

# GRFA access and use in USAID Innovation Labs: results from an international survey of scientists

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*The Moving Landscape of Moving Germplasm: A Global Policy Workshop*

*Wednesday, February 15, 2017*

*International Food Policy Research Institute*

# Key Findings

- **Sources of GRFA:** Scientists obtain GRFA from a wide variety of sources
  - Most IL scientists actively exchange GRFA with multiple **countries**
- **Regulations:** MTA use is low to moderate, US scientists use MTAs less than non-US
- **Other restrictions:** Substantial restrictions on third party exchange and commercial use: US report higher than non-US
- **Reciprocity** is commonplace, but higher among IL members than non-IL
- **Access:** scientists able to discern differences in barriers across countries/regions
- **Regulations impacts:**
  - Greater administrative burdens and transaction costs
  - Project delays/barriers that are detrimental to research
  - Country and collaborator selection
  - Material sourcing strategies
- Possible tensions on perceptions of **openness/ownership**

# Survey Data Collection

## Sample frame

- USAID Innovation Labs (IL)<sup>1</sup> involved in genetic material exchanges (14/24 ILs)
- 503 unique scientists invited.
- Lists of scientists in each IL built by using IL websites, confirmed with PIs.

## Survey characteristics

- Traditional survey data and social network data.
- Response rate of 64%
- Focus on prior 2-year timeframe

<sup>1</sup> <https://feedthefuture.gov/lp/feed-future-innovation-labs>

# ILs surveyed

## In which Innovation Lab(s) do you participate?

1. Applied Wheat Genomics
2. Grain Legumes
3. Aquaculture & Fisheries
4. Climate Resilient Beans
5. Climate Resilient Sorghum
6. Peanut & Mycotoxin
7. Climate Resilient Chickpea
8. Climate Resilient Millet
9. Genomics to Improve Poultry
10. Climate Resilient Cowpea
11. Rift Valley Fever Control in Agriculture
12. Sorghum & Millet
13. Soybean Value Chain Research
14. Integrated Pest Management

# Respondents (1/2)

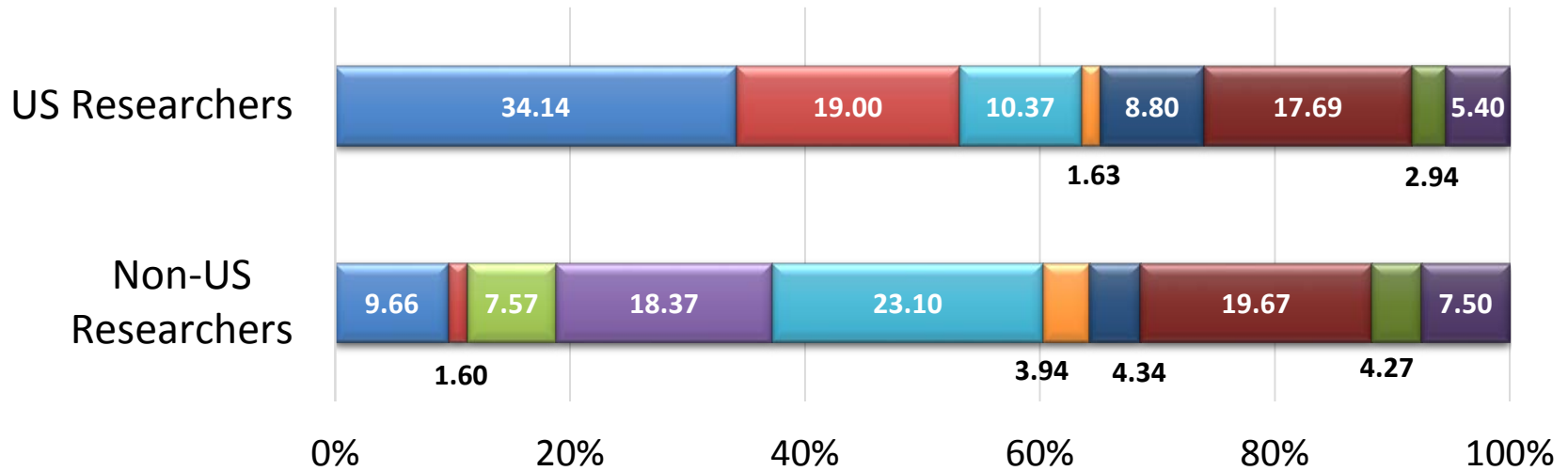
- 80% of survey respondents are GRFA users
- Of the GRFA users in the survey
  - 31% US
  - 69 % non-US
- GRFA Type Use in Research
  - Plants 82%
  - Microbes 42%
  - Insects 25%
  - Animals 13%
  - Multiple 49%

# Respondents (2/2)

What are your main research activities? (Select all that apply)

	Percent
Conventional / classical breeding	43%
Molecular breeding	31%
Genetic characterization	42%
Genomic research	24%
Agronomy research	35%

# Sources of GRFA



- U.S. university collection
- U.S. government collection
- Own-country university collection (International Researchers)
- Own-country government collection (International Researchers)
- CGIAR collection
- Universities in other countries (non-US)
- Government collections in other countries (non-US)
- Your personal collection
- Other privately owned collection
- Other

# Regulations on IL Scientists (1/2)

**Scientists report frequent (always or often) compliance with:**

- Biosafety regulations (63%)
- Other national regulations (58%)
- Access and benefit sharing regulations (34%)

**Material Transfer Agreement (MTA) use is generally low**

**US scientists report lower use of MTA than non-US scientists**

Frequent (always or often) of MTA use for material outside their region:

- US scientists: (26%)
- Non-US scientists (52%)



# Regulations on IL Scientists (2/2)

**Restrictions set on material received (always or often):**

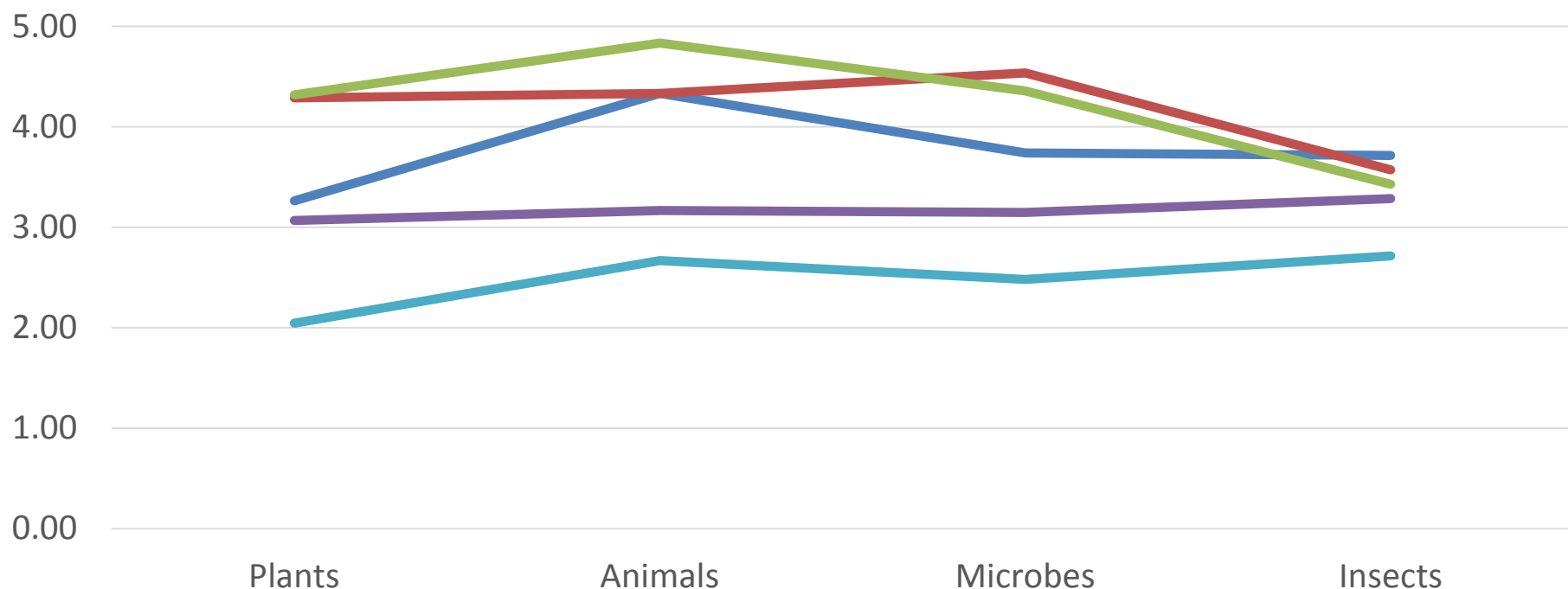
- Third party exchange (64%)
- Commercial use (65%)
- Requirement to property rights on research outputs (46%)

**US scientists higher restrictions on 3<sup>rd</sup> party exchange and commercial use than non-US scientists**

**Restrictions differ by sector (next slide)**

# Non-US Sector Differences Restrictions on GRFA

(1=Never; 2=rarely; 3=sometimes; 4=often; 5=always)



— Provisions related to safe stewardship and protection of human and environmental health

— Restrictions on commercial or profit use

— Restrictions on transfers to third parties

— Requirements to destroy the material after use

— Requirements to return the material to the provider upon completion of the research

# Reciprocity

When you receive genetic material from others, how frequently do you provide the following in return?

	Returns to IL members	Returns to non-IL members	T-test
Data produced by the research	4.32	3.98	***
Student training or education	3.96	3.56	***
Analytical or technical services	3.77	3.49	**
Storage of the genetic materials	3.66	3.40	*
Data in your possession but not currently in the public domain	3.60	3.40	
Other genetic materials in your possession	3.33	3.07	*

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

# Sources and Access (1/3)

Number of countries with which respondents exchange material:

- Mean **3.13** (Standard Deviation 1.83)

Number of countries respondents identified that don't currently exchange with but would like to:

- Mean **1.57** (Standard Deviation 1.69)

# Sources and Access (2/3)

Once country names were entered, respondents were asked the following about each:

- What is the likelihood that there will be **significant delays** in receiving the genetic material that you request because of rules and regulations in each of these countries?
- What is the likelihood that **you will not receive genetic material** you request because of rules and regulations in each of these countries?

Scale: 1=very likely, 2=likely, 3=unlikely, 4=very unlikely

# Sources and Access (3/3)

Geographic region	Likelihood of Delay	Likelihood of Stoppage
South America	<b>3.11</b>	<b>2.97</b>
East Asia	<b>3.25</b>	<b>2.94</b>
South Asia	<b>3.21</b>	<b>2.79</b>
Europe	<b>2.89</b>	<b>2.57</b>
Australia and New Zealand	<b>2.68</b>	<b>2.68</b>
West Asia	2.95	2.50
East Europe	2.40	2.40
North Africa	3.12	2.35
South-East Asia	2.79	2.33
Central America and Caribbean	2.48	2.02
North America	2.47	2.05
South Africa	2.48	1.86
East Africa	2.42	1.86
West Africa	2.30	1.53
Central Africa	2.75	1.25

Scale: 1=very unlikely, 2=unlikely, 3=likely, 4=very likely

# Research Impacts: Transaction Costs

Please indicate the extent to which you agree or disagree with the following statements about trends in your area of research in the last two years:

Transaction Costs	Percent agree / strongly agree	Mean (SD)
Rules and regulations associated with genetic materials have increased staff costs to process regulatory paperwork	45%	3.14 (1.22)
The financial cost of obtaining genetic materials is increasing rapidly.	44%	3.29 (1.11)
Rules and regulations associated with genetic materials have increased budget allocations in grants to account for permits and regulatory compliance	39%	3.01 (1.20)

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

No significant US non-US differences

# Research Impacts: Strategy

Please indicate the extent to which you agree or disagree with the following statements about trends in your area of research in the last two years:

Strategies	Percent agree / strongly agree	Mean (SD)
Researchers are increasingly strategic about selecting collaborators to ensure access to genetic materials.	62%	3.73 (0.88)
I make decisions to collaborate with individuals in certain countries based on ease of access to genetic materials	40%	3.03 (1.16)
Competition among researchers for access to genetic materials is increasing significantly.	34%	3.04 (1.00)
I have stopped collaborating with researchers in certain countries because it is difficult to obtain genetic materials from their countries	20%	2.54 (1.11)

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree



# Research Impacts: Collaboration

**Have you ever had to end a research collaboration because you were unable to obtain the genetic materials you needed for your research?**

	US	Non-US
Percent of respondents who have ended research due to inability to obtain GRFA	25%	11%

Yes =1, No = 0

# Research Impacts: Structure & Outputs

To what extent do you agree or disagree that rules, regulations and administrative processes related to exchange of genetic materials result in the following outcomes?

	Percent Agree / Strongly Agree	Mean (SD)
Delayed your research projects because you could not access the material you needed	53%	3.17 (1.30)
Changed the collaborators you work with	41%	2.95 (1.30)
Changed the countries you work with	41%	2.96 (1.30)
Delayed publication of data from the research	29%	2.69 (1.18)
Delayed your publications because of restriction on germplasm use	23%	2.60 (1.14)
Prevented you from claiming ownership over results from your research	20%	2.53 (1.17)

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree  
No significant US non-US differences

# Research Impacts: Consequences

Please indicate the extent to which you agree or disagree with the following statements about trends in your area of research in the last two years:

	Percent agree / strongly agree	Percent disagree / strongly disagree
Delays or blockages of genetic materials have had negative consequences for my research.	57.4%	21.3%
Time required to obtain genetic materials has increased so much that it has affected the research process.	61.7%	17.1%

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

# Scientists Perceptions on Ownership & Openness

Please indicate the extent to which you agree or disagree with the following statements about trends in your area of research in the last two years:

	Percent agree / strongly agree	Mean (sd) (full sample)
Ownership rights on genetic material support equal distribution of benefits from research	51%	3.49 (1.03)
Ownership rights severely limit the dissemination of knowledge about genetic materials	63%	3.74 (0.98)

1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; 5=strongly agree

This presentation is part of the “**Potential and emerging impacts of the changing institutional landscape on the global exchange of genetic resources for food and agriculture (GRFA)**” research project funded by USAID.

All data and findings concern Innovation Labs members.

The project has been conducted by researchers at Arizona State University (CSTEPS), CIRAD and University of Illinois at Chicago.

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