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Report Highlights:

The Ministry of Natural Resources and Environment anticipates that the Biodiversity Law, which includes biosafety regulations covering research, field trial, and commercialization for genetically engineered plant, animal, and microorganisms, will be sent to the Cabinet for approval by the end of the calendar year. After receiving Cabinet approval, the draft bill will enter the legislative process. In addition, the Thai Food and Drug Administration is finalizing two new genetically engineered (GE) food regulations regarding GE food import, production, and labeling.

Executive Summary:

The production, trade, policy, and marketing for plant and animal biotechnology in Thailand has remained unchanged for several years. However, there has been significant developments towards finalizing the Biodiversity Act. The Ministry of Natural Resources and Environment (MONRE) anticipates that the draft bill will be sent to the Cabinet for approval by the end of the year. The bill will then head to the National Legislative Assembly (NLA). The Biodiversity Act incorporates many of the areas covered by the failed 2015 Biosafety Act. In 2015, the draft Biosafety Act received approval from the Cabinet before being rejected a month later by the NLA.

The Thai Food and Drug Administration (TFDA) plans to implement two notifications regarding genetically engineered (GE) food and labeling in early 2021. TFDA is expected to send the two draft notifications to the Management Council by the end of 2020. The draft notifications will be sent to the Minister of Public Health for final approval before being printed in the National Gazette once they are approved by the Management Council. The TFDA has been working on these two draft notifications since 2019. Developers of GE crops and Thai industry stakeholders are concerned that, if implemented, the regulations would delay or disrupt the trade flow of soybeans and corn, and all processed foods containing GE organisms and microorganisms into Thailand.

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CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

a. PRODUCT DEVELOPMENT: Although there were field trials for several transgenic plant varieties in the 1990s, the Thai government issued a blanket ban in 2003 on further field trials after public opposition. The Cabinet, however, gave permission for GE crop field trials to be conducted in Thailand under certain restrictions in 2007. Despite the change in regulations, no GE crop field trials have been conducted in Thailand since the 2003 ban. Monsanto Thailand planned to partner with Naresuan University to conduct a field trial for NK603 herbicide-resistant corn in 2013, but Naresuan University changed course and declined to host the project. In addition, Syngenta Thailand and Pioneer Thailand have also discontinued their projects to conduct greenhouse trials of GE corn seeds.

b. COMMERCIAL PRODUCTION: Thailand has a de facto ban on GE crop cultivation.

c. EXPORTS: Thailand does not officially export GE products since there is no legal domestic cultivation of GE crops. However, more than 40 shipments of papayas originating from Thailand were detected positive for GE contamination by the European Union (EU) Rapid Alert System for Food and Feed (RASFF) report and rejected from 2013-2017. There were no detections in 2018 and 2020, but two shipments were detected and rejected in 2019. In 2014, the Department of Agriculture (DOA) regulated that all fresh or dried papaya or food products containing papaya exported to the EU and Japan are subject to GE detection testing prior to shipping. In 2016, the DOA set up formal criteria that exporters of Thai fresh papaya must meet in order to export to the EU, Switzerland, Norway, Iceland, China, and Japan.

d. IMPORTS: Thailand limits the importation of GE products to processed food, soybean and corn for feed and industrial uses, and cotton lint. It is estimated that 95 percent of total soybean imports and 85-90 percent of cotton imports in 2019 came from GE plants. According to the Thai Customs Department, Thailand imported $1.2 billion of soybeans and $392 million of cotton from all sources in 2019. Cotton and soybean imports from the United States totaled $291 million in the same year.

e. FOOD AID: Thailand is not a food aid recipient and does not provide food aid on a regular basis. Rice has occasionally been used for disaster relief in other neighboring countries.

f. TRADE BARRIERS: There are no additional biotechnology-related trade barriers. The TFDA is in the process of finalizing two new "genetically modified" (GM)[1] food regulations. The industry is concerned that, if enforced, the regulations will delay or disrupt the trade flow of soybeans and corn, and all processed foods containing "GM organisms and microorganisms" into Thailand.

[1] Specifically denoted in the Thai notifications as "GM" when referring to GE or genetically engineered

PART B: POLICY

a. REGULATORY FRAMEWORK: The four main government agencies involved in the regulation of agricultural biotechnology are the: 1) DOA, Ministry of Agriculture and Cooperatives (MOAC), responsible for regulating imported GE seed for planting, conducting GE research and development, and conducting risk assessment; 2) National Center for Genetic Engineering and Biotechnology (BIOTEC), Ministry of Higher Education, Science, Research and Innovation (MHESI), responsible for conducting GE crop research and development including DNA technology laboratory development and providing technical advice and research funding; 3) Ministry of Natural Resources and Environment (MONRE), responsible for drafting the National Biosafety Law and being the national focal point for Convention on Biological Diversity (CBD) and Cartagena Protocol on Biosafety (CPB); and 4) TFDA, Ministry of Public Health (MOPH), responsible for regulating and monitoring the use of GE food including labeling and regulating imports of GE-contained food products. In addition, the National Bureau of Agricultural Commodity and Food Standards (ACFS) under MOAC represents the Thai Government in negotiating all SPS issues in international organizations (i.e., WTO, Codex, OIE, etc.), including the safety of GE products.

The National Biosafety Committee (NBC), Ministry of Science and Technology, was established in 1993 to serve as a coordination body to develop national biosafety guidelines, to oversee imports of living organisms, to review and direct research methodologies. The NBC worked with the Institutional Biosafety Committee (IBC) to achieve its mandate. IBC is a working group comprised of various institutions, mainly universities and government agencies, where GE research and development project is conducted. IBC is mainly responsible for controlling and monitoring GE projects in order to comply with national biosafety guidelines. IBC is also required to report project proposals and project evaluations to NBC. However, due to a lack of real field trial activities, the NBC is no longer active. The review of biosafety issues for GE plants and animals is currently being conducted by the Technical Biosafety Committee (TBC), an ad hoc technical advisor of BIOTEC.

MONRE anticipates that its draft Biodiversity Act, which covers research, field trial, and commercialization for genetically modified plant, animal, and microorganisms, will be sent to the Cabinet for approval by the end of the year. The draft act will then need to get approval from the NLA and the King of Thailand before becoming law. The draft Biodiversity Act represents a more than 10-year process to develop a law governing biodiversity. The recent push to finalize biodiversity legislation is from the National Strategy developed in 2018. The National Strategy provided guidelines on promoting economic development while also managing the sustainability of Thailand's national resources. The National Reform Plan in Natural Resources and Environment (NRP) was published in the Royal Gazette in April 2018 in response to the National Strategy and stated that the drafting of a comprehensive biodiversity law must be initiated by 2020.

Thailand is also adopting the economic growth model known as Thailand 4.0, which mandates agriculture and biotechnology as one of the growth engines. One of the projects initiated under Thailand 4.0 is the Agriculture 4.0 project. The Agriculture 4.0 project's objective is to improve crop productivity using innovative biotechnologies for more efficient farming while reducing negative impacts on the environment and society.

The 2015 Biosafety Act received Cabinet approval in November 2015 only to be rejected by the NLA a month later due to heavy criticism from anti-biotech non-governmental organizations (NGO) claiming that the law legalized GE. On November 1, 2016, the Chairman of the NLA's Science, Telecommunication, and Public Communication Committee created a new subcommittee to draft a new Biosafety Act. A revised draft was completed on December 27, 2016. NLA assigned MONRE with task of approving their draft legislation and preparing it for a Cabinet review. MONRE chose to include the draft NLA biosafety legislation as a part of its draft Biodiversity Act. The draft legislation's definition of biosafety covers environmental safety, human health safety, and sustainable biodiversity. Some are concerned that this is too broad of a definition and the complicated organizational process might impede future GE field trials and GE commercialization.

MONRE held public hearings on the revised draft of the Biodiversity Act from March 16 to May 4, 2020. The draft Biodiversity Act's definition of biosafety covers access to biological resources, the fair and equitable sharing of benefits arising from utilization, utilization of biodiversity, living modified organisms (LMOs), and control of effects on biodiversity. The draft legislation adopted the Cartagena Protocol on biosafety provision on the control of effects of LMOs. In addition, the draft uses the precautionary principle on the control and approval of LMOs in order to avoid the same criticism that anti-biotech NGOs had with the 2015 Biosafety Act.

The draft legislation stipulates that only LMOs on the "Release List" will be allowed into the environment. Applicants wishing to add an LMO to the Release List must submit an application with a biosafety risk assessment report to the competent authority. Permission from the competent authority is required in order to import, export, transfer, commence contained use activity, and field trials. In addition, the owner of both domestically developed and imported LMOs must comply with ministerial regulations as well if undertaking the following activities; importation, exportation, transportation, packaging, classification, usage in controlled environment and in field (a biosafety assessment is required before an environmental release). The draft legislation also stipulates that any person who possess LMOs that appear to be unsafe, harmful or able to cause adverse effect to the environment, human or animal health, or socio-economy must dispose or destroy the LMOs at his/her own expense.

b. APPROVALS: Currently, no GE crops have been approved for cultivation nor have any field trials been undertaken. Imports of GE crops are limited to corn, soybean, and cotton for feed and industrial use.

c. STACKED or PYRAMIDED EVENT APPROVALS: No GE crops with stacked or pyramided events have been approved for cultivation thus far. No additional requirements for imports of GE soybeans, corn, and cotton with stacked events for feed and industrial use are applied. Thailand currently lacks a specified regulatory framework for the approval of GE stacked/pyramided events. BIOTEC published its guidelines for safety assessment of GE stacked/pyramided events in 2014, but these guidelines have not been officially adopted by the TFDA, which is the agency responsible for food approval. Further details are discussed in the 'Labeling' paragraph that follows.

d. FIELD TESTING: According to the 2007 Cabinet's criteria, all field trials must be located on government properties, hold public hearings prior to implementation, and obtain approval from the Ministerial Cabinet.

e. INNOVATIVE BIOTECHNOLOGIES: Some academic and research institutes are unofficially conducting gene editing for a few crops (such as tomato, cucumber, sugarcane, orchid), but research is limited to laboratory experiments. Thailand lacks a regulatory framework for plants developed by this technology.

f. COEXISTENCE: Thailand has not established any framework or guidelines regarding coexistence with non-GE crops.

g. LABELING AND TRACABILITY: The TFDA under the MOPH enforces the labeling requirement for processed foods containing GE plant materials. Effective in 2002, the MOPH lists 22 food products that are subject to labeling requirements when their contents exceed the five percent threshold. The labeling requirements are the following:

   i. food containing only one main ingredient should include a statement of "genetically modified" in conjunction with, or in close proximity to, the name of foods such as "genetically modified corn," or "tofu produced from genetically modified soybean," etc.; and
   ii. for multi-ingredient foods, labels should include a statement of "genetically modified" in conjunction with, or in close proximity to, or under the names of top three main ingredients of the food product such as "genetically modified corn starch," etc.

However, the regulation is not applied to small producers who produce and directly sell to consumers. The products subjected to labeling requirements are the following:

1. Soybeans
2. Cooked soybeans
3. Roasted soybeans
4. Bottled or canned soybeans or soybeans contained in retort pouch
5. Natto
6. Miso
7. Tofu or tofu fried in oil
8. Frozen tofu, soybean gluten from tofu or its products
9. Soybean milk
10. Soybean flour
11. Food containing product(s) from 1 to 10 as the main ingredient
12. Food containing soybean protein as main ingredient
13. Food containing green soybean as main ingredient
14. Food containing soybean sprout as main ingredient
15. Corn
16. Popcorn
17. Frozen or chilled corn
18. Bottled or canned corn or corn contained in heat-treated pouch
19. Corn flour or cornstarch
20. Snack foods deriving from corn as main ingredient
21. Food containing product(s) from 15 to 20 as the main ingredient
22. Food containing corn grits as main ingredient

TFDA is finalizing two new GE food regulations, namely: 1) Notification on Genetically Modified Foods (GMFs); and 2) Notification on Principles, Conditions, and Food Labeling for Food Derived from GM Organisms. Thailand notified the WTO on the Notification on GMFs on July 5, 2019 (G/SPS/N/THA 264). The deadline for comments from WTO member stakeholders was September 3, 2019.

The main contents of the "GMF" Notification are the following:

i. the notification covers all products of "GM plants, GM microorganisms (GMM), and GM animals";
ii. "GMFs" are meant to cover all materials used as food ingredients, food additives, and products for human consumption; and
iii. once the regulation is implemented, the import and/or production of food derived from "GM organisms" would be allowed only for the following:

    1. Food derived from "GM organisms/events" that are on a list of approved organisms (a positive list). The current positive list provided in Annex I of the notification covers only 26 "GM plant organisms" (all belonging to soybeans and corn).
    2. As for food derived from "GM plant organisms" that have not been approved, TFDA will grant a grace period of 5 years from the effective date of the regulation, but this waiver is subject to the following criteria:

        a) importers/processors must present evidence that particular "GM plant organism(s)" is(are) approved in at least 3 countries, excluding countries that developed that particular "GM plant organism(s);"
        b) importers/exporters/plant developers must prepare and provide reference material, method of analysis, and other necessary information for analysis to the Thai Department of Medical Science or a government agency accredited by TFDA for food safety risk assessment; and
        c) each shipment of imported grain/products must be accompanied by a certificate that states the food is derived from a "GM organism or events" that are on the waiver under #2.

Thailand notified the WTO on the Notification on the Labeling of GMFs on November 1, 2019 (G/SPS/N/THA 275). The deadline for comments from WTO member stakeholders was December 31, 2019.

The main contents of the Labeling of "GMFs" Notification are the following:

i. Food containing or consisting of "GM plants, GM animals and GMMs" equal to or greater than 5 percent for each ingredient is required to be labeled.
ii. TFDA will exempt food products from labeling in case of
    a. such food product can be proved to be a "non-GM organisms" by traceability certification system;
    b. produced by small scaled producers;
    c. prepared and sold by restaurants or vending machines;

d. do not contain any detectable genetic material or protein resulting from genetic modification in the final product.

iii. TFDA will not allow claim of "Free from GMF" or "Non-GM Food" or any other similar text or symbols.

iv. Labeling of "GMFs", which were allowed before the enforcement date of the draft, shall have 2-year grace period from the enactment date of the draft.

GE crop developers and Thai industry stakeholders are concerned that, if implemented, this regulation would delay or disrupt the trade flow of soybeans, corn, and all processed foods containing "GM organisms and microorganisms" into Thailand given that a positive list of only 26 organisms or events is not very comprehensive and a 5-year grace period waiver is likely to prove unpractical. The industry groups that are likely to be affected by this new regulation proposed that the TFDA do the following recommendations:

1. detach submission of approval from three countries from the dossier submission;
2. accept CropLife's global list as the official temporary approval list to ensure no trade interruptions happen while the tech providers have reasonable lead time to submit all dossiers; and
3. clarify the requirements regarding reference material, method of analysis submission, and detection method for labeling.

In August 2019, TFDA unofficially responded that it would take the request of the industry groups and comments from different WTO member countries, including U.S. comments, into its consideration.

In June 2020, TFDA sent the draft notification back to its technical committee for a review. The current draft states that labeling will be required only when the presence of each GM product ingredients in any foods is greater than 5 percent (by total weight). Once finalized, TFDA will reply and provide information to WTO members' comments. TFDA plans to implement these two regulations in early 2021.

h. MONITORING AND TESTING: Although Thailand has laboratory facilities to test GE products, sources indicate that officials do not closely test or monitor manufacturers' compliance of the biotech food labeling requirements.

i. LOW LEVEL PRESENCE (LLP) POLICY: Thailand has not established any framework or guidelines regarding low level presence.

j. ADDITIONAL REGULATORY REQUIREMENTS: None.

k. INTELLECTUAL PROPERTY RIGHTS (IPR): Seed developers believe that the current Thai Plant Variety Protection Act (PVP) does not protect patents for new plant varieties derived from genetic engineering. In particular, the PVP regulates that the use of foreign plant varieties to develop new breed seed in Thailand, including GE crop seeds, is subject to a benefit sharing requirement for local communities. The Thai Seed Trade Association (THASTA) and other stakeholders have worked with MOAC over the past couple years to revise these provisions in accordance with the

International Union for the Protection of New Variety of Plants' (UPOV) guidelines. Copyright protection for GE crops is covered under Trademark Act (No.2) B.E. 2543 (2000), which is regulated by the Ministry of Commerce's Department of Intellectual Property.

l. CARTAGENA PROTOCOL RATIFICATION: Thailand signed the Convention on Biological Diversity (CBD) in 1992. Thailand signed the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety in March 2012. In March 2015, the Thai Cabinet approved the Master Plan for Integrated Biodiversity Management B.E. 2558- 2564 (2015-2021). The master plan has been implemented under National Biodiversity Targets, which are divided into three phases (i.e., by 2016, by 2020, and by 2021). Details of the master plan and national biodiversity targets can be found in http://faolex.fao.org/docs/pdf/tha169773.pdf

m. INTERNATIONAL TREATIES and FORUMS: Thailand regularly participates in international organization conventions such as the International Plant Protection Convention (IPPC) and Codex Alimentarius (Codex). However, Thailand has not taken any clear positions on issues relating to GE crops and related products.

n. RELATED ISSUES: The Thai government, especially the MOAC, promotes organic production and self-sufficient agricultural production. Most Thais perceive organic crops as being safer than GE crops and view farmers who adopt self-sufficiency in agricultural production as being less dependent on expensive agricultural practices.

PART C: MARKETING

a. PUBLIC/PRIVATE OPINIONS: The latest survey on this issue available is from 2010. According to the 2010 survey, 66 percent of the 340 surveyed respondents said they would not purchase GE foods. On specific health risks, 40 percent of respondents believed that consumption of GE foods could create an allergic reaction, and 56.2 percent believed that consumption could lead to antibiotic resistant diseases. On consumption benefits, 59.7 percent of the respondents felt that GE foods could enhance food traits, while 54.4 percent believed that consumer could pay less for GE foods. Regarding the environment, 68.3 percent of the respondents believed that GE crops could cause an unbalanced ecosystem, and 75.1 percent agreed that the flow of GE crops into other traditional crops could occur.

b. MARKET ACCEPTANCE/STUDIES: In general, Thai producers, retailers, and consumers remain misinformed about the safety and use of transgenic plants or related foods. Contrary to public perception, Thailand consumes large amounts of biotech crops either directly (such as soybean oil) or indirectly (through the garments and processed foods that use biotech inputs). Although mandatory labeling is required for food products with more than five percent GE content, unpackaged products or products packaged in bulk are exempt from the rules. This has led to public misinformation about the amount of biotech products that they consume.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

a. PRODUCT DEVELOPMENT: Thailand does not engage in the development or production of genetically engineered animals. Cloning research in cattle, buffalo, goats, and pet animals has been conducted in some universities, such as Chulalongkorn University, Kasetsart University, and Suranaree University of Technology, but FAS/Bangkok is unaware of initiatives to develop this technology for commercial purposes.

b. COMMERCIAL PRODUCTION: None.

c. EXPORTS: None.

d. IMPORTS: None.

e. TRADE BARRIERS: Trade of GE animals is subject to a de facto import/export ban despite there being no regulatory framework.

PART E: POLICY

a. REGULATORY FRAMEWORK: The TBC, an ad hoc technical advisor of BIOTEC, has responsibility for the review of biosafety issues for GE animals.

b. APPROVALS: None.

c. INNOVATIVE BIOTECHNOLOGIES: There has been no research on gene editing in Thailand, and Thailand lacks a regulatory framework for animals developed by this technology.

d. LABELING AND TRACEABILITY: None.

e. INTELLECTUAL PROPERTY RIGHTS (IPR): None.

f. INTERNATIONAL TREATIES and FORUMS: None.

g. RELATED ISSUES: None.

PART F: MARKETING

a. PUBLIC/PRIVATE OPINIONS: There has been no survey on public or private opinions. However, FAS/Bangkok believes that the majority of the Thai population is not aware of developments in animal biotechnology, including both GE and cloned animals. If any, most private opinions would be negative due to prevailing campaigns by anti-biotech NGOs regularly delivering misinformation to the public.

b. MARKET ACCEPTANCE/STUDIES: FAS/Bangkok believes that market acceptance for the sale and use of livestock clones and GE animals in Thailand is very low and probably nonexistent.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

a. COMMERCIAL PRODUCTION: Currently, there is no report of Thailand's production of food ingredients derived from microbial biotechnology.

b. EXPORTS: Exports of products containing microbial biotech-derived food ingredients may include those traditionally used in the production of alcoholic beverages, dairy products, and processed products. Likewise, Thailand exports/imports alcoholic beverages, dairy products, and processed products from other countries, which may contain microbial biotech-derived food ingredients.

c. IMPORTS: In 2019, Thailand imported U.S. $577 million worth of food additives and enzymes. However, there are no trade figures specifically for microbial biotechnology-derived food ingredients since there is no specific tariff classification for them.

d. TRADE BARRIERS: The TFDA is in the process of finalizing two new "genetically modified" (GM) food regulations. The industry is concerned that, if enforced, the regulations will delay or disrupt the trade flow of all processed foods containing "GM organisms and microorganisms" into Thailand due to the approved numbers of GM microbes on the positive list.

PART H: POLICY

a. REGULATORY FRAMEWORK: There is no specific regulation to monitor and enforce overall food ingredients derived from microbial biotechnology. TFDA, Ministry of Public Health (MOPH), is responsible for regulating and monitoring the use of GE food including labeling and regulating imports of microbial biotechnology-derived food ingredients. Please refer to more information on TFDA's responsibilities in Chapter 1: Plant Biotechnology, Part g) Labeling and Traceability.
According to the new draft Notification on Genetically Modified Foods (GMFs), the definition of food derived from "GMM" are categorized into the following three types:

i. Food produced from "GMM" that have had "GMM" and newly introduced genes used in "genetic modification" removed or foods that still contain "GMM", but their "GMM" and newly introduced genes used in "genetic modification" processes cannot increase in number (multiplication) and cannot transfer genetic material (transferring gene).
ii. Complex products that have no remaining "GMMs" and newly introduced genes used in the "modification" in the product.

iii. Foods that are chemically purified compounds and the compounds obtained from a mixture of those compounds in which their "GMM" and newly introduced genes used in "genetic modification" have been removed.

There is no grace period or waiver for cases of food derived from "GMM." Importers/processors must present evidence for a safety assessment on biotechnology-derived food products where "GMM(s)" is(are) approved as stated in Appendix 3 of the draft Notification on Genetically Modified Foods (GMFs).

The MOPH does regulate enzymes produced using microbial biotechnology through Notification No. 409 Re: Enzyme used for food production.

Thailand does recognize the importance of microorganisms. BIOTEC published guidelines in 2011 titled "Biosafety Guidelines for Contained Use of Genetically Modified Microorganisms at Pilot and Industrial Scales," and updates the guidelines every two year. The guidelines provide basic information to serve operators who are interested in topics such as containment measures, biosafety levels, risk assessment and management, basis for the classification of biohazardous agents by risk group, certified host-vector systems, and good laboratory and industrial large scale practices including the possession, transport, import, and export of GE microbes In 2015, GE microbe waste management guidelines were added, the list of microorganisms/agents was updated to conform to the lists of national and international organizations, and an English version was prepared for foreign organizations/institutions working with GE microbes at pilot and industrial scales in Thailand.

The guideline is available in English at http://www.biotec.or.th/en/index.php/news-2011/881-biosafety-guidelines-for-contained-use-of-genetically-modified-microorganisms-at-pilot-and-industrial-scales.

b. APPROVALS: TFDA provides an approved list of food additives under MOPH Notification No. 418 B.E.2563 Re: Prescribing the principle, conditions, methods and proportion of food additives (No.2). The list of permitted food additives in Thailand is available at http://food.fda.moph.go.th/law/data/announ_moph/V.English/P418_E.pdf
The list includes all approved food additives and does not specify microbial biotechnology-derived products. If the food additive is derived from GE microbes and is not listed, a safety assessment is required by BIOTEC for product registration with TFDA. The TFDA also accepts food additives that are identified by CODEX (GSFA).

In addition, according to MOPH Ministerial Notification no.409 B.E.2562 Re: Enzymes used for food production (in Thai).
(http://www.ratchakitcha.soc.go.th/DATA/PDF/2562/E/203/T_0017.PDF), the list of TFDA permissible enzyme for product registration is in accordance to Appendix 1 of the Notification or JECFA Combined Compendium of Food Additive Specifications (http://www.fao.org/food/food-safety-quality/scientific-advice/jecfa/jecfa-additives/en).

c. LABELING AND TRACEABILITY: TFDA requires food additives and enzymes derived from GE microbes to comply with labeling requirements according to MOPH Ministerial Notification

No. 372 B.E. 2558 Re: Food Additives (No.3). Food additives and enzymes that are not sold directly to consumers are exempted from declaring ingredients on the label. The name of the food additives or enzymes together with the type of GE microbes they're derived from can be presented in the product manual instead.

d. MONITORING AND TESTING: Although Thailand has laboratory facilities to test GE products, sources indicate that officials do not closely test or monitor manufacturers' compliance of the biotech food labeling requirements.

e. ADDITIONAL REGULATORY REQUIREMENTS: None

f. INTELLECTUAL PROPERTY RIGHTS (IPR): None

g. RELATED ISSUES: In 2018, NSTDA and the Chinese Academy of Sciences (CAS) officially launched the Thailand-China Joint Laboratory on Microbial Biotechnology. This joint laboratory aims to bring together the expertise of Thai and Chinese researchers to discover useful applications of microorganisms in various industries that rely on microbial agents and microbial processes such as food, pharmaceutical and environmental technology. In the initial stage, the joint laboratory is focusing on the following five research projects:

- Yeast Evaluation and Biotechnology Application;
- High Value Compound from Microalgae and its Application;
- Exploration of Fungal Potential in Biotechnology;
- Synthetic Biotechnology for Biochemical Products; and
- Microbial Big Data.

PART I: MARKETING

a. PUBLIC/PRIVATE OPINIONS: There has been no survey on public or private opinions. However, FAS/Bangkok believes that the majority of the Thai population is not aware of developments of microbial biotechnology and its functional use.

b. MARKET ACCEPTANCE/STUDIES: FAS/Bangkok believes that Thai consumers have not been informed about the functionality, usage, and advantage of microbial biotechnology.

End of Report.

Attachments:

No Attachments