



JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD LABELLING

Forty-First Session

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Discussion paper on labeling of food derived from crops biofortified by natural selection (conventional breeding)

Discussion Paper prepared for the 41st Session of the Codex Committee on Food Labelling by the International Food Policy Research Institute (IFPRI) with contributions from Australia, Canada and South Africa.

Introduction:

The use of biofortification to enhance the nutrient content of staple crops has quickly evolved over the last decade. HarvestPlus leads a global effort to breed and disseminate micronutrient-rich staple food crops to reduce hidden hunger. It is part of the Consultative Group on International Agriculture Research (CGIAR) Program on Agriculture for Nutrition and Health (A4NH). Harvest Plus is coordinated by the International Food Policy Research Institute (IFPRI) and the International Center for Tropical Agriculture (CIAT) which in turn are two of the 15 Centers of CGIAR.

CGIAR research is dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources. The research is carried out by the 15 Centers, that are members of the CGIAR Consortium, in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector.

HarvestPlus seeks to reduce hidden hunger and provide micronutrients to billions of people directly through the staple foods that they eat. A novel process called biofortification is used to breed higher levels of micronutrients directly into key staple foods. The crops released by HarvestPlus have all been biofortified by conventional breeding. However biofortification can also be accomplished by agronomic biofortification or genetic engineering.

HarvestPlus focuses on three critical micronutrients that are recognized by the World Health Organization (WHO) as most limiting in diets: iron, zinc, and vitamin A. HarvestPlus envisions that in fifteen years, millions of people suffering from micronutrient malnutrition will be eating new biofortified crop varieties.

The work on biofortification through conventional breeding is being carried out in the absence of much needed International Standards.

The Issue: The fundamental question to be considered within the mandate of the CCFL is as follows:

If a processed food product contains inputs from a biofortified staple food crop produced by conventional breeding that substantially increases a particular nutrient level, what are the labeling implications and options?

Background:

In their efforts to seek international standard setting for Biofortification through conventional breeding, IFPRI started by gaining Member with Observer Status in the Codex Alimentarius. To inform Codex Representatives of Member Governments of the need for Standards for Biofortification, IFPRI has been permitted by Committees to make brief presentations, under the “Other Business” Agenda Item, at CCNASWP, CCLAC, CCAAsia and CCAfrica. The HarvestPlus Program was outlined showing the positive public health outcomes, particularly with the biofortified Orange fleshed Sweet Potato (OFSP). Also identified was the problem of the lack of standardization of biofortification. Although there have not been in- depth discussions on Biofortification at the Coordinating Committees, as the subject was presented as an informational item, there have been many informal opinions expressed that new work is needed.

Nutrition and Labelling in Codex Committees

Recognizing that the two substantive Codex Committees where informed discussions on Biofortification could take place were CCFL and CCNFSU, IFPRI succeeded in having the Committees recognize the subject with the following outcomes:

1. The report of CCFL 40 (May, 2012) contained the following paragraphs appearing under Agenda Item “Other Business”

“Labelling of Food derived from Crops Biofortified by Natural Selection

107. The Observer of IFPRI presented their work on biofortification of crops by natural selection and asked the Committee how foods derived from such crops should be labelled.

108. The Committee noted that IFPRI could prepare a discussion paper on this issue for consideration at the next session. One delegation noted that IFPRI might also ask advice from appropriate committees. Another delegation noted that it would be important to identify challenges to such labelling. The Chairman mentioned that if delegations wished to give input to the discussion paper as it related to the mandate of CCFL, they could contact IFPRI”

The Discussion Paper title was changed to the ***Labelling Of Food Products Produced Using Biofortification Through Conventional Breeding*** to more accurately reflect the products produced under the HarvestPlus Program. This discussion paper represents the outcome of the Committee’s conclusion.

2. The Report of CCNFSU 38 (December, 2012) contained the following paragraphs:

“Proposal to Develop a Discussion Paper on the Biofortification of Staple Food Crops with Essential Vitamins and Minerals by Conventional Breeding”

154. The Observer of IFPRI made a presentation about biofortification of crops by conventional breeding and proposed that it would prepare a discussion paper for consideration at the next session.

155. Several delegations supported the development of a discussion paper. Several delegations questioned what the purpose of the discussion paper was and recalled that biofortification had been excluded from the revision of the General Principles for the Addition of Essential Nutrients to Foods. One Delegation asked if IFPRI considered whether the existing *General Principles for the Addition of Essential Nutrients to Foods* (CAC/GL 9-1987) might be used for biofortification.

156. The Delegation of Canada proposed to collaborate with IFPRI to clarify the purpose of the discussion paper on the biofortification of the staple food crops with essential vitamins and mineral by conventional breeding and assist the development and how to direct, if appropriate. The Committee agreed with the proposal of Canada.”

The Committees decision was based on CRD 1 prepared by IFPRI entitled **“Proposal To Develop A Discussion Paper On The Biofortification Of Staple Food Crops With Essential Vitamins And Minerals By Conventional Breeding”**

(ftp://ftp.fao.org/Codex/Meetings/CCNFSU/ccnfsdu34/CRDs/nf34_CRD01e.pdf)

This paper describes the scientific process with the resultant evidence based positive public health outcomes from Biofortification through Conventional Breeding. IFPRI and Canada will collaborate to produce the Discussion Paper for the CCNFSU 39 to be held in November 2013.

First considerations relevant to CCFL Texts

When considering a food biofortified by conventional breeding, an important first consideration would be the determination as to whether the food is a Standardized Food or an Unstandardized Food.

If it were to be determined that such foods were Standardized Foods then the lack of guidance could be addressed by having an amendment to an existing Standard or by the elaboration of a new Standard.

If it were to be determined that such foods were Unstandardized Foods then there would be a concurrent discussion running in tandem in both CCFL and CCNFSDU as to how to deal with the standardization of foods which had been biofortified.

Consideration of Claims

If one considers the Guidelines for the use of Nutrition and Health Claims there are questions that current texts cannot sufficiently address.

Ideally speaking a comparative claim (CAC/GL 23-1997 rev. 2001, rev. 2004) would be the most appropriate choice for a biofortified crop but then there must be reliable up-to-date country-specific food composition data for the specific crop to use as baseline data for the comparison. This may be difficult for third world countries. Currently Codex texts allow a 10% difference in the NRV for micronutrients, however some countries have chosen to require a 25% difference for micronutrients and not the 10% as in Codex, at the moment. This particular issue is under discussion in CCFL. However, the regulatory reality in such countries is that a 24% increase in a micronutrient increase through biofortification through conventional breeding would not allow for a comparative claim. Depending on the outcome of Codex in this regard, that is whether the 10% for micronutrients should be increased to 25% as for the macronutrients, may affect Member's and Observer's policy approaches.

As the regulatory approach is being considered by some Countries, there are clearly different analytic approaches that one could reflect upon. Because food fortification is of global importance for many countries who are challenged to deal with the burden of malnutrition effectively and as biofortification can be the result of natural selection and enhancement of the inherent nutritional value of natural crops through traditional/conventional plant breeding methods (and realizing that there are other methods of biofortification), the technology could be expected to receive widespread acceptance on a global scale. Therefore, until such time that the technology has advanced to the point whereby a 25% increase in the nutrient level in question is attainable in a specific crop, it may be proposed that leniency may be required for the criteria for making a comparative claim on biofortified single ingredient products. However, the following additional condition may be considered: the % difference (increase) is clearly indicated on the label and should be not less than 5% than the conventional crop.

Problem Identification:

The following represent some of the challenges when considering the labeling of food containing micronutrients "added" to the food through biofortification by conventional breeding:

- Foremost for both CCFL and CCNFSDU is the complete lack of a definition for Biofortification. Without a common understanding of the term, it is difficult to elaborate standards. Whilst the term biofortification is being used in the scientific literature (see Annex A), there is no definition in the Oxford English Dictionary.
- Whilst "food additive" and "ingredient" are well defined in the Codex labeling texts, does the micronutrient added/increased through conventional breeding fall within these definitions in the absence in the Codex texts of a definition for "addition". Although "addition" is commonly understood, the lack of a definition hampers the consideration of biofortification as an element of "addition".
- What influence do the Nutrient Reference Values (NRVs), or the proposed changes to the General Principles for NRVs which are under consideration in CCNFSDU, have when considering nutrition claims, comparative claims or health claims for foods that have been produced using biofortification through conventional breeding and the labelling of such food.
- As "scaling-up" of the biofortified crops progresses, it is inevitable that there will be international trade in these food products. For example both Orange Sweet Potato (OSP) and Cassava have very successfully been biofortified

through intensive breeding programs. How will this be reflected in the labeling of consumer packs of OSP or Cassava chips or crisps?

- Thought has been given by IFPRI to the potential for consideration of currently available biofortified crops in the labelling provisions of the individual Commodity Committees such as maize, cassava, orange sweet potato and iron beans. However this ignores the larger issues of importance in the mandates of both CCFL and CCNFSDU which would be relevant to biofortified food products, such as definitional issues and comparative claims.
- When considering the food production chain, starting with biofortified crop production, what elements of traceability would be relevant and important to assure correct information to the Consumer and at what point in the production chain would there be a need for specific identification of biofortification? Would there be consequences if a specific identifier were not to be used?
- As biofortified crops are “scaled-up”, (some processed food examples from the biofortified OFSP are sweet potato flour, sweet potato juice, crisps and doughnuts), they constitute the major ingredient of the processed food. In turn, Member Governments may develop Regulations which cannot be harmonized to an internationally accepted standard, such as is provided by the Codex Alimentarius. Clearly this situation can result in impediments to the trade of the processed food.

Next Steps:

A thorough discussion to be undertaken in CCFL on the **Labelling of Food Biofortified Through Conventional Breeding** to resolve definitional and standards development issues specifically related to labeling. Also to be determined is the most appropriate place within the Codex subsidiary bodies for more discussion on the subject of biofortification.

ANNEX A

Examples of Definitions for Biofortification

- Biofortification is the idea of breeding crops to increase their nutritional value (+ methods)---Wikipedia, Bailey and Islam
- Biofortification is food fortification achieved by plant breeding or genetic modification to give a higher content of nutrients---Bender, Dictionary of Food and Nutrition
- Biofortification is enriching the nutrition contribution of staple crops through plant breeding---Nestel, Bouis et al, Journal of Nutrition
- Biofortification is the process of increasing the nutritional content of the edible portion of plant foods to levels that consistently exceed the average content observed---Wiktionary
- Biofortification (specific) is an effort to add nutritional value to cassava by increasing the contents of protein, minerals, starch and beta-carotene.---Montagnac et al, Comprehensive Reviews in Food Science and Food Safety
- Biofortification –no dictionary entries found for “biofortification”---Oxford English Dictionary
- Agronomic Biofortification can provide temporary micronutrient increases (such as Zinc) through fertilizers