

# **Code of Scientific Ethics**

**International Center for Agricultural Research in  
the Dry Areas**

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## **Preamble**

### **The Code**

The objective of this Code of Scientific Ethics is to raise the level of awareness within ICARDA about scientific ethics and to help diminish the likelihood that breaches of scientific ethics would occur. A corollary is to help educate our collaborators about ethics expectations, so they too could avoid potential problems.

The purpose of this code is to describe ethical conduct in scientific research and development activities. The code applies specifically to the conduct of scientific investigation and reporting.

The code should help encourage ethical conduct in science as a fundamental theme in ICARDA activities. The intent of the code is to foster a genuine commitment to fairness, accuracy, and integrity in the conduct of scientific research and development by establishing a clear understanding of expectations regarding scientific ethics. All individuals should feel that they are adequately protected from potential exploitation via unethical practices.

This code is largely based on the Code of Scientific Ethics of the **USDA Forest Service Research & Development (FS R&D)**, to whom we are greatly indebted, but has been modified for application to ICARDA. The code is a tool for self-regulation.

### **Where Does the Code Apply?**

The code applies to researchers, associates, and support staff within ICARDA, and to individuals who participate as scientists in helping to accomplish ICARDA's mission, including scientists outside ICARDA when they conduct work funded by ICARDA.

### **ICARDA Research Code of Scientific Ethics**

- I dedicate myself to the pursuit, promotion, and advancement of scientific knowledge.
- I will conduct, manage, judge, and report scientific research honestly, thoroughly, and without conflict of interest.
- I will prevent abuse of all resources entrusted to me and endeavor to treat subjects humanely, following established guidelines where they are available.
- I will not willfully hinder the research of others nor engage in dishonesty, fraud, deceit, misrepresentation, or other professional misconduct.
- I will welcome constructive criticism of my personal scientific research and offer the same to my colleagues in a manner that fosters mutual respect amid objective scientific debate.

- I will recognize past and present contributors to my research and will neither accept nor assume unauthorized and/or unwarranted credit for another's accomplishments.
- I will claim authorship for a research product only if I am willing to be held responsible for both the interpretation of the data and the conclusions as presented.
- I will claim authorship for a research product only if I have made a major intellectual contribution (as part of conception, design, data collection, data analysis, or interpretation) and made significant contributions to its preparation (write, review, or edit).
- I will not publish or use original ideas, research data, or unpublished findings of others without written approval.
- I will refrain from duplicative publication of the same research findings as original.
- I will show appropriate, diligence toward preserving and maintaining resources, such as data records, that are entrusted to me.

## Definitions

This explains and clarifies the intent of each element in the Code of Scientific Ethics.

- I dedicate myself to the pursuit, promotion, and advancement of scientific knowledge

All staff are expected to be fair and honest. Scientists, however, may face ethical challenges that are unique to the conduct and reporting of scientific research. The goal of science is knowledge, and the method of gaining new knowledge is through scientific research and development.

- I will conduct, manage, judge, and report scientific research honestly, thoroughly, and without conflict of interest

Scientific honesty and integrity of ICARDA researchers is in the public interest and must be placed ahead of personal gain or allegiance to individuals or organizations. Scientists are obligated to be thorough in documenting their work to ensure that the details of their methods are described adequately, such that other scientists can reproduce their research results.

This code element does NOT suggest that using novel investigative approaches, using unusual analysis methods, excluding data points that are known to be faulty for identifiable material reasons, or interpreting data in a novel way constitute unethical behavior. Any data modifications should be fully documented in the research record. When done honestly and diligently, use of unorthodox approaches, analysis methods, and interpretations can result in significant scientific progress. It is a breach of scientific ethics, however, if these practices are used to support a desired conclusion. It is particularly unethical if the representation is

made that the novel or unusual practices are in fact standard or the only correct way to have conducted the study, performed analyses, or interpreted the data.

Conflict of interest can be defined as a situation in which an individual's personal interest interferes with the objectivity of his/her actions or judgments. Some instances of conflict of interest occur when personal financial interests affect an individual's action, but these situations are uncommon among ICARDA scientists.

More common instances of conflict of interest in ICARDA activities occur when actions or judgments are affected by opportunities for career advancement, professional prestige, and personal allegiances or animosities.

Scientists are expected to interact with other ICARDA scientists and scientists from Advanced International Research Centers, National Agricultural Research Systems, universities, commercial enterprises, and public interest groups. A scientist's interpretation of research results, recommendations to others, and review of other scientists' works or proposals has the potential to be influenced by these individuals or entities. Furthermore, a scientist's personal prestige may depend on the perceived importance of his/her field of investigation and on the scientific community's acceptance of certain theories, paradigms, or data sets from within that field (sometimes those of the individual scientist or those of the scientist's colleagues). Even when the scientist believes he/she is acting objectively, circumstances may exist where others may perceive there is a conflict of interest. In these cases scientists are advised that they should document these relationships and make an honest effort to act in an objective fashion.

- I will prevent abuse of all resources entrusted to me and endeavor to treat human and animal subjects humanely, following established guidelines when they are available.

ICARDA personnel are expected to prevent abuse of resources used in the conduct of scientific research. A guideline for determining abuse is whether damage to the public interest (by damage to the resource) outweighs the public benefit in terms of useful knowledge gained.

Animals used for research purposes are public resources. Furthermore, an historical precedent exists that cruel treatment of human beings or animals is considered to be damaging to the public interest. ICARDA employees are expected to obey any public laws concerning humane treatment of research animals.

- I will not willfully hinder the research of others nor engage in dishonesty, fraud, deceit, misrepresentation, or other professional misconduct.

The research of other scientists may be hindered by actions such as biased review of research proposals or manuscripts submitted for publication, physical disruption of another scientist's experiments, denial of access to resources or data needed by other scientists to perform their work, or failure to provide information that other scientists need to duplicate; research or verify its accuracy.

Scientific staff are expected to allow others access to research resources that have been entrusted to them, unless doing so would compromise the scientific validity of their research or substantially interfere with its performance. Reasonable judgments that specific actions would compromise the validity of research or interfere with its performance depend on individual circumstances. Therefore, this code does not attempt to provide specific guidelines for making such determination. However, denying other researchers access to research resources or data from published studies primarily for the purpose of enhancing one's own position of importance is unethical.

- I will welcome constructive criticism of my personal scientific research and offer the same to my colleagues in a manner that fosters mutual respect amid objective scientific debate.

Scientific research is a contest of ideas and the newest concepts that are not part of a current paradigm can result in serious conflict. Open and honest debate is essential for the advancement of science.

The peer-review process is an important step in the conduct of scientific research and should be free of personal and professional jealousies, competitions, and disagreements and conflicts of interest (see detailed discussion under other code items). Reviewer comments on publications in process should be focused on their logical and scientific validity, rather than the personal feelings of the reviewer or past or current interactions between the reviewer and the author.

All authors should try to avoid putting reviewers in a position where personal or professional relationships might influence the reviewer's ability to provide an honest review. Use of a single- or double-blind peer review process may help in these situations.

It is sometimes necessary that certain scientific reviews are conducted anonymously and the identity of the reviewers be kept confidential. In order for other reviewers to express their views honestly and without fear of repercussion or retaliation, each participant in the review process should respect the confidential nature of the review process and not identify themselves or other reviewers.

- I will recognize past and present contributors to my research and will neither accept nor assume unauthorized and/or unwarranted credit for another's accomplishments.

Scientific knowledge is cumulative and is built on the contributions of many scientists over many years. Recognition often takes the form of credits in a publication through an acknowledgement, citation, or co-authorship. It is unethical to omit citations of a scientist's work because of personal disagreements when their ideas have influenced a manuscript.

- I will claim authorship for a research product only if I am willing to be held responsible for both the interpretation of the data and the conclusions as presented.

This Code element concerns what is often termed "responsible authorship." It is intended to discourage claims by an individual of rights to authorship and associated benefits without a willingness to accept professional responsibility tied to authorship. It is also intended to assure that individuals who have made a substantial intellectual contribution to a study are appropriately recognized.

Manuscripts with multiple authors reflect the creative inputs of all the authors. With complex studies, individual authors may not be able to ascertain the accuracy of every detail of the work conducted by their co-authors. In these situations, individual authors are not expected to be responsible for every technical detail of the work performed by coauthors but should be able to fully explain and defend the manuscript's major conclusions. Coauthors are jointly responsible for all statements made in manuscripts.

- I will claim authorship for a research product only if I have made a major intellectual contribution (as part of conception, design, data collection, data analysis, or interpretation) and made significant contributions to its preparation (write, review, or edit)

This code element addresses the topic of "honorary authorship." Individuals within ICARDA have sometimes demanded or claimed authorship on research manuscripts to which they made no intellectual contribution. This practice is not acceptable.

"Honorary authorship" instigated by a junior scientist who adds the name of an established scientist to a manuscript prepared by the junior scientist to help ease the manuscript through the peer review process is also unacceptable. Scientists should not add the name of any person to a manuscript byline unless the person made an intellectual contribution to the manuscript.

Scientists may serve important roles as facilitators of research and development studies by providing administrative support, by attracting and directing financial support, or by virtue of their reputation or position facilitating cooperative relationships with other research institutions. None of these roles constitutes an intellectual contribution to the published research worthy of claiming authorship. Claiming authorship on manuscripts to which an individual provided no intellectual contribution is dishonest and, therefore, unacceptable. However, recognition for these important roles in facilitating research and development should be included in the individual's position description.

Intellectual contributions in data collection means not merely collecting data following a standard, recognized protocol, but entails developing the process by which data are collected or validated.

- I will not publish or use original ideas, research data, or unpublished findings of others without written approval

This code element addresses plagiarism and theft of ideas, data, or unpublished findings. It seeks to protect the intellectual efforts of scientists. Permanent damage to the scientific record can occur once the stolen intellectual property is published. It may be impossible to correct the record to properly identify the true source of the information once published.

The scientist who prepares a **draft** manuscript or submits a research proposal retains the exclusive intellectual property right to the ideas described in the manuscript or proposal. Scientists who act as reviewers of the manuscript or research proposal may not use those ideas in their own research or development activities until the manuscript is published or until the author of the proposal gives permission. The only certain way to obtain official permission is in writing. If permission is granted, there may be stipulations on how the ideas or information may be used. Those stipulations must be followed and appropriate credit given.

Supervisors have sometimes presented in papers or at meetings intermediate data or results of work by scientists they supervise. This should only be done with the subordinate scientist's permission and knowledge and with full credit given.

Special situations are created by the untimely death, permanent disability, or changes of employment (e.g., to a non-research position) of a researcher or developer with work in progress. In most cases, it is ethical for supervisors or colleagues to assure that the unpublished ideas, data, and/or findings are made available to the public. The scientist originating the ideas, data, and/or findings should be clearly identified through co-authorship. Senior authorship by a deceased or disabled scientist may be appropriate and determined in the same way as for active scientists.

Speeches and papers that are not scientific papers or presentations are outside the scope of this Code of Scientific Ethics. For example, researchers may sometimes write speeches for management on programmatic or policy issues, functioning as anonymous authors.

- I will refrain from duplicative publication of the same research findings as original.

This item addresses the practice of repetitive publication of the same research or identical manuscripts in different outlets for the primary purpose of increasing the number of publications a scientist can list to their credit. This does not suggest that it is inappropriate to publish more than one manuscript based on a single piece of research. In some cases, the same research may be of interest to separate audiences having different technical specialties or to journals having different readerships. In order to make the information readily available to those different audiences, publication of the same research study in different venues with different styles, emphasis, scope, and/or tailored to their specific interests is appropriate and ethical. Also, during the execution of a study, data of different types may be collected, and publication of all the data or analyses in a single article may not be feasible if manuscript length limitations are to be met. It is therefore NOT the intent that any scientist be accused of misconduct merely because he/she published more than one manuscript based on the same research study. However, earlier publications should be referenced in subsequent publications wherever possible. What is intended by this Code element is discouraging the publication of substantially the same manuscript in multiple outlets.

- I will show appropriate diligence toward preserving and maintaining resources, such as data records, that are entrusted to me.

Scientists have the responsibility of presenting and maintaining information so that other scientists can reproduce their work and/or evaluate its validity. This does not suggest that scientists must provide every detail of their methodology in manuscripts or presentations; editorial constraints often prohibit this. Nevertheless, scientists should accurately, if briefly, describe methodology in manuscripts and be prepared to provide details on request. Likewise, scientists should maintain raw data for reasonable periods after publication. Doing so will permit other scientists to evaluate its validity. What constitutes a reasonable period for maintenance of raw data varies with the scientific discipline, but 5 years after publication is a minimum.

Scientific staff should not modify, dismantle, or discard research materials, plots, or apparatuses of other researchers with few exceptions: permission was granted by the other researchers, the resources were abandoned, or the items pose an imminent safety hazard. Data gathered by others should also be treated with respect; it must not be discarded unless it is objectively judged as having no scientific validity. Determination of scientific validity should not be made without consulting with the individuals responsible for generating it.

Determination that another scientist has abandoned research resources or data must not be casually assumed. Inquiry concerning whether research resources have been abandoned is a necessary professional courtesy.

Other directions on preservation of study documentation should be followed. Examples of documents that should be retained in the study file include the project plan, laboratory notebooks, original data, metadata, and quality assurance/quality control information. These items may be on both paper and electronic media. The study file is the permanent possession of the unit to which the researcher or developer is assigned. When an employee departs to take another job or through retirement, arrangements may be made by the former supervisor for the employee to take with her/him duplicates of some/all of the information contained in a study file. Original documents must always remain with ICARDA.

### **Handling of Allegations of Scientific Misconduct**

The process flowchart illustrates how the process for handling allegations of scientific misconduct shall be done. The role of the senior scientist is to answer questions about the general nature of the scientific method and the ways in which research and development activities in ICARDA are conducted. If the process reaches the analysis phase, an Ethics Panel may be appointed to review findings and make recommendations. More details on the Ethics Panel and the senior scientist are contained in the definitions, below. The equivalency table provides a crosswalk from actions considered to be scientific ethic misconduct to the more general items of administrative misconduct.

#### *Definitions*

Scientific Misconduct. Scientific misconduct includes both research misconduct and professional misconduct. It does not include instances of honest error, honest differences of

opinion, differences in interpretation of scientific data, or disagreements involving experimental design.

Research Misconduct. Research misconduct is defined as fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results.

*Fabrication:* Fabrication is making up results and recording or reporting them.

*Falsification:* Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record.

*Plagiarism:* Plagiarism means the appropriation of another person's ideas, processes, results, or words without giving appropriate credit, including those obtained through confidential review of others' research proposals and manuscripts.

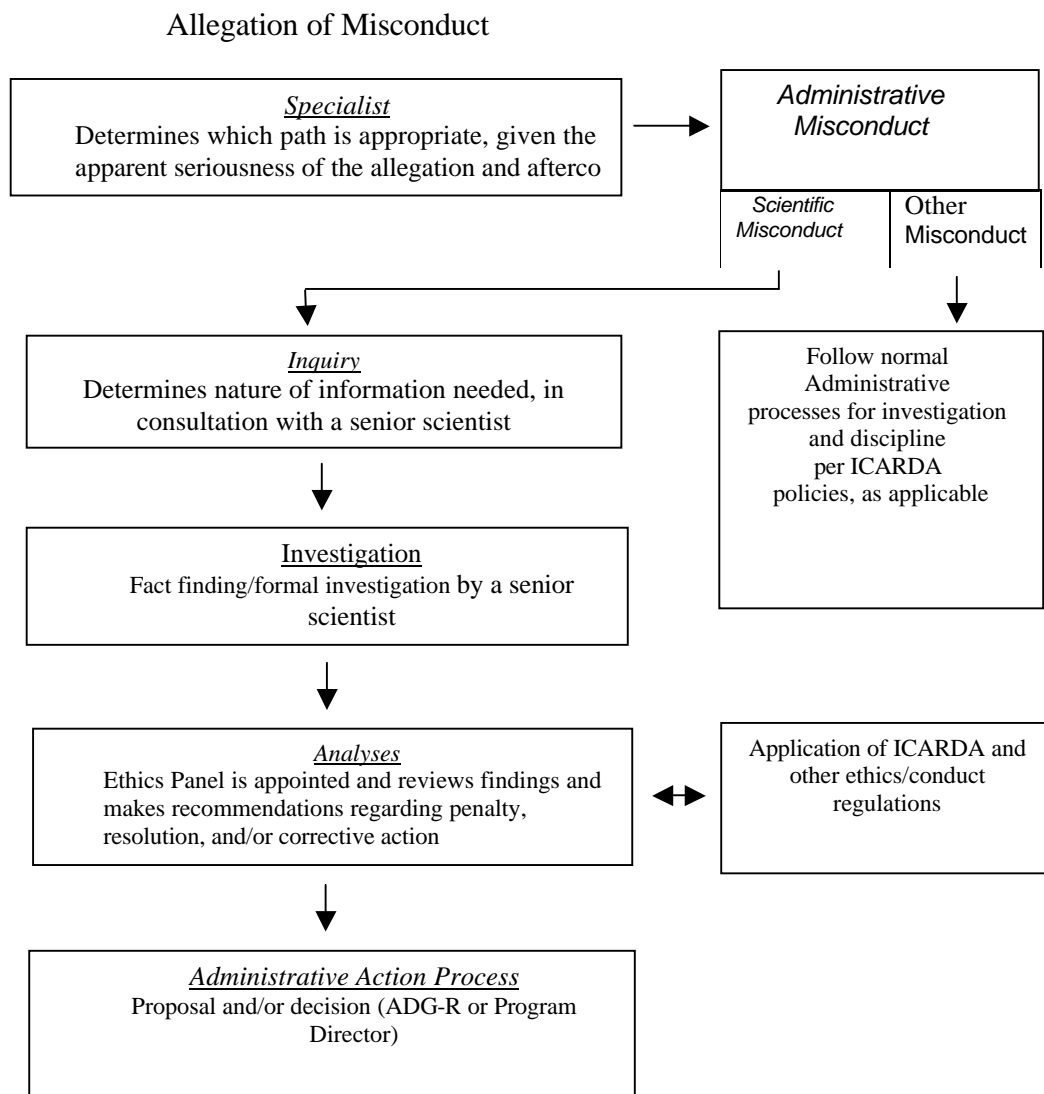
Professional Misconduct. Professional misconduct includes but is not limited to exploitation of research associates, conferring or denying authorship inappropriately, duplicative publication, misstating one's research credentials, failing to retain significant data for a reasonable period, unauthorized use of data, or failing to publish significant data in a timely manner without reasonable cause.

Ethics Panel: An Ethics Panel participates in the process for handling allegations of scientific misconduct (See the flowchart on page 13). It consists of a Panel Chair, and two scientists. The Ethics Panel Chair will be an individual that is not in the line of authority over the individual being investigated. The Program Director whose employee or collaborator is accused of scientific misconduct appoints the Ethics Panel after the inquiry and/or investigation determines that there is some substance to the allegation or if management has reasonable suspicion that a specific act of misconduct has occurred. To assure the independence of the process, at least half the panel members should be selected from outside the research station responding to the inquiry.

Senior Scientist: An individual who has at least 5 years of experience as a researcher with ICARDA and who will become a member of the Ethics Panel if one is appointed.

## Process for Handling Allegations of Scientific Misconduct

Use the process for handling allegations of administrative misconduct to handle allegations of scientific misconduct with modifications as shown below. If at any point in the process there is a determination of "no misconduct," the case immediately goes to the ADG-R or appropriate Program Director for a decision to take no further action on the allegation.



## Table of Misconducts and Penalties

<b>Scientific Ethics Misconduct</b>		<b>Administrative Misconduct</b>	<b>Penalty for First Offense</b>	<b>Penalty for Subsequent Offense</b>
Inappropriate authorship	→	False statement, or misrepresentation of material facts or documents in connection with official matter. Unauthorized use, removal, or possession of a thing of value belonging to another employee or private citizen.	Letter of reprimand to removal  Letter of reprimand to removal	Removal  Removal
Falsification of data	→	False statement, knowingly and willfully making an incorrect entry on an official document, or approving an incorrect official document	Letter of reprimand to removal	14-day suspension to removal
Conflict of interest in review/ comment on manuscripts or proposals	→	Unethical or improper use of official authority or credentials.	Letter of reprimand to removal	Removal
Misrepresentation of credentials and/ or accomplishments	→	False statement, misrepresentation, falsification, or concealment of material facts or documents in connection with an official matter, including an investigation.	Letter of reprimand to removal	Removal
Unwarranted credits for another's accomplishments	→	Unauthorized use, removal, or possession of a thing of value belonging to another employee or private citizen	Letter of reprimand to removal	Removal
Use of another's ideas without approval	→	Unauthorized use, removal, or possession of a thing of value belonging to another employee or private citizen.	Letter of reprimand to removal	Removal