

## Comments of Third World Network on Digital Sequence Information

Submitted in response to NCP GB8-016MYPoW/DSI and NCP GB8-020MYPoW/DSI<sup>1</sup>

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In response to the above-referenced notifications, Third World Network is pleased to submit the following views on the potential implications of the use of DSI on plant genetic resources for food and agriculture (PGRFA) on the objectives of the International Treaty. We thank the Executive Secretary for taking our comments into account in the compilation of views to be made available to the Eighth Session of the Governing Body.

### General

Creation of a system that ensures benefit sharing when genetic resources are utilized as DSI, and synthesized from DSI, is an existential challenge to the Treaty. If benefit sharing is not required of users of DSI, then the eventual collapse of the Treaty is probably inevitable. Yet ITPGRFA cannot act unilaterally in many DSI-related questions because of its relationship, and the relationship of GRFA in general, to the Convention on Biological Diversity (CBD).

Ongoing discussions of DSI by the Governing Body and Treaty entities including the Working Group to Enhance the Functioning of the Multilateral System have value in shaping the Treaty's approach to this important issue, yet the Treaty cannot presently adopt a solution because of the need to maintain consistency with the CBD, which itself is still seeking consensus on a solution.

As a consequence, ITPGRFA must inexorably wait for clarification by the CBD before implementing a permanent solution at the Treaty level, and this same solution adopted by the Treaty equally inevitably must be reflected in the *Standard Material Transfer Agreement* (SMTA) used by the Multilateral System (MLS) as well as any *DSI Access and Use Agreement* necessary to extend Treaty benefit sharing obligations into the DSI realm.

While the timing is frustrating, in the interim the Treaty can usefully work to define the aspects of DSI that are of most importance to PGRFA, such as which types of information are of greatest application for food security and how are these presently held and handled, such that the Treaty is prepared to move ahead with implementing its benefit sharing approach for DSI in parallel to the CBD.

### Terminology

With respect to terminology, we note that it is agreed that "Digital Sequence Information" (DSI) is currently used as a placeholder term. Importantly, what the term is agreed to include is more significant than the words of the term itself. Creating a term *de novo* and

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<sup>1</sup> Submitted by Edward Hammond, Advisor. Contact: Tel: +1 325 347 2829 | Email: eh@pricklyresearch.com

assigning a definition to it is within the normal scope of negotiation of and in relation to binding arrangements, thus, terminology *per se* is not the trouble here. Rather, it is agreement on the breadth of the term.

We thus believe that the focus of Treaty discussions should be on the types of information are of most import for PGRFA in whatever novel term is eventually adopted for use. These will necessarily include, minimally, DNA and RNA sequences in all their forms (e.g. including cDNAs, etc) as well as amino acid sequences, SNPs, STRs, and a range other molecular and characterization information (e.g. DNA methylation) and sequence associated metadata.

We concur with many members of the CBD's DSI AHTEG and others who believe that the word "digital" is both unnecessary and potentially confusing. It should not be part of the term that is ultimately used, due to developments such as quantum computing and the much older phenomenon of storing sequence and other relevant information on non-digital media, such as plain old paper.

We understand DSI as a neologism that originally combined "digital sequences" with "genetic sequence information", two phrases that were used in the 2015 meeting of the CBD's Synthetic Biology AHTEG. At that meeting<sup>2</sup> and in other early discussions, use of the word "digital" typically was not focused on storage formats, but rather sought to capture the comparative speed and ease with which developments in information technology now allow sequences to be transmitted across borders, often but not exclusively via the "digital" Internet. DSI is then stored, used *in silico*, and/or subsequently synthesized, and these phenomena pose considerable challenges to methods currently used to implement access and benefit sharing obligations, both in agriculture and beyond. Thus capturing this idea in the term ultimately used would be preferable to the less descriptive "digital".

A useful starting point for discussion of the various elements of DSI in the context of agriculture is the *Draft Exploratory Fact-Finding Scoping Study on "Digital Sequence Information" on Genetic Resources for Food and Agriculture* prepared for the CGRFA in 2018.<sup>3</sup>

## Actors

Key actors to which the Treaty discussions should be directed include:

**Private Databases** It is well known that seed companies are amassing large proprietary databases of PGRFA DSI. These databases may include DSI of farmers' varieties, wild relatives, and many other types of PGRFA, including PGRFA in the MLS, over which the companies may exert no rightful claim or make any assertion of privilege or exclusivity. These private databases, which may be leveraged to develop products and intellectual property (e.g. proprietary traits), cannot allow companies to be freeloaders on the backs of

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<sup>2</sup> See: <https://www.cbd.int/doc/meetings/synbio/synbioahteg-2015-01/official/synbioahteg-2015-01-03-en.pdf>

<sup>3</sup> <http://www.fao.org/fi/static-media/MeetingDocuments/AqGenRes/ITWG/2018/Inf10e.pdf>

small farmers, provider countries, and multilateral accessions. Indeed, there is little reason that these databases, or very large proportions of them, should be privately held at all.

Though Article 11 of the Treaty foresaw the inclusion of genetic resources held by private entities in the MLS, markedly little, if any, progress has been made in this direction since the beginning of the Treaty, before many of the key technological developments related to DSI. Today, to add insult to the injury of private collections never having entered the MLS, instead of the devolution of privately-held genetic resources foreseen at the outset, the Treaty confronts the opposite – an expansion of the private domain over PGRFA through the amassing of proprietary DSI.

**Public Databases** Public databases with wide species coverage, such as Genbank and ENA, as well as databases specific to agriculture and crops are both relevant. It stands to reason that the vast majority of DSI can and should be publicly-accessible, provided that informed consent of and benefit-sharing with small farmers and local communities is in place.

Publicly-accessible, however, is not synonymous with “free for the taking”, “no strings attached”, or some concepts of the idea of “open access”.

In fact, public databases that host DSI PGRFA that do not make any significant stipulations about how the data they host may be used, including not restricting intellectual property claims or commercial use, prompt serious concerns that will need to be addressed in the course of implementing the Treaty’s approach to DSI benefit sharing. Before the DNA sequence of material in the MLS is uploaded into any publicly-accessible database, by a genebank or an MLS user, it should be ensured that that database utilizes an access and use agreement whose obligations are those of the Treaty, that is, that parallel to the SMTA.

In relation to both public and private databases, the role of **genebank operators and managers** should be carefully assessed by the Treaty. Genebank operators are currently too often inappropriately placed in the position of taking decisions of consequence on the generation and release of DSI - in the absence of benefit sharing rules and related guidance. For example, there have been indications – apparent in the DivSeek controversies – that some genebank managers would exploit the policy vacuum to benefit narrow institutional or professional interests. Still worse, these decisions include CGIAR centers obtaining patents on DSI from the MLS.

Likewise, placement of MLS DSI in the “public domain”, such as the hundreds of rice genomes posted online with the participation of a CGIAR center and without any benefit sharing obligations for users, are regrettable missteps that prejudice the interests of the Treaty and, most importantly, those of small farmers and *in-situ* conservation supported by the Benefit Sharing Fund.

DSI can be, and should be, *publicly-accessible* in the vast majority of cases, but with a user agreement, and not “public domain” or under unethical and commercially exploitable “free for all” notions of “open access”.

## **Types and extent of uses of DSI on PGRFA**

Use of DSI is becoming pervasive in characterization, breeding and genetic improvement, and identification of PGRFA in the development of the proprietary varieties used in industrialized agriculture. Widespread use of new technologies such as genome editing, if permitted by regulators, is likely to hasten the adoption of DSI use in development of IP-protected seeds. DSI also has use in conservation that may be of biodiversity importance but that is of comparatively trivial economic importance, at least in short timespans.

As noted earlier, a useful starting point for discussion of these aspects of DSI is the *Draft Exploratory Fact-Finding Scoping Study on “Digital Sequence Information” on Genetic Resources for Food and Agriculture* prepared for the CGRFA in 2018.

## **Relevance of DSI on PGRFA for food security and nutrition**

Historically, and today, *in-situ* genetic diversity created and managed by farmers is the most important long-term guarantor of food security and PGRFA-derived nutrition. It is certainly possible to envision that DSI and linked physical techniques may find uses in industrial agriculture that support food security and nutrition by facilitating the identification and use of farmers’ diversity or to identify and use diversity from crop wild relatives, among other possibilities.

Such benefits, though possible, appear to be more theoretical than practical at this point in time. Transparency from the seed sector concerning its DSI holdings and their applications could shed light on the question. Any potential benefits for food security and nutrition must be weighed in conjunction with concerns about biopiracy and the need to support small farmers’ *in-situ* conservation, whose benefits are manifestly profound and proven, whereas for PGRFA DSI is primarily taking a place in the toolkit of a commercial seed production system that has not proven to be supportive of *in-situ* conservation and has frequently been hostile to farmers breeding, saving, and exchange of seeds.