Pilot plant	
4.1.8.3 Production facilities	4.1.8.4 Glasshouse/growth room	
4.1.8.5 Animal breeding facility	4.1.8.6 Other (Specify)	
4.1.9 Species and amount of used organism and the used genetic modifications including nominally mentioned validated methods for detection of occurrence of genetically modified organisms.		
4.1.10 Waste management plan		

4.2 Contained Use Facility: Greenhouse Facility

4.2.1 Facility Location	4.2.2 Approval No. or reference.	4.2.3 Number of other activities currently approved within the same facility.
4.2.4 Protocol **:** Fully describe the following		
4.2.4.1 Purpose of the greenhouse trial		

4.2.4.2 Experimental design
4.2.4.3 Nature and type of data to be collected
4.2.5 Arrangements for transporting the GMO to the greenhouse
4.2.6 Proposed herbicide/pesticide use, if any

4.2.6.1 Name of the pesticide /herbicide	4.2.6.2 Active ingredient	4.2.6.3 Total area to be sprayed (m^2 /hectarage)

4.2.7 Provide work schedule (post approval) of key activities including but not limited to:		
4.2.7.1 Dates of movement of material	4.2.7.2 Planting (anticipated)	4.2.7.3 Harvest/Sampling (anticipated)

4.2.8 Describe your plan for recording the quantities of seed planted/GMO used and accounting for any excess
4.2.9 Describe the disposition plan, including how and where any excess, or non-planted seed/GMO will be disposed of or stored.

4.2.10 State whether plants will be allowed to set seed or to reproduce Yes ☐ No ☐	
4.2.11 Indicate whether any harvested plant material will be retained from the trial	4.2.11.1 If yes, Type (e.g. seed, leaves, etc.)
Yes ☐ No ☐	
4.2.11.2 Quantity to be retained	4.2.11.3 Purpose of retaining material

4.2.12 For harvested plant material, describe the following if applicable:	
4.2.12.1 The storage method.	4.2.12.2 Storage location
4.2.12.3 Person in the institution responsible for the storage of the material	
4.2.12.3.1 Name	4.2.12.3.2 Telephone
4.2.12.4 Proposed storage records	

5.0. Nature and identity of Genetically modified organism

5.1 Name of GMO		
5.2 Modified trait(s) Identification		
☐ Herbicide Tolerance	☐ Modified Oil Composition	☐ Pharmaceutical
☐ Male sterility/restoration	☐ Virus Resistance	☐ Genetic Research
☐ Insect Resistance	☐ Stress Tolerance	☐ Generation of mutants
☐ Nutritional change	☐ Fungal Resistance	☐ Other (Specify)
5.3 Modified Trait(s) Describe each specific new trait associated with this GMO.		

5.4 For each gene construct, describe all genes, regulatory elements, gene products, non-translated DNA sequences and, where applicable, affected metabolic pathways.
5.5 Provide Information on the donor organism including its origin
5.6 Provide Information on recipient and parental organism including origin
5.7 Provide Information on the vector including its origin
5.8 Provide the name of plasmid (construct) and genetic map (map of each genetic construct is required).
5.9 Describe Mode of action of traits (gene product, metabolic pathways).

5.9.1 Is the vector naturally pathogenic?	5.9.2 Is the vector disarmed?	5.9.3 If yes, how was the vector disarmed?
☐ Yes ☐ No	☐ Yes ☐ No	

5.10 Description of elements of the constructs(s): This area should be filled for all constructs and GMO gene elements

5.10.1 Genetic Element	5.10.2 Size (bp)	5.10.3 Source	5.10.4 Function

5.11 Method of introduction of the insert
5.12 Method for detection of genetically modified organism
5.13 Amount of genetically modified organism to be used (volume of the culture, number of plants or animals)
5.14 Information on whether the genetically modified organism has already been approved in some other country and for what purpose.

6.0 Nature and purpose of the contained use activities

6.1 In case of import or export of the genetically modified organism intended for contained use	
6.1.1 The country of origin or destination, as appropriate	6.1.2 Importer or exporter, as appropriate
6.1.3 Maximum amount of genetically modified organism to be imported or exported	6.1.4 Means of transportation
6.1.5 Means of packaging and labeling	
6.2 Measures to protect human health and the environment and biological diversity	
6.3 Frequency and the manner of carrying out control of the occurrence of genetically modified organism inside and outside of the contained space	
6.4 Description of waste management plan	

7.0 Containment measures

7.1 List all protocols proposed to be used at this facility for this application **(***Separate sheets may be annexed***.)**
7.2 Attach inspection report if facility is not yet assigned a biosafety level

7.3 State proposed documentation procedures on the use of genetically modified organisms
7.4 Plan of training of employees prior to the commencement of the use of genetically modified organisms, and the plan of their refresher training

8.0 Declaration of correctness of information

I certify that the above information is true to the best of my knowledge.

Principal Investigator

Name _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Institutional Biosafety Committee (IBC) Review

This application has been reviewed by IBC

Name of IBC_____

Name of chairperson_____

Signature_____ Date_____

THIRD SCHEDULE

Part II

APPLICATION FORM FOR CONTAINED AND CONFINED USE/TRIALS
(GENETICALLY MODIFIED ANIMALS AND ANIMAL HEALTH INPUTS)

This application form must be completed for each individual animal/organism species.

Applications for new and renewal of previously authorized contained or confined research field trials should be submitted separately.
Sections 1, 2 and 3 must be completed for all contained use (laboratory and animal units) trials.
For all confined field trials, Section 4 must be completed, in addition to Sections 1, 2 and 3.

Section 1: General Information

1.0 Title of Planned Introduction	
1.1 Application Type	**1.2 Animal/Organism Species Name** 1.2.1 Latin Name(s)
☐ New ☐ Renewal	1.2.2 Common Name(s)
1.3 Feed Section Indicate whether any animal/organism material generated in the contained or confined research trials will be used as research material for livestock feed.	☐ Yes ☐ No

1.4 Applicant 1.4.1 Name		**1.5 Co-Applicant - Complete if the applicant is <u>not</u> a Kenyan resident** 1.5.1 Name	
1.4.2 Address		1.5.2 Address (Affiliate Institution)	
1.4.3 Telephone	1.4.4 Facsimile\ Email	1.5.3 Telephone	1.5.4 Facsimile/Email
1.6 Facility Manager (Name, Address and Telephone Number)			

1.7 Name of Institutional Biosafety Committee (IBC) - (Attach confirmed minutes of IBC)

1.8 The Proposed Contained or Confined Trial

1.8.1 Brief description of proposed trial
1.8.2 What are the aims and objectives of the proposal?
1.8.3 What is the intended eventual use(s) of the products?

Description of the Unmodified Animal/Organism

1.9 Fertility

1.9.1 Describe mechanisms and frequency of intra-and inter-specific out-crossing.
1.9.2 Describe the mechanism of infertility

1.10 Habitat

1.10.1 What is the natural habitat of the parent animal/organism and its distribution in Kenya?
1.10.2 Where is the origin of the parent animal/organism?
1.10.3 Is the parent animal/organism already present at or near the site of the planned genetically modified organism introduction (s)?
1.10.4 Is the parent animal/organism exotic to Kenya?
1.10.5 Does the unmodi ed form(s) have any adverse effect on: (please indicate adverse effects)
1.10.5.1 Humans, animals, or plants?
1.10.5.2 Agricultural production? (e.g. pests)

1.10.5.3 Any other aspect of the environment? (e.g. invasiveness)
1.10.5.4 List any locations in Kenya or elsewhere where the animal/organism is a known pest.

1.11 Phenotypic Characteristics

Provide information on animal/organism mechanisms responsible for:

1.11.1 Tendency to propagate uncontrollably
1.11.2 Dormancy
1.11.3 Body tissues/fluid dispersal (animals only)
1.11.4 Persistence or dispersal of reproductive structures such as larvae and eggs
1.11.5 Other dispersal mechanisms

1.12 Toxins

1.12.1 List any known toxins produced by this animal/organism, including natural defence compounds.
1.12.2 Indicate the levels at which these compounds induce toxicity.
1.12.3 Indicate the species affected by these toxins.

1.13 Allergens

1.13.1 List any known allergens that emanate from this animals/organisms, including natural defence compounds.

1.14 Please describe any other pathological, ecological and physiological traits that relate to the animal/organism Novel Trait (NT) but not the unmodified animal/organism. A few suggestions of the required information are as described below:

- Generation time in natural ecosystems, sexual and asexual reproductive cycle
- Pathogenicity: infectivity, virulence, infective dose, communicability, possibility of survival outside of human, (toxigenicity, allergenicity = already given), carrier (vector) or means of dissemination of pathogen, biological stability, host range including non-target organisms. Possible activation of latent viruses (proviruses), availability of possible therapies, etc.

▪ Antibiotic resistance and potential use of the antibiotics in humans and domestic organisms ▪ Involvement in environmental processes, e.g. primary production, nutrient turnover, decomposition of organic matter, etc

Section 2: Submission

Please fill out Section 2 for each individual Submission included in the application.

2.1 Name or Designation of animal or organism Novel Trait (NT)		
2.2 Novel Trait(s) Identification (Tick as appropriate)		
☐ Genetic Research. ☐ Insect Resistance. ☐ Nutritional change.	☐ Pharmaceutical. ☐ Stress Tolerance. ☐ Increased production of milk or wool.	☐ Generation of mutants. ☐ Fungal Resistance. ☐ Genes knocked out to allow xenotransplantation.
☐ Faster, more efficient growth rates.	☐ Increased tolerance to cold water for fish.	☐ Improved meat, milk or wool quality.
☐ Leaner, more tender beef and pork.	☐ Resistance to diseases caused by viruses, bacteria and other pathogens.	☐ Milk that lacks allergenic proteins, or results in increased amounts of cheese and yogurt.
☐ Development of animals that serve as models for human diseases to help scientists better understand prevention and treatment strategies.	☐ Possession of characteristics which are environmentally friendly e.g. improved use of dietary phosphorous to lessen the environmental impacts of animal manure.	☐ In the phylogenetic analysis of the amplified nucleic acid sequences to provide novel information on the evolution of pathogens.
☐ Animal vaccines rationally designed for the specific control and eradication of diseases, including the implementation of DIVA (differentiating infected from vaccinated animals) strategies.	☐ Development of diagnostic kits that can not only be used in the laboratory but pen-side tests that can be used in the field to make decisions about the exposure of animals during a disease outbreak.	☐ In epidemiology to characterize pathogens through determination of their nucleotide sequence. The possibility of pinpointing the source of infection can significantly contribute to improved disease control.
☐ Cloning to enable the rapid dissemination of superior genotypes from nucleus breeding flocks and herds, directly to commercial farmers. Genotypes could be provided that are ideally suited for specific product characteristics, disease resistance, or environmental conditions.	☐ Cloning to help salvage the germplasm of indigenous species that are near extinction, including intra-species nuclear transfer procedures which can be used to rescue genes from endangered species.	☐ New and improved medicines for animals. e.g. Gene therapy which involves the insertion of a functional gene or another molecule that contains an information sequence into a cell to achieve a therapeutic effect. Thus, the gene serves as a drug.

☐ Producing large amounts of therapeutic proteins in animal milk or meat (biopharm animals or transgenic animal bioreactors) may be an efficient, relatively low cost method to manufacture many proteins used to treat human diseases or proteins that have industrial value.	☐ In the development of novel diagnostic assays, e.g. PCR and isothermal amplification methods, microarrays, protein detection by nucleic acid amplification, recombinant proteins, synthetic proteins, biosensors etc. to detect the pathogens and/or the immune responses after infection.	☐ Other (Specify)

2.3 Novel Trait(s) Describe each specific novel trait associated with this animal or organism .
2.4. Is GMO Imported or generated locally.
2.4.1 Import Permit No. If the animal or organism novel trait is imported, provide the import permit number issued under the *Animal Diseases Act (Cap 364)* or any other appropriate legislation.
2.5 History Is this submission previously tested in Kenya? If yes, please provide information on trial (s), year(s) of authorization and location(s) tested.
☐ Yes ☐ No

2.6 Trait Introduction and Selection Method

2.6.1 Describe Induction Method (mutagenesis) of Transformation Method (recombinant techniques).
2.6.2 Describe Selection Method.
2.6.3 Describe Mode of action of traits (gene product, metabolic pathways).
2.6.4 Other Provide details of modification by means other than mutagenesis or recombinant techniques.

2.7 Gene Donor

Indicate the gene s donor organism (for animals or organisms transformed using recombinant techniques).

2.8 Transformation Plasmids

Please provide the following information:

2.8.1 Name of plasmid (construct) and genetic map (map of each genetic construct required).		
2.8.2 Is the vector naturally pathogenic? (Tick as appropriate)	2.8.3 Is the vector disarmed? (Tick as appropriate)	2.8.4 If yes, how was the vector disarmed?
☐ Yes ☐ No	☐ Yes ☐ No	
2.8.5 For each gene construct, describe all genes, regulatory elements, gene products, non-translated nucleic acid (DNA/RNA) sequences and, where applicable, affected metabolic pathways.		

2.8.5.1 Description of elements of the constructs(s): This area should be filled for all constructs and GMO gene elements

2.8.5.1.1 Genetic Element	2.8.5.1.2 Size (bp)	2.8.5.1.3 Source	2.8.5.1.4 Function

2.9 Characteristics of the Novel Trait(s)

Spatial and Temporal Trait Expression			
Trait	Expression		
	Constitutive (Yes/No) If not constitutive, indicate the specific tissue(s) in which the trait is expressed (green tissue, seed, pollen, roots, other)	Is the trait expressed during specific developmental stage? If yes, when?	Is the trait inducible? If yes, how?

2.10 Toxicity and Allergenicity of the Novel Trait(s)

2.10.1 To what extent are novel gene products toxic when ingested by native faunal populations, including mammals, birds, reptiles, and insects? How has this been determined?
2.10.2 To what extent are novel gene products allergens? How has this been determined?

2.11 Altered Animal or Organism Characteristics

Please indicate any changes with respect to the following:

2.11.1 Tendency to propagate uncontrollably
2.11.2 Dormancy
2.11.3 Body tissues/fluid dispersal (animals only)
2.11.4 Persistence or dispersal of reproductive structures such as larvae and eggs
2.11.5 Other dispersal mechanisms
2.11.6 What is the frequency of reversion, i.e., loss of genetic modi cation?
2.11.7 How do you verify that you have the desired GMO?
2.11.8 What methods are to be used to test for batch-to-batch consistency?

2.12 Facility Inspection

2.12.1 Has the facility been inspected by the relevant regulatory agency?
☐ Yes ☐ No
Please attach the facility inspection approval letter/certificate

2.13 Trial Site Locations and Trial Protocols

Town and Province	**Legal land and location**	**Trial Protocol(s) – Attach trial Protocol**

Please note: Section 3 must be completed for each Trial Protocol listed above and, for confined field trials. Section 4 must be completed for each Trial Site Location listed above.

Section 3: Contained Use Trial Protocol

Please fill out Section 4 for each Trial Protocol included in the application.

3.1 Trial Protocol (Study) Title:	

3.2 Protocol Fully describe the purpose of the trial, the experimental design, the nature and type of data to be collected and arrangements for transporting the GMO to the trial site. Please include proposed, if any, herbicide/pesticide use.

3.3 Provide work schedule (post approval) to include:	
3.3.1 Intervention (anticipated)	3.3.2 Sampling (anticipated)

3.4 Isolation State the isolation measures being implemented for this trial and give details.

3.6 Spraying/Dipping*

Please complete this section if the trial site is subject to the use of an unregistered product, or a registered product used for a non-registered purpose.

3.6.1 Name of the pesticide	3.6.2 Total area sprayed (Square meters)	3.6.3 Active ingredient

** This information is also required to determine compliance with the Pest Control Products Act.*

3.6.4 Unregistered Pesticide Use Indicate whether the trial site location will be subject to unregistered pesticide use.	Yes ☐	No ☐

3.7 Harvesting

3.7.1 Will animal/organism be allowed to reproduce?	3.7.2 Describe the method of harvest for microbial cultures, embryos and other animal material
Yes ☐ No ☐	
3.7.3 Will any material be retained from the trial?	3.7.4 If yes,
Yes ☐ No ☐	3.7.4.1 Type of material to be retained
	3.7.4.2 Quantity to be retained
	3.7.4.3 Purpose of retaining material.

3.7.5 Describe the storage method and storage location of harvested material.
3.7.6 Provide the name, address and phone number of the contact person responsible for the storage of the material and the proposed storage records.
3.7.7 Describe your management plan to avoid escape of GMO from the trial site

3.8 Disposal Plan

3.8.1 Describe your disposal plan for all material; including how and where the material will be disposed of.
3.8.2 Provide the name, address and phone number of the contact person responsible for the disposal of the material and the proposed disposal records.

3.9 Contingency Plans

4.9.1 Describe your contingency plan in the case of accidental release of GMO material or the breakdown of isolation/quarantine.

3.10 Monitoring the Trial Site

3.10.1 Describe the extent and frequency of trial site monitoring during the course of the trial.
3.10.2 Describe the extent and frequency of trial site monitoring during the post-trial period.
3.10.3 Describe what monitoring results will be recorded, how they will be recorded and who is responsible for them.
3.10.4 If any controlled monitoring procedures are proposed for this trial, detail these.
3.10.5 Describe the provisions to remove or eliminate the GMO from the test site or any other place where it may be found upon completing the trial release and to restore the test site and any such other place to its status quo.

Section 4: Field Trial Site Location

(To be completed for confined field trials only)

Please fill out Section 3 for each Trial Site Location included in the application.

4.1 Town/City (Nearest city)	**4.2 Province**	**4.3 Legal Land Location**
		The NBA will not authorize a confined field trial unless the trial site has been inspected and approved.
4.4 Field Manager 4.4.1 Name	*Must be a Kenyan resident and responsible for the trial site location.*	**4.5 Trial Size** Trial size in meters^2
4.4.2 Address		**4.6 Map location** Has a complete map location of the trial site been provided?
		Yes ☐ No ☐
4.4.3 Telephone	4.4.4 Facsimile	A map and GPS coordinates of the trial site must be received by the NBA within 7 days following commencement of the trial.

4.7 Habitat

4.7.1 Describe the biological diversity of the trial site, including:
4.7.1.0 Potential impacts resulting from the field test
4.7.1.1 Soil
4.7.1.2 Groundwater level
4.7.1.3 Topography
4.7.1.4 Flora and fauna
4.7.1.5 Climate, especially prevailing winds and temperature

4.7.1.6 Former use of the facility
4.7.1.7 Distance from nearest human settlements
4.7.1.8 Distance from surface water body

4.7.2 Is the trial site part of a managed ecosystem?	4.7.3 If yes, how close is the nearest natural ecosystem?
Yes ☐ No ☐	
4.7.4 How close is the site from an area of special ecological interest, including protected areas and sanctuaries?	

4.8 Indigenous Species

4.8.1 Specify the related wild and domesticated species/organisms present at the trial site and how close they are to the novel animal/organism material under test.	
4.8.2 Are there any endangered species on or near the site?	4.8.3 If yes, please list.
Yes ☐ No ☐	
For information on endangered species that may be near the trial site location, contact the Kenya Wildlife Service, P.O. Box 40241 NAIROBI, Email: kws@kws.org, Website: www.kws.org, Langata Road, Telephone (+245-20-501081.	

4.8.4 What mechanisms are in place to prevent the local fauna from removing novel plant/animal/organism material from the site?

4.9 Post-Trial Land Use

4.9.1 Name and address of the person(s) having control over the site during the post-trial land use period.
4.9.2 What is the anticipated post-trial land use?

4.9.3 Describe how the site boundaries will be marked to facilitate subsequent inspection.

4.10 Submissions and Trial Protocols

Please list all submissions and trial protocols used at this site.

Submission (Animal or organism novel trait designation – List of possible designations/unique identifier)	**Trial Protocol(s)**

Please note: Section 2 must be completed for each Submission listed above and Section 4 must be completed for each Trial Protocol listed above.

4.11 Public Notice

4.11.1 How will you provide public notification of your proposed field trial?

Section 5: Certification

I certify that the above information is true to the best of my knowledge.

Principal Investigator

Name _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Institutional Biosafety Committee (IBC) Review

This application has been reviewed by IBC

Name of IBC_____

Name of chairperson_____

Signature_____ Date_____

THIRD SCHEDULE

Part III

APPLICATION FORM FOR CONFINED FIELD TRIAL (PLANTS)

This application form must be completed for each individual genetically modified plant. The application may include more than one submission of a genetic modification of that particular species, Trial site Location and/or Trial Protocol.

Complete section 2 for each submission, section 3 for each trial site and section 4 for each trial protocol included in the application. All sections must be completed. Additional pages can be attached if the space provided is not sufficient.

Applications for new and renewal of previously authorized confined research field trials should be submitted separately.

Section 1.0 General Information

<table>
<tr><td>1.1 Application Type</td><td>1.2 Plant Species Name
1.2.1 Latin Name(s)</td></tr>
<tr><td>❑ New
❑ Renewal
❑ Date of submission of the application</td><td></td></tr>
<tr><td></td><td>1.2.2 Common Name(s)</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td>(Indicate if perennials, annuals, trees etc.)</td></tr>
<tr><td colspan="2">1.3 Feed Section
Indicate whether any plant material generated in the confined field trials will be used as research material for livestock feed.
Yes ☐ No ☐</td></tr>
<tr><td>1.4 Applicant
1.4.1 Name</td><td>1.5 Name of Institutional Biosafety Committee.
(Attach signed minutes of Institutional Biosafety Committee discussions)</td></tr>
<tr><td rowspan="3"></td><td></td></tr>
<tr><td>1.5.1 Institution of applicant</td></tr>
<tr><td></td></tr>
</table>

		1.5.2 Registration Status in Kenya	
		1.5.2.1 Affiliating institution (if institution of applicant is not registered in Kenya)	
1.4.2 Address		1.5.3 Address	
1.4.3 Telephone	1.4.4 Facsimile/email	1.5.3 Telephone	1.5.4 Facsimile/email

1.6 Summary of trial

1.6.1 Brief Description of Proposed Trial
1.6.2 Objective
1.6.3 What is the aim of the proposed trial of the genetically modi ed organism?
1.6.4. What are the bene ts of this approach compared with other possible methods, especially those not involving planned trial?
1.6.5 If the trial is successful, do you intend to propose a general release of the GMO?
1.6.6 Summary of the risk assessment

1.7 Description of unmodified plant species

1.7.1 Describe mechanisms and frequency of intra-and inter-specific out-crossing.
1.7.2 Describe the mechanism of infertility

1.8 Phenotypic Characteristics

Provide information on plant mechanisms responsible for:

1.8.1 Tendency to weediness

1.8.2 Allelopathy
1.8.3 Dormancy
1.8.4 Pollen dispersal
1.8.5 Seed dispersal
1.8.6 Vegetative dispersal
1.8.7 Other dispersal
1.8.8 Other Characteristics

1.9 Toxins

1.9.1 List any known toxins for this species, including natural defence compounds.
1.9.2 Indicate the levels at which these compounds induce toxicity.
1.9.3 Indicate the species affected by these toxins.

1.10 Allergens

1.10.1 List any known allergens for this species, including natural defence compounds.

1.11 Describe any pathological, ecological and physiological traits that relate to the genetically modified organism but not to the unmodified plant.

Section 2: Submission

Fill out section 2 for each individual submission (genetic modification of that particular species) included in the application.

2.1 Name or Designation of genetically modified organism		
2.2 Modified trait**(s) Identification**		
☐ Herbicide Tolerance	☐ Modified Oil Composition	☐ Pharmaceutical
☐ Male sterility/restoration	☐ Virus Resistance	☐ Genetic Research
☐ Insect Resistance	☐ Stress Tolerance	☐ Generation of mutants
☐ Nutritional change	☐ Fungal Resistance	☐ Other (Specify)
2.3 Modified Trait(s) Describe each specific novel trait associated with this genetically modified organism.		
2.4 Status of authorization 2.4.1 Is genetically modified organism Imported or generated locally.		
2.4.2 If imported, provide the import permit number issued under any other authorization.		
2.5 History Submission previously tested in Kenya?		
☐ Yes ☐ No		
If yes, please provide information on trial (s), year(s) of authorization and location(s) tested.		

2.6 Trait Introduction and Selection Method

2.6.1 Describe Introduction Method (mutagenesis) or Transformation Method (*r*DNA techniques).
2.6.2 Describe Trait Selection Method.

2.6.3 Describe Mode of action of traits (gene product, metabolic pathways).
2.6.4 Other techniques of modification Provide details of modification by means other than mutagenesis or recombinant DNA techniques.

2.7 Gene Donor (s)

Indicate the gene donor organism(s) (for plants transformed using rDNA techniques).

2.8 Transformation Vectors and/or Plasmids

Please provide the following information:

2.8.1 Name of plasmid (construct) and genetic map (map of each genetic construct required).		
2.8.2 Is the vector naturally pathogenic?	2.8.3 Is the vector disarmed?	2.8.4 If yes, how was the vector disarmed?
☐ Yes ☐ No	☐ Yes ☐ No	
2.8.5 For each gene construct, describe all genes, regulatory elements, gene products, non-translated DNA sequences and, where applicable, affected metabolic pathways.		

2.9 Characteristics of the transformed Trait(s)

2.9.1 Spatial and Temporal Trait Expression			
Trait	Expression		
	2.9.1.1 Constitutive ☐ Yes ☐ No If not constitutive, indicate the specific tissue(s) in which the trait is expressed (green tissue, seed, pollen, roots, other)	2.9.1.2 Is the trait expressed during specific developmental stage? ☐ Yes ☐ No If yes, when?	2.9.1.3 Is the trait inducible? ☐ Yes ☐ No If yes, how?

2.10 Toxicity and Allergenicity of the Transformed Trait(s)

2.10.1 To what extent are transformed gene products toxic when ingested by native fauna populations, including mammals, birds, reptiles, and insects?
2.10.1.1How has this been determined?
2.10.2 To what extent are transformed gene products allergens?
2.10.2.1 How has this been determined?

2.11 Altered Plant Characteristics

Please indicate any changes with respect to the following:

2.11.1 Persistence and invasiveness
2.11.2 Allelopathy
2.11.3 Dormancy

2.11.4 Pollen Dispersal
2.11.5 Seed Dispersal
2.11.6 Vegetative Dispersal
2.11.7 Any other Dispersal Mechanism
2.11.8 Any other altered characteristic (s) Are any of the likely gains directly linked to losses in other characteristics of the species?
2.11.9 Please describe if any toxins and allergens are produced by the GMO that were not produced by the unmodified plant.
2.11.10 What is the frequency of reversion, i.e., loss of genetic modi cation?
2.11.11 How do you verify that you have the desired GMO?
2.11.12 What methods are to be used to test for batch-to-batch consistency?

2.12 Trial Site Locations and Trial Protocols

2.12.1 Town and Province	**2.12.2 Legal land and location**	**2.12.3 Trial Protocol(s) (Attach trial Protocol)**

Please note: Section 3 must be completed for each Trial Site Location listed above and Section 4 must be completed for each Trial Protocol listed above.

Section 3: Confined Field Trial Site

Please fill out Section 3 for each Trial Site Location included in the application.

3.1 Town/City (Nearest city)	**3.2 Province**	**3.3 Legal Land Location**
The National Biosafety Authority will not authorize a confined field trial until the legal land location of the trial site has been given.		
3.4 Field Manager responsible for the trial site 3.4.1 Name (*Must be affiliated to a research institution registered in Kenya*)		3.4.2 Address
3.4.3 Telephone		3.4.4 Facsimile
3.5 Trial Size Trial size in meters^2 / Hectarage		**3.6 Location Map** Attach a complete map (including GPS coordinates) of the location of the trial site
3.6.1 Has the suitability of the contained use facility to conduct contained use activity been assessed. Explain		

3.7 Habitat

3.7.1 Describe the biological diversity of the trial site, including:
3.7.1.0 Potential impacts resulting from the field test
3.7.1.1 Soil
3.7.1.2 Groundwater level

3.7.1.4 Topography
3.7.1.5 Flora and fauna
3.7.1.6 Climate, especially prevailing winds direction and Temperate
3.7.1.7 Former use of the facility
3.7.1.8 Distance from nearest human settlements
3.7.1.9 Distance from surface water body

3.7.2 Is the trial site part a of a managed ecosystem?	3.7.3 If yes, how close is the nearest natural ecosystem?
Yes ☐ No☐	

3.7.4 How close is the site from an area of special ecological interest, including protected areas and sanctuaries?

3.8 Indigenous Species

3.8.1 Specify the related wild and domesticated species/organisms present at the trial site and how close they are to the modified plant material under test.

3.8.2 Are there any endangered species on or near the site?	3.8.3 If yes, list
Yes ☐ No☐	
NB: For information on endangered species that may be near the trial site location, contact the Kenya Wildlife Service, P.O. Box 40241 NAIROBI, Email: kws@kws.org, Website: www.kws.org, Langata Road, Telephone +245-20-501081.	
3.8.4 What mechanisms are in place to prevent the local fauna from removing the modified plants material from the site?	

3.9 Post-Trial Land Use

3.9.1 **P**erson(s) having control over the site during the post-harvest/trial land use period, including the isolation area	
3.9. 1.1 Name	3.9.1.2 Address
3.9.1.3 Telephone	3.9.1.4 Facsimile
3.9.2 Describe how the site boundaries will be marked to facilitate subsequent inspection.	

3.10 Submissions and Trial Protocols

Please list all submissions and trial protocols used at this site.

3.10.1 Submission (genetically modified organism designation – List of possible designations/unique identifier)	**3.10.2 Trial Protocol(s)**

***Please note*: Section 2 must be completed for each Submission listed above and Section 4 must be completed for each Trial Protocol listed above.**

Section 4: Confined Field Trial Protocol

Please fill out Section 4 for each Trial Protocol included in the application.

4.1 Trial Protocol (Study) Title:	

4.2 Protocol 4.2.1 Fully describe the following
4.2.2 Purpose of the field trial
4.2.3 Experimental design
4.2.4 Nature and type of data to be collected
4.2.5 Arrangements for transporting the GMO to the trial site
4.2.6 Proposed, if any, herbicide/pesticide use

4.3 Provide work schedule (post approval) to include:	
4.3.1 Planting (anticipated)	4.3.2 Harvest/Sampling (anticipated)

4.4 Isolation (*Recommended special isolation distances for some plants is shown in this form*) State the isolation measures being implemented for this trial and give details.
4.4.1 If using bags or nets, please provide the mesh size of the material being used and justify the effectiveness.

4.5 Seeding

4.5.1 Material will be planted by:	4.5.2 Will any unmodified plants of the same or a related species be planted at the trial site location?	
		4.5.3 If yes, state reason
4.5.1.1 Hand ☐ Or 4.5.1.2Mechanically ☐		
4.5.4 Describe your management plan to avoid the dissemination, e.g. of seed, from the trial site.		
4.5.5 Describe your plan for recording the quantities of seed planted/GMO used and accounting for any excess		
4.5.6 Describe the disposition plan, including how and where any excess, or non-planted seed/GMO will be disposed of or stored.		

4.6 Spraying*

Complete this section if the trial site is subject to the use of an unregistered product, or a registered product used for a non-registered purpose.

4.6.1 Registered pesticide for unregistered use		
4.6.1.1 Name of the pesticide	4.6.1.2 Total area to be sprayed (m^2 /hectarage)	4.6.1.3 Active ingredient
4.6.2 Unregistered Pesticide Use		Yes ☐ No ☐
4.6.2.1 Name of the pesticide	4.6.2.2 Total area to be sprayed (m^2 /hectarage)	4.6.2.3 Active ingredient
* This information is required to determine compliance with the Pest Control Products Act *(Cap 346).*		

4.7 Harvesting

4.7.1 Will plants be allowed to set seed or to reproduce?	4.7.2 Describe the method of harvest for seed and other plant material (e.g. by hand, small plot combine, etc.)
Yes ☐ No ☐	
4.7.3 Will any harvested plant material be retained from the trial?	4.7.4 Material retention If yes
	4.7.4.1 Type (e.g. seed, leaves, etc.)
Yes ☐ No ☐	
	4.7.4.2 Quantity to be retained
	4.7.4.3 Purpose of retaining material

4.7.5 For harvested plant material, describe the following if applicable: 4.7.5.1 The storage method.
4.7.5.2 Storage location
4.7.6 Person responsible for the storage of the material

4.7.6.1 Name	4.7.6.2 Address
4.7.6.3 Telephone	4.7.6.4 Facsimile

4.7.6.5 Proposed storage records
4.7.7 Describe how the site boundaries will be marked to facilitate subsequent inspection.
4.7.8 Describe your management plan to avoid dissemination of seed/GMO from the trial site during harvesting.

4.8 Disposal

4.8.1 Describe your disposal plan for all propagules and non-propagule plant material; including how and where the material will be disposed of.	
4.8.2 Person responsible for the disposal of the material	
4.8.2.1 Name	4.8.2.2 Address
4.8.2.3 Telephone	4.8.2.4 Facsimile
4.8.2.5 Proposed disposal records	

4.9 Contingency Plans

4.9.1 Describe your contingency plan in the case of accidental release of seed/GMO plant material (e.g. spills), or the breakdown of isolation.
4.9.2 Describe your contingency plans if after accidental release there is unexpected spread of the transformed plant material.

4.10 Monitoring the Trial Site

4.10.1 Describe the extent and frequency of trial site monitoring during the course of the field trial.
4.10.2 Describe the extent and frequency of trial site monitoring during the post-trial period.
4.10.3 Person responsible for monitoring

4.10.3.1 Describe what monitoring results will be recorded
4.10.3.2 Describe how monitoring results will be recorded
4.10.4 If any controlled monitoring procedures are proposed for this trial (e.g. planting of unmodified plants of a related species to determine possibility and frequency of gene flow), detail these.
4.10.5 Describe the provisions to remove or eliminate the GMO from the test site or any other place where it may be found upon completing the trial and to restore the test site and any such other place to its status quo.

4.11 Public Notice

4.11.1 How will you provide public notification of your proposed field trial?

Section 5: Hectarage

Please indicate the number of hectares per submission per province
(Limit of 5 ha cumulative per submission per province)

Province:

Submission (genetically modified organism designation):

Trial site location		
Legal land location	Town	Number of hectares

Total number of hectares:

Submission (Genetically modified organism designation):

Trial site location		
Legal land location	Town	Number of hectares

Total number of hectares:

RECOMMENDED SPACIAL ISOLATION DISTANCES (IN METRES) FROM POLLEN SOURCES FOR SOME PLANTS

	Isolation Distances (in meters) from pollen sources for selected crops			
	Crop	**Foundation**	**Registered**	**Certified**
1.	Corn (inbred)[a]	200	-	-
2.	Corn (hybrid) [b]	-	-	200
3.	Cotton (hybrid)	0	0	0
4.	Millet (selfed)[c]	400	400	200
5.	Millet (crossed) d	0	0	0
6.	Mung beans [d]	0	0	0
7.	Onion	1,600	800	400
8.	Peanuts [d]	0	0	0
9.	Pepper	200	100	30
10.	Potato (male fertile)	400	400	400
11.	Potato (male sterile)	0	0	0
12.	Rapeseed (selfed)	400		100
13.	Rapeseed (crossed)	200		100
14.	Rice	3	3	3
15.	Sorghum (hybrid)	300	300	200
16.	Sorghum (hybrid)			200
17.	Soybeans [d]	0	0	0
18.	Sun ower [e]	800	800	800
19.	Tomato	200	100	10
20.	Watermelon [f]	800	800	400

a. No isolation is required for the production of hand-pollinated seed.
b. Isolation distance between upland and Egyptian types must be at least 400, 400, and 200 meters for Foundation, Registered, and Certi ed classes, respectively.
c. Distance adequate to prevent mechanical mixture is necessary.
d. Isolation between millets of different genera must be 2 meters.
e. An isolation distance of 1,600 meters is required between oil and non-oil sun ower types and between either type and other volunteers or wild types.
f. The minimum distance may be reduced by 50 percent if natural or arti cial barriers adequately protect the eld

Section 6: Certification

I certify that the above information is true to the best of my knowledge.

I certify that the above information is true to the best of my knowledge.

Principal Investigator

Name _____

Signature _____ Date _____

Collaborator(s)

Name(s) _____

Signature _____ Date _____

Institutional Biosafety Committee (IBC) Review

This application has been reviewed by IBC

Name of IBC_____

Name of chairperson_____

Signature_____ Date_____

FOURTH SCHEDULE ..... (r. 9)

THE NATIONAL BIOSAFETY AUTHORITY

APPROVAL TO CONDUCT CONTAINED USE ACTIVITIES USING GENETICALLY MODIFIED ORGANISMS

<table>
<tr><td>APPROVAL NUMBER_____</td><td>DATE OF ISSUE_____

VALID UP TO_____</td></tr>
<tr><td colspan="2">In accordance with regulation 9 of the Biosafety (Contained Use) Regulations, of the Biosafety Act, I hereby grant the approval to undertake contained use activity of the genetically modified organism herein stated in the research institution mentioned in this approval.</td></tr>
<tr><td>Name of the Applicant/ Research Institution</td><td></td></tr>
<tr><td>Specification of the genetically modified organism</td><td></td></tr>
<tr><td>Specification of the genetic modification</td><td></td></tr>
<tr><td>Risk category</td><td></td></tr>
<tr><td>Purpose of the use</td><td></td></tr>
<tr><td colspan="2">This approval is granted subject to the following conditions-
1._____
2._____
3._____
4._____</td></tr>
<tr><td colspan="2">This approval is not transferrable and is valid for:</td></tr>
<tr><td>Place:

Date</td><td>Name:

Signature:

The Chief Executive Officer
National Biosafety Authority</td></tr>
</table>

FIFTH SCHEDULE ..... (r 13)

CONTINGENCY PLAN

1.0 Name of the Applicant	2.0 Address of the Work place
3.0 Accurate identification of premises, sites and facilities where the genetically modified organisms are used and the accurate identification of the place, premises, sites or facilities are situated (describe and attach map)	
4.0 Plan of the workplace with identification of places that are important for the reduction of accident consequences, places of storage of genetically modified organisms, protective measures of the contained space	
5.0 Description of an accident that can occur in space or place where the genetically modified organism is used	
6.0 Review on possible accident impacts on human health and the environment, including the methods for detection of such impacts and effective protection from the impacts	
7.0 Validated procedures for the detection of presence of genetically modified organisms	8.0 Validated methods and procedures available for liquidation of genetically modified organisms and for decontamination of an affected space
9.0 Methods of isolation of spaces and facilities affected by accident including methods of control of isolation effectiveness	10.0 Methods of disposal or remediation of plants and animals that were in the affected area at the time of the accident
11.0 Description and layout of decontamination agents available to liquidate genetically modified organisms and decontaminate an affected space	
12.0 Procedures for protection of human health and the environment in case of undesirable effects of an accident	
13.0 Description of the procedure of subsequent monitoring of sites and premises after the termination of a decontaminated process	

14.0 Persons to whom the contingency plan is submitted to	15.0 Manner of notification of an accident to the Authority and relevant regulatory agency including the manner of warning the inhabitants on its possible consequences
16.0 Undertaking of the applicant (attach affidavit)	
16.1 Name	Signature

DECLARATION BY APPLICANT

I, of P.O. Box No. of (Company/ Institution) . . ID No. ., hereby declare that to the best of my knowledge and belief the particulars given in this application are true and correct.

Declared by } _____

this day of } **DECLARANT**

at }

Before me
Commissioner for Oaths/Magistrate/Judge

Dated , 2011.

HELLEN SAMBILI,
Minister for Higher Education, Science and Technology.