

# **The amendment of the EU Novel Food Regulation: Opportunity for recognizing the special status of exotic traditional foods.**

## **Discussion paper**

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### **Abstract**

The stringent food safety assessment for novel foods required by the EU Novel Food Regulation (NFR) (EU Regulation 258/97) places an unreasonably high burden of proof on those bringing traditional food products from the South to the EU market. The regulation has emerged as a non-tariff barrier for trade in food items that are often derived from under-utilized crops and are viewed as “exotic” from the EU perspective. Current practice of the regulation has discouraged investment in supply chains, and particularly in market development. Research and development agencies concerned with neglected crops and poverty alleviation are still to recognize the potential threat, which the regulation poses to income generation in developing countries and poor farmers’ livelihoods. This paper outlines a number of considerations that, in the interest of enhanced trade from developing countries and diet diversification within the EU, should be taken into account for the currently discussed amendment of the NFR. The paper also recommends that development activities promoting exotic foods must increasingly accommodate legitimate food safety concerns about neglected food species in project design and seek to generate data to enhance regulatory acceptance in target markets.

### **1. Background**

Most of the world's food is derived from just a few crops and this obscures the rich diversity of edible plant species, particularly in the tropical latitudes of developing countries. Published global inventories of food crops (Uphof 1964, Kunkel 1984) list several thousand species of edible plants that are either cultivated or collected from the wild. A recent compilation of useful plants in Peru (Brack Egg 1999) recognizes 782 edible species for this country alone.

Much of this useful diversity in the tropics has been used for millennia, yet it is overwhelmingly limited to its native range and products derived from it are rarely traded beyond national or regional borders. “Neglected” and “under-utilized” as these species may be (for a variety of reasons that are outside of the scope of this paper), the perspectives for their commercial use within and across borders has improved in recent years as the demand for more diverse food products is expanding.

This paper concerns the access of “exotic traditional” food species to the EU market, which provides the brightest prospects for their commercial use, often in up-market niches paying premiums for specific product attributes. Rich biological and culinary

heritage affords the poor countries in the South with many opportunities to earn income on export markets, for the benefit of the rural poor. However, food safety concerns in the North, especially those embodied by the European Novel Food Regulation (NFR) are increasingly getting in the way of South-North food chains. This paper examines the implementation of the NFR since its inception in 1997. It describes the nature and procedures of this legislation and identifies it as a non-tariff trade barrier. In an effort to contribute to the current assessment of the NFR, the paper proposes amendments to the NFR and recommends action to address food safety concerns in a realistic manner.

This paper is concerned only with foods derived from plant sources.

## **2. New income opportunities for poor countries through trade with food products derived from biodiversity**

Several factors are behind the rising interest in diverse foods from the developing world. Demographic change, especially aging and immigrant populations, have led to a previously unseen demand for new health, functional and ethnic food. The desire for dietary diversification and consumer unease about industrial production methods as well as rejection of genetically engineered food sources further motivates the search for new ingredients from sources that are perceived as less “artificial”. Moreover, fierce competition in the food market forces companies to seek new products and ingredients and to add value through new flavors and attributes.

Many of the traditional food species of the developing countries meet the changing needs of developed country markets. Marketable attributes of these species include nutritional and culinary excellence, distinct health-promoting properties (high contents of vitamins or functional nutrients, non-allergenic properties, etc.) and aesthetic appeal. Further contributing to their consumer appeal is the fact that often these products are derived from environmentally sustainable and ethically managed production systems (organic agriculture, small farmers). A growing number of companies embrace fair trade principles and build supply chains back to poor farmers, who benefit in terms of contract farming, higher prices and/or purchase guarantees.

Annex 1 presents the attributes of an arbitrarily chosen selection of promising food species from Andean South-America (including tropical zone), a region known to contain many useful but underutilized foods. Their consumption can be locally significant, but they are largely unknown outside South America, often even outside their “insular” distributions. Overlooked by food science, there is little formal knowledge on food composition and post-harvest processes. However, many of these species have dietetically and commercially interesting attributes, and their wholesomeness among consumers in their native range, often at high intake levels, is beyond doubt.

Species shown in Annex 1 represent different groups of edible species. Most are domesticates, meaning they have been associated with humankind for millennia and have evolved to fit human needs of cultivation and nutrition. Domestication (as opposed to mere cultivation) typically implies significant morphological changes and the

development of agricultural multiplication methods, as well as the selection for low levels of anti-nutritional substances (as compared with wild types), relatively high consumption levels and long experience of safe use.

Other sources of exotic traditional food in Annex 1 are wild species that are gathered (camu camu, lucuma) and/or cultivated (lucuma). A significant number of species, both from domesticated and wild sources, are closely related to -albeit taxonomically distinct from- traditional EU food sources (Andean Elderberry, yacon) or pertain to families (Brassicaceae, Chenopodiaceae) well known for a variety of important vegetables.

It is increasingly recognized that trade with products derived from biodiversity can contribute to development. Foreign aid donors therefore assist efforts of developing countries to promote trade and investment in biological resources, with the aim of contributing to poverty alleviation and biodiversity conservation. National and donor-funded organizations such as GTZ (through PPP and other programs), SIPPO (Swiss Import Promotion Program) and CBI (Centre for the Promotion of Imports from Developing Countries, Netherlands) seek to promote trade of food and food ingredients in support of sustainable development. Numerous development and research projects are concerned with the task of linking poor farmers, the originators and custodians of agricultural biodiversity, with the emerging market for exotic food species.

### **3. The EU Novel Food Regulation: Procedures and implementation since 1997**

Since 1997 the EU Novel Food Regulation (NFR) has been in place to regulate the placing of “novel foods” in the 15 member states of the EU (Regulation No 258/97 of the European Parliament and of the Council of 27 January 1997 concerning novel foods and novel food ingredients. Official Journal L 043, 14/02/1997 p. 1–7). Its objective is to protect public health by ensuring food safety. The NFR defines novel foods as foods and food ingredients that were not used for human consumption to a significant degree within the EU before 15 May 1997. It would seem that this concerns the majority of exotic traditional foods, which only recently are beginning to make their way into foreign markets.

Much of the NFR and complementary texts providing guidance for its implementation address principally food safety concerns arising in the context of foods derived from, or containing, genetically modified organisms (GMOs). It seems EU legislators had basically GMOs on their mind when designing the regulation, as well as foods with “new [...] molecular structure” and those derived from novel processes. Food categories established in article 1 of the NFR do not expressly recognize or accommodate traditional foods from outside the EU. By exempting “foods and food ingredients obtained by traditional propagating or breeding practices, and having a history of safe use” (article 1.2.[e]) the regulation appears to exclude traditional foodstuffs, but the wording is unclear and contradicts current interpretations and practice of the NFR.

The NFR calls for anyone wishing to place a food product on the EU market to first evaluate whether the food is novel and to present evidence to support the case. Novel food needs to satisfy two conditions: 1) it must fall into one of six food categories and 2) it has not been used for human consumption to a significant degree within the EU before 15 May 1997. What constitutes “a significant degree” is not specified and is subject to interpretation. Applicants may seek advice on these matters from commission officers or member states.

If the food is viewed as *not novel*, it may be placed on the market and its assessment under the NFR is not required. If the food is viewed as *novel*, an assessment of the food’s safety under the NFR is required and an application can be accepted by the relevant member state. (It is important to note that the very acceptance of an application implies that the food was found to be novel.)

Once submitted to the relevant member state authority, the application takes its course in a process in which the commission, all 15 member states, and advisory bodies intervene at various stages and iterations. The process scrutinizes the novel food against the objectives of the NFR, which is to ensure that it neither presents a danger for the consumer nor that its consumption be nutritionally disadvantageous. The applicant is required to present scientific evidence to support the application (requirements specified in a separate EU document). Member states can and do raise objections against the submitted evidence and applicants may be asked to present evidence to address such objections. The average time taken from acceptance of an application to a final decision has been 18-24 months.

By October 2002, EU commission decisions had been made in relation to eight novel foods. Six decisions authorized the placing of the market of novel foods that all represent innovations or derivatives of existing products. It is of concern that the two novel foods that were denied market access involve exotic traditional foods that are considered safe for human consumption and are commercially used outside the EU. One is *Stevia rebaudiana*, a plant of the composite family. Its leaves are used widely as a sweetener in Brazil and other countries. Aid agencies such as GTZ have been actively involved in supporting projects aimed at placing Stevia and its processed derivatives on the world market. The other case concerns the edible nuts of *Canarium indicum*, a commonly cultivated tree of the Pacific, with potential for gourmet products (see Annex 2).

By November 2003, only one product has been authorized as novel food, namely a juice of the noni fruit (*Morinda citrifolia*), produced by Morinda Inc., a large US based company. Noni is widely used in Polynesia as a traditional food and folk medicine. In the initial assessment, the company’s application was rejected, based on a series of specific objections raised by member states. Only after the company had produced extensive food safety evidence from compositional, toxicological and allergenicity studies and clarified suggested intake level (30 mL per day), did the EU grant authorization in June 2003.

It is important to note, that the authorization is limited to this particular product. The placing on the market of any other noni products, say jam, the spray-dried juice, or the dried whole fruit, would require a separate authorization. But not only is the authorization specific to a particular product, it is also directed to the applicant, meaning a competitor could not market it, unless evidence was presented of substantial equivalence.

This practice of the NFR has granted Morinda Inc. a unique market position – at least momentarily – as the sole supplier of noni juice on the EU market. It has infuriated a host of smaller companies with total annual sales probably under Morinda's research budget, and that cannot afford the needed research to seek authorization for their own noni products.

Particularly confusing is the implementation of the NFR in regard to the edible root maca (*Lepidium meyenii*), a cruciferous crop endemic to the Central Peruvian Andes. Official Peruvian export statistics (SUNAT) reveal for 1996 maca shipments worth some US\$ 5,000 going to Italy and Spain. Peruvian maca shipments to EU countries had grown to a total FOB value of US\$ 113,000 by 2002 but since then have dropped sharply. In January 2003, the Belgian authority issued a statement that maca had been on the market in Belgium before 1997 and should therefore not be considered a novel food. In May 2003, however, maca appeared as a “non-authorized novel food” (along with a variety of chemically and microbiologically contaminated food items) in the weekly published “Rapid Alert System for Food and Feed” a newly created instrument to assist authorities with the rejection of incriminated foods at the EU's external borders or with the removal of such foods from the market. Based on this list, the Netherlands seized a maca consignment in August 2003 but returned it to the importer after receiving the above-mentioned Peruvian export statistics. Complications may also stem from the fact that maca, a well-defined species with limited variation and known by the preferred scientific name *Lepidium meyenii* is also referred to by the synonymous binomial *Lepidium peruvianum* used by some Peruvian exporters in the mistaken belief it would prove the Peruvian authenticity of maca. Instead, the practice has created uncertainties as to the identity of the species.

The practice of the NFR, however, can also be remarkably “relaxed”. Thus, a UK importer of specialty vegetables seeking clarification as to the food status of oca (*Oxalis tuberosa*, see Annex 1), was informed in 2001 by the Food Standards Agency, the UK competent authority, that oca was unlikely to fall within the remit of the NFR. The UK authority appears to have relied in their assessment on texts in three garden books, supplied by the company, where cursory mention is made of the occasional presence of oca in European gardens since the early nineteenth century, evidence deemed by the authority as of a “somewhat anecdotal” nature but sufficient to let the company import oca for fresh consumption (under the trade name “chioca”).

#### **4. Adverse impact of the Novel Food Regulation on trade in biodiversity products**

The two declined applications as well as the above-described cases of foods challenged by the NFR have been widely observed by European importers, raw material traders and distributors of specialty foods. The costs, complexity, length and uncertain outcomes of NFR procedures have led to legal uncertainty and discouraged firms of the sector to file applications.

No matter how favorably candidate novel foods are viewed in relation to market potential, companies shy away from the investment and (likely futile) efforts of registering them properly through the NFR. This is evident from surveys conducted by the author from 2001 to 2003 as an exhibitor of traditional foods on trade fairs and through interaction with specific firms exploring traditional Andean foods for market potential.

Chances of EU market admission for the majority of exotic food species are currently nil, unless extensive data allowing stringent food safety assessment are available. Larger corporations have research budgets to tackle this task, but rarely justify such expenses in view of the still embryonic market size (Morinda Inc. as a company operating from the established noni US market being a notable exception).

On the other hand, the NFR curtails the entrepreneurial initiative of small and medium-sized companies, who typically have the agility and pioneering spirit to develop niche products but cannot afford the research to gain regulatory acceptance.

Organizations promoting trade in biodiversity products and aid donors are just beginning to understand that the NFR is in conflict with their objectives, especially with policies aimed at investment in the sustainable use of biological resources in support of poverty alleviation.

There is also confusion on the part of developing country governments and public sector players who view the NFR as in conflict with stated development goals of the EU member states, namely to ensure access to its market and thus contribute to the alleviation of poverty.

In conclusion, the NFR has emerged as a serious, albeit unintended, non-tariff trade barrier to imports from the developing world into the EU, perhaps the most attractive market for exotic traditional foods.

##### **4.1. Are the concerns overstated?**

The concerns expressed in this paper have been challenged along several lines:

***Argument 1: The paper overstates the market size and potential of traditional exotic food to generate income for the poor.***

*Response:* Trade in food presumably falling under the NFR is indeed still modest, but growth rates for exotic traditional foods are high, especially in up-market niches. A clear indication of the growing demand is UNCTAD's Biotrade initiative, which seeks to

facilitate access of biodiversity products from developing countries to international markets. In pursuing this goal Biotrade's regional programs Biocomercio (Andes) and Bolsa Amazonia (Amazonian countries) place much emphasis on building equitable and environmentally sustainable supply chains that originate in poor, but diversity-rich communities.

Not only are poor farmers keepers of much biodiversity, they often also have comparative advantages of production, such as privileged access to seed and appropriate production sites, especially in the case of perennials and species exacting specific agroecological conditions. The recent transition of maca and yacon from neglect and under-use to significant market presence in Peru has afforded thousands of farmers with new income opportunities, with dramatic improvements of livelihoods, especially where other income options are scarce or absent. Yet, the NFR curtails efforts to link these farmers with an important export market.

***Argument 2: Exotic traditional foods likely falling under the NFR, or even incriminated by it, continue to be marketed in the EU.***

*Response:* It is important to realize that the NFR requires anyone marketing a food in the EU to be prepared to demonstrate its novelty status, a task inherently difficult to perform in a community of 15 countries. It requires proving that the food in question was on the EU market prior 15 May 1997, in at least one country, and often sold in minuscule volumes. Moreover, member states seem to disagree about the criteria to be taken into account for the determination of the novelty status (see previous section on maca and oca).

It is therefore not surprising that some importers and distributors of exotic traditional foods have indeed chosen to ignore the NFR in the hope that their marketing of exotic foods in niches will go unnoticed by regulatory bodies. This is particularly so, when companies become aware of the NFR after investments in supply chains and marketing have been effected, that they are reluctant to abandon. Others are uncertain about the novel food status of a particular product, and prefer to assume it is not novel. Exotic traditional foods can also be "hidden" as ingredients in complex foods.

However, some foods such as maca products and unauthorized noni products have eventually been recognized as falling under the jurisdiction of the NFR and have been removed from the market.

The continued, yet infrequent, presence of unauthorized or even incriminated novel foods in several countries of the EU therefore is not a contradiction to the view of this paper of the NFR as a potential threat to trade but rather consequence of legal uncertainties and divergent implementation in different countries.

***Argument 3: Non-EU countries have similar regulations to protect consumers.***

*Response:* A description of market access of novel food in countries outside the EU is beyond the scope of this paper, but a preliminary web-based assessment of this matter suggests that regulations in Japan, USA and in particular Switzerland (see below) are

much less stringent than the NFR. This interpretation is also supported by the tendency of traders and exporters to re-orientating their marketing strategies to these markets preferentially.

In Switzerland, the "Bundesamt für Gesundheit" as the relevant authority has published lists of authorized novel foods ("Bewilligungen für Neuartige Lebensmittel") since January 1998

([http://www.bag.admin.ch/verbrau/lebensmi/lmrecht/d/inhaltsverzeichnis\\_bnl.htm](http://www.bag.admin.ch/verbrau/lebensmi/lmrecht/d/inhaltsverzeichnis_bnl.htm)) In 2002, 116 novel products were authorized for the Swiss market. Most of these are novel formulations of traditional ingredients, but the 2002 list also contains exotics such as three maca products, and the maitake mushroom, an edible basidiomycete fungus (*Grifola frondosa*). In previous years, the authorized products included a range of unusual products such as the seed oil of *Borago officinalis*, Asian soy products (smoked tofu, tapeh), several exotic algae, Geysir salt and the leaves of wheat and barley.

In October 2003, yacon syrup, a concentrate obtained from the juice of the edible yacon root (*Smallanthus sonchifolius*, see Annex 1) had been authorized to be placed on the Swiss market in less than three months after submission of the company's respective request (Claro AG, personal communication).

Authorizations can be obtained by submitting a registration form to the Bundesamt. The form calls for data on product purpose, physical description, packaging, intended intake levels and compositional data. The latter as well as claims as to particular nutritional benefits need to be substantiated by scientific/analytical data. Guidelines for the registration of novel food reflect Codex Alimentarius rules. For example, claims that the food prevents or cures diseases are prohibited. Also misleading compositional or other misleading product information is banned. The Bundesamt reserves the right to request further information, for example an official certificate about the food status of the novel food in the country of origin may be required. All in all, the registration appears to be straightforward and follow the principle: "if the food is eaten abroad, then there should be no problem with its consumption in Switzerland!"

## **5. Considerations for the amendment of the Novel Food Regulation**

This paper recognizes the need for consumer protection in the EU, but it urges EU lawmakers to acknowledge the special nature of exotic traditional foods (as opposed to other Novel Food categories) and the need for their continued commercial use for biodiversity conservation and poverty alleviation through trade.

In particular, the following considerations are offered for the amendment of the NFR:

### **5.1. Recognition of exotic traditional foods as a separate Novel Food Category**

There is only cursory mention in the NFR and in the EU July 2002 discussion paper of exotic traditional foods, as if they were almost immaterial to the NFR. As shown in sections 1 and 2, exotic traditional foods consist of a vast variety of food items and are of growing importance to poor country economies and to the diet diversification desired by EU consumers.

In light of the diverse nature of novel foods it is unreasonable to subject them all to a single safety assessment as currently practiced under the NFR.

Traditional foods are fundamentally different from GMOs, not only in terms of their long history of safe use, but also in regard of their place in the public domain. Different criteria and evidence requirements need to be applied to exotic traditional foods as compared with GMOs.

This paper favors to establish a separate novel food category for exotic traditional foods as opposed to innovative products with no history of long-term consumption outside the EU (as outlined under 3.3.1., option 2 in the EU discussion paper). Most importantly, exotic traditional foods should remain in the public domain and no private entity should be granted privileged access to the EU market for authorized products as has happened recently with noni fruit juice.

Such considerations may require the separation of exotic traditional foods from the NFR altogether or a separate regulation for them alone.

### ***5.2. Simplification of safety evaluation of exotic traditional foods***

The NFR places an unreasonably high burden of proof on the innocuousness of products generally regarded as safe (GRAS) outside the EU. Applicants are required to present extensive data with regard to composition, nutritional considerations, intake levels, toxicology and allergenic potential, which even in the case of vastly better researched major foods would be hard to come by. As a matter of fact, it is likely that a great deal of European foods would not pass the evidence requirement posed by the NFR: Having considerable allergenic potential due to the presence of gluten proteins, wheat would probably disqualify for market admission. Europeans are fortunate to have introduced potatoes in the 16<sup>th</sup> century; today potatoes would certainly be rejected by the NFR on the grounds of hazards posed by glycoalkaloids. Likewise green leafy vegetables with their high contents of anti-nutritional substances such as nitrate and oxalate would most likely be denied market access.

Risks associated with the use of exotic traditional foods and ingredients should not exceed those arising from European traditional foods, particularly as far smaller intakes can be expected.

In addition to experimental scientific evidence, the NFR should admit traditional knowledge for food safety assessment. The combined evidence on a particular food from the ethnobotanical and anthropological literature as well as from anecdotal and folkloric sources can provide important pointers for safety assessment.

Toxicity, allergenicity or clinical studies should only be required where reasonable doubts as to food safety are justified.

### ***5.3. Taxonomic status of food source***

The current NFR is silent on the taxonomic status of a given food source yet the taxonomic status can be relevant to the safety assessment in a variety of ways.

It is well established that the similarity in chemical composition of any two species is a function of their taxonomic relatedness. Similar chemical profiles can be expected for closely related species. Conversely, taxonomically distant groups are unlikely to share common chemical profiles. Some families are known for a large number of toxic representatives (ironically the economically important Solanaceae) while others have few or no reported toxins. Taxonomic position and relatedness of novel food sources to widely used species (within and beyond the EU) should therefore provide important entry points for appropriate safety assessments (see Annex 1).

The amended regulation also needs to be specific about what constitutes sufficient distinctness of a food source to be recognized as novel as compared to accepted sources. The following may illustrate this: a range of montane Neotropical food plants are very closely related to northern hemisphere (=EU, USA) fruits of the genera *Vaccinium* (blueberries), *Prunus* (cherry), *Ribes* (black currants) and *Sambucus nigra* (elderberry). Andean elderberry, for example, in recognition of its distinct and superior culinary quality was previously considered a species separate from the European taxon, but has, in a recent taxonomic revision been reduced to subspecies status. Is it a novel food from an EU perspective?

Finally, some foods known by a generic name in fact are derived from a variety of plant (and animal) species, yet they can be expected to escape regulatory scrutiny. For example, palm hearts, the tender apical portions of palm stems are produced and traded from species of different genera, raising the issue which of these may be subject to the NFR. If the NFR is to achieve its stated purpose it needs to recognize this problem. Another example involves the generic trade name of certain starches, such as arrowroot starch, which can be derived from as many as four clearly distinct taxa. Still another example involves yams, a term used for a series of tropical tuber crops.

#### **5.4. Regulations with general application for exotic traditional food**

Under the current NFR, if a novel food is authorized, only the applicant is allowed to place the product on the EU market. If another party wishes to market the same or a similar product, they must take the appropriate steps in accordance with the NFR. Addressing decisions to a particular applicant makes sense for a novel food that is the result of an innovative process or based on a proprietary technology, which the process of the NFR protects. But in the case of exotic traditional products, which are in the public domain outside the EU, this procedure is prone to create monopolies and allows firms to appropriate public sector goods at the expense of smaller companies, which cannot afford extensive documentations of food safety.

This paper therefore supports the idea of making “regulations with general application” (Item 3.2., option 2 in EU July 2002 discussion paper) in response to applications under the NFR. This alternative would have the advantage of binding all relevant parties to follow applicable requirements in relation to a particular exotic traditional food. Multiple applications for products would not need to be made and processed and greater efficiencies achieved.

From a development perspective it would be desirable, if non-profit or public sector institutions with no intent of placing the product on the market themselves could make an application. For example, a government, regional organization or a donor might want to invest into a particular product or food species and assume the cost for opening up the EU market to target beneficiaries (such as poor farmers producing and exporting the product).

### **5.5. Generic admission of exotic traditional foods**

Market admission should, wherever possible, be granted for a host of products from the same plant species, especially for products obtained through traditional processes. For example, if an application for a particular fruit were to be filed, the NFR should allow a single safety assessment for pasteurized juice, frozen pulp, marmelade, ice cream and related products.

### **5.6. Food safety dossiers**

Food safety concerns in regard to exotic traditional foods will not go away. It is likely that even an amended NFR, will require nutritional, compositional and other documentation that is currently not available for most traditional and under-researched foods. The research and development community must consider this need in project design and product development and trade promotion activities. This is also a task for public sector intervention.

There is a need to develop dossiers for exotic traditional foods, which compile the available knowledge and identify gaps. Issues that need to be addressed include history of use (origins, domestication, cultivation), composition and compositional changes due to post-harvest conditions and processing, evidence for the presence of functional nutrients, evidence for the presence or absence of anti-nutritional or toxic factors, nutritional assessments (food intake levels considered safe) for both human and animal use.

The amended NFR should be accompanied by interpretative aids such as texts that would provide practical examples how food dossiers would need to be structured to be helpful in the safety assessment required by the legislation.

## **References**

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## Annex 1: Edible minor plant species from Andean South America not yet widely traded internationally

Common and scientific name	Family	Uses	Salient properties of interest	Related products in use in EU
Arracacha ( <i>Arracacia xanthorrhiza</i> )	Apiaceae (Umbelliferae)	Edible root, staple food in Colombia and Ecuador	Unique flavor, low syneresis starch	The umbelliferous arracacha is closely related to a range of Eurasian vegetables (carrots, parsley, celery, etc.)
Mashua ( <i>Tropaeolum tuberosum</i> )	Tropaeolaceae	Edible root, widely used in Andes	Piquant flavor, rich in mustard oils	Related to garden nasturtium ( <i>Tropaeolum majus</i> )
Oca ( <i>Oxalis tuberosa</i> )	Oxalidaceae	Edible tuber, widely eaten in the Andes	Colored, visually attractive tubers, specialty “potatoes”	Carambola fruits, a distant oxalidaceous relative
Maca ( <i>Lepidium meyenii</i> )	Brassicaceae (Cruciferae)	Traditional tonic, Peru	High antioxidant content	Watercress, mustards and cabbages ( <i>Brassica</i> spp.)
Yacon ( <i>Smallanthus sonchifolius</i> )	Asteraceae (Compositae)	Edible root, eaten raw	High in fructans, recognized for gut health	Of the same family as chicory and Jerusalem artichoke, with similar chemical composition
Cañihua ( <i>Chenopodium pallidicaule</i> )	Chenopodiaceae	Andean grain	Exceptionally high in iron content, balanced protein, substitute for gluten containing cereals	A close Andean relative, quinoa ( <i>C. quinoa</i> ), is now widely sold in health shops across Europe
Camu camu ( <i>Myrciaria dubia</i> )	Myrtaceae	Amazonian fruit, mostly collected wild	Exceptionally high in Vit C content	Other fruits of this tropical family widely traded in EU (guava, etc.)
Lucuma ( <i>Lucuma obovata</i> )	Sapotaceae	Fruit from sub-tropical valleys	Fruit pulp for gourmet market	Several dozen species of this family eaten in tropics but no close relatives in EU
Andean Elderberry ( <i>Sambucus nigra</i> var. <i>peruviana</i> )	Caprifoliceae	Temperate fruit, and medicinal tea from flowers	Fruit for gourmet market, superior to European Elderberry	Sub-species of European elderberry previously classified as a distinct species
Lulo ( <i>Solanum quitoense</i> )	Solanaceae	Edible domesticated fruit	The connoisseur’s “most delicious fruit of the Americas”	Only distantly related nightshades (tomatoes, pepper, potatoes)

## Annex 2: Promising minor crops challenged by EU Regulation 258/97

<b>Common name</b>	Nangai nuts	Stevia	Maca	Noni
<b>Scientific name</b>	<i>Canarium</i> spp.	<i>Stevia rebaudiana</i>	<i>Lepidium meyenii</i>	<i>Morinda citrifolia</i>
<b>Origin</b>	East Asia and Pacific	South America	Peru	Polynesia
<b>Description &amp; traditional uses</b>	Several tree species with edible seed kernels; archeological evidence for use dating back 8000 years	Herb, cultivated world-wide; foliage used by Guarani people for centuries	Ancient root crop with documented food use since 16 <sup>th</sup> century; closely related to a number of European Brassicaceae	Tree with edible fruits; Long tradition as famine food and folk medicine of aboriginal people
<b>Properties of commercial interest</b>	Almond-sized kernels for gourmet market	Natural sweetener; dried leaves 30–45 times as sweet as sucrose	Traditional tonic, acquiring ambiguous fame as “Andean Viagra”	Health-promoting attributes
<b>Status of trade</b>	Traded regionally and internationally	Dried foliage and extract traded internationally	Dried roots and extracts traded internationally, particularly in US and Asia	Noni juice traded internationally and available on EU market after NFR came into force
<b>Status with regard to Regulation 258/97</b>	Request for market admission of dried kernels refused by EU Commission in 2000	Request for market admission of dried leaves refused by EU Commission in 2000	Not clear; some EU member state authorities prohibiting commercialization	Commercialization temporarily suspended, after novel food status became evident
<b>Food safety assessment</b>	Submitted compositional and toxicology data deemed incomplete; product allergenicity not investigated	Toxicity data deemed unsatisfactory to dispel food safety concerns; insufficient standardization of commercial product	Mounting evidence for pharmacological effects on endurance and libido	In 2002, favorable opinion issued by EU Scientific Committee, based on assessment of extensive toxicity and allergenicity data. EU authorization as novel food as of June 2003

