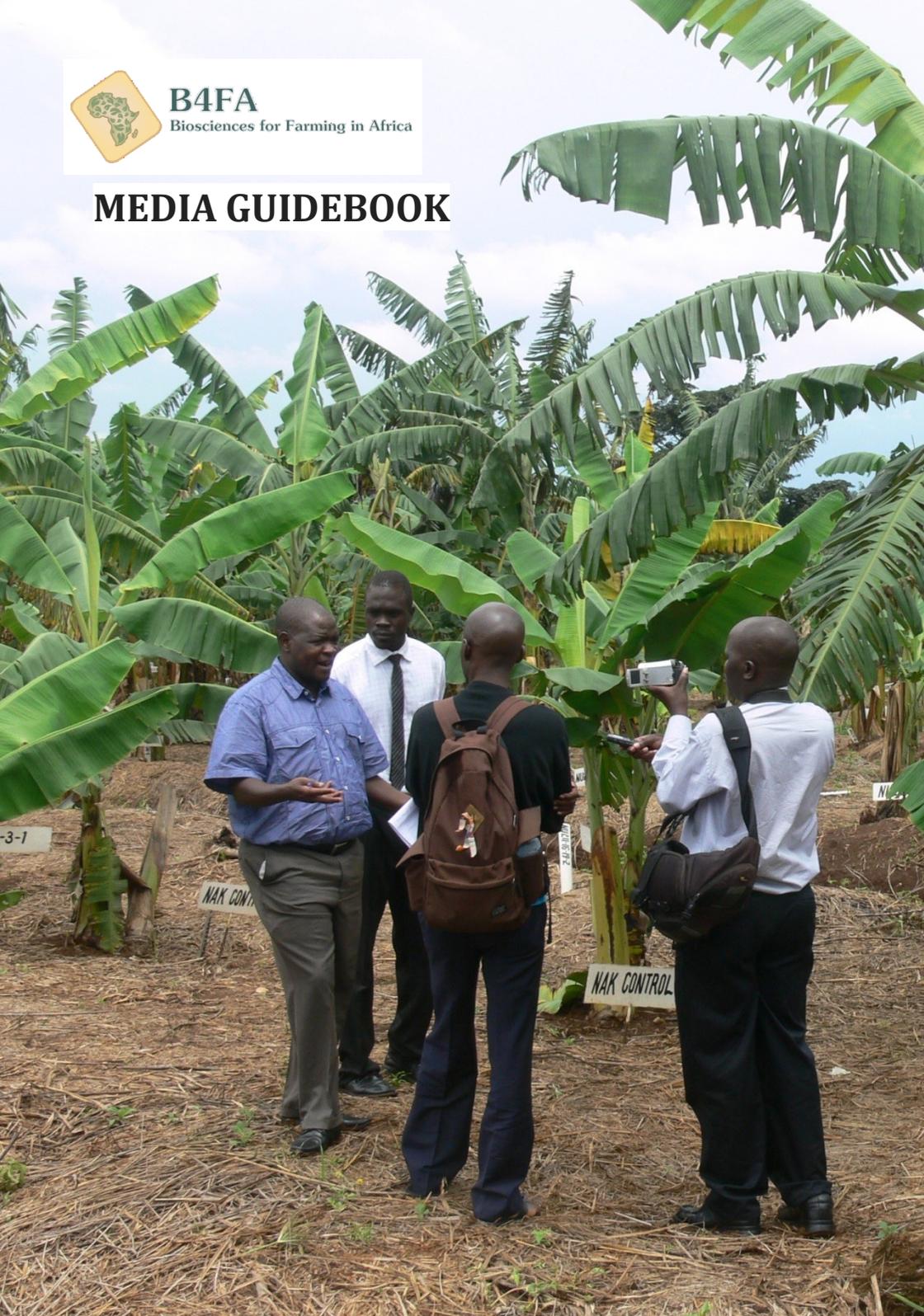




B4FA
Biosciences for Farming in Africa

MEDIA GUIDEBOOK





B4FA

Biosciences for Farming in Africa

This Media guidebook, published by the Biosciences for Farming in Africa project, is also available in pdf format on www.b4fa.org

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Introduction

African journalists have prime access to one of the biggest stories of this century.

In response to United Nation projections that Africa's population will quadruple by the century's end, scientists across the continent are deploying new tools of agricultural biosciences in an urgent race to propel food production and prevent widespread hunger.



Ultimately, the success of that effort will depend on cooperation from smallholder farmers, policy makers and consumers. That cooperation, in turn, will depend on information that can foster dialog and understanding of the need for the research and the results it can bring. No one is better positioned to deliver that information than African journalists.

It is not a simple task, though, to accurately explain new developments such as the microbiology that yields improved cuttings for cassava, the genetic shuffle enabling hybrid maize to tolerate drought and the gene transfer process that gives rise to virus-resistant bananas.

This pocket guide is intended to help with that task. It also includes journalistic tips for reporting Africa's all-important bioscience stories to a world that is watching the continent.

II. Preparation

Cultivating Bioscience Sources

A common lament from aspiring science writers is that scientists won't return their phone calls. It's a real problem, but not necessarily a story stopper.

First, exhaust the reasonable approaches:

- Plead the public's need to know about the research, especially if the scientist or the research institution has received public funding.
- Work other connections, such as scientists and regulators who know you, financial backers of the research and international organizations engaged in related research.
- Appeal to the research institution's press officer. (Established science writers prefer to go straight to the scientists, but some press officers can help break the ice.)
- Send emails. Many scientists travel frequently and prefer this channel for corresponding.

Still ignored? Start the basic reporting for your story:



- Collect scientific papers the source has published and related material posted on the web sites of the scientist, the research institution and other affiliates.
- Interview others in the know, such as government regulators, experts at international research institutions, leaders of agricultural organizations, and companies with a stake in the research.
- Contact the scientist again, outlining the information you have gathered. Make it clear that you will do the story and that it is in the scientist's best interest to cooperate in order to get the facts right.

- State your deadline. Scientists often are surprised at the tight turnaround time in journalism.
- If the scientist still ignores you, run the story anyway, saying without spite that he or she did not respond. Then send a copy to the scientist with a note saying you hope to talk for future stories.

BIG CAVEAT: This strategy will backfire unless you are scrupulous about your research and writing. You must be absolutely accurate, clear and fair.

Let's say you've tried everything. Here's advice from a media-savvy scientist, Nigerian plant breeder Moses Adeolu Adebayo: "I was a fisher boy who learned a great dose of resilience and persistence by the riverside. When I cast my line and hook, I got disappointed several times to realize that my bait was gone without a catch. I had to stay several hours doing it over and over. That is the game (you play) to catch a busy scientist. Keep trying. He's human. He'll eventually oblige you."

PHOTO MOSES

Maintaining networks of science sources

Once established, relationships with key science sources need maintenance:

- Take every opportunity to attend conferences, seminars and media briefings at research institutions and universities. Use those opportunities to reinforce personal connections.
- Send copies of your stories or links to scientists whose research is relevant.
- If you interview one scientist, ask about the research of his or her colleagues down the hall. Better yet, ask for an introduction.
- Solicit scientists to help you fact check a story or gauge the significance of another's research. Ask them to comment for stories.
- Rather than ask a scientist to take precious time for a lengthy interview, try shadowing him or her while working in a lab, lecturing students, or presenting research findings at a meeting with peers. The approach gives you

action for your story and also shows that you respect the busy schedule. Of course, you will need some time in the process to ask questions too.

- Invite scientists to speak or at least sit in on science writers' conferences and workshops.
- Make friends with communications officers at research institutions and scientific journals. You don't want to regurgitate their press releases because you are a journalist, not a secretary. But they sometimes will help chase down information and hard-to-reach scientists.
- Cultivate government regulators and lobbyists with an interest in biosciences. Many have access to data and key sources. Know their agenda, though, and don't let yourself be used to serve it.

All sources are not alike

- A science degree does not necessarily create an authoritative source. Make sure the expert has the background you need for a particular story.
- Scientists often differ. Explore their various viewpoints, not necessarily to pit one against the other but to expand your story and give it sophistication.
- Watch for conflicts of interest and ties with organizations and causes that might sway opinion. Check to see who is funding the research and who has a commercial interest in the results. Even scientists at major research universities rely on grants from outsiders with interests in the outcome; that is not to say the research would be flawed. In the interest of transparency, though, reveal that relationship in your story.
- Scientists working in private industry can be crucial sources of information. As with lobbyists, know their agenda. Don't be swayed by it. Again, reveal the connection in your story.

Peer review

From the Australian Science Media Center [http://www.smc.org.au/for-media/tips-on-reporting-science/#Scientists as sources](http://www.smc.org.au/for-media/tips-on-reporting-science/#Scientists%20as%20sources)

Peer-review – How does it work?

After experiments have run their course and results are in, scientists turn their focus to writing up and publishing their research in peer-reviewed journals.

It's an extremely important part of the scientific process, as it means other scientists around the world can quickly learn from each other's successes and failures, and also independently test the research for themselves to verify its accuracy. Publishing is also an important measure for many scientists of their output.

Before a paper can be published in a reputable journal, it must be peer-reviewed. In a process which can last months, a paper is sent out to several scientists working in the same field, who are best positioned to be able to decide whether the study is well designed, the methodology is sound, and the conclusions drawn make sense. The reviewers' comments are anonymous and unpaid.

Why is this step necessary? Because science is becoming increasingly complex, and no one person has all the knowledge necessary to evaluate the full range of research submitted for publication. Even for the journals which are devoted to a single field, the plethora of subjects within it mean that those best suited to judging the merit of a paper are those people working on something similar. Peer review is designed to provide an important check on the quality of research entering the public domain.

A paper submitted for peer review can have one of three different outcomes – it can be accepted with no changes, sent back for revision, or rejected outright. If this latter occurs, the paper's authors can always try to get it published in another journal and hope for a more favourable outcome.

This strategy of submitting rejected papers repeatedly 'down the chain' to ever less competitive journals is part of the reason that the quality of research papers in more obscure journals may be less robust than in the most highly sought after ones.

Embargoes are designed to give journalists time (typically a few days), to digest the research, conduct interviews and source graphics. Be aware – breaking an embargo can result in your organisation being banned from receiving future press releases.

Many embargoes are issued in international time zones, so check your local time conversion.

Looking for the story: Enterprise on the Bioscience Beat

Current events generally drive journalism: candidates lose, planes crash, teams win, tragedy strikes.

On the bioscience beat, though, the important stories often unroll slowly.

That reality is not a drawback. It's a bonus. It frees you from dependence on the press release and challenges you to do science writing at its best

Rather than chase big stories, journalism professor and author Deborah Blum said that she prefers enterprise stories that show the essential connections between science and real life. Blum has helped foster science writing in Africa as a board member of the World Federation of Science Journalists. In the United States, she also is past president of the National Association of Science Writers.

"I like the view through a small lens," Blum said in an interview for a [Wellcome Trust report](#) on science writing. "The audience that interests me doesn't really dwell in the science inner circle but outside of it."

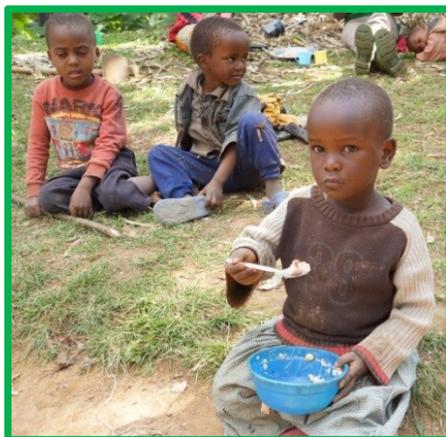
Here's what Blum tells her science writing students at the University of Wisconsin: "Science is, at its heart, a human inquiry, just people trying to understand the world around us. . . . If we fail to convey that, we aren't really doing justice to what makes it so difficult, so fascinating, and so important."

In that spirit, think of the bioscience stories waiting to be told:

Think children. No stories are more compelling than those exploring question of whether children are getting enough nutrition to become healthy, smart and productive adults. Those stories are waiting to be told as scientists across Africa work to boost micronutrients in common foods like sweet potato and banana.

Think policy. Tension between farmers and governments is an old story, but it takes on fresh urgency as Africa's population skyrockets.

This is a prime time to explore questions of whether farmers are getting the



extension service, research funding, seed technology, and other support they need to feed future Africans.

Think global. How do crop yields in your country compare with those across Africa and around the world? The answers could yield a wealth of stories about what government officials, farmers, scientists and others are doing – or, failing to do – to achieve the yield gains needed to feed ever more people.

Think local. Some prized local crops are called orphans because they were neglected for years by scientist who focused on maize, rice, wheat and other major crops. Now, the orphans are finding a home in African research laboratories. You could be among the first to tell their stories.

Think pests. From viruses attacking cassava to weevils hatching in beans, pests are taking a big bite out of Africa's food supplies. Scientists have some interesting new ideas for getting the best of the bugs and sparing the environment from some potent pesticides.

Think environment. Drought already is afflicting large pockets of Africa's farm land. Scientists say that is only the beginning of the trouble farmers could see as the global climate changes. Meanwhile, scientists and farmers are working to address a host of other questions about the interaction between agriculture and the environment.

Think food bowl. Everyone is interested in food. Questions of what farmers and scientists are doing to affect the taste, shelf life and price of food are worth stories that belong in every section of the newspaper or broadcast report.

Think people. Scientists conducting important research, government officials weighing difficult options and farmers struggling with low yields offer the framework for fascinating stories. Profile them. Or use them as the main characters in a narrative that captures the science as well as the human element.

Think market. New local and international markets constantly are developing for food. Products virtually unknown (edamame) 10 years ago now are hot. Others (cassava) have international potential.

Maximizing the Press Conference and Other Packaged “News”

If you rely on press releases, press conferences and other packaged “news” that falls on your desk, you are getting the same story as every other journalist in town.

Of course, you’d like to stand out from the pack. You can have it both ways: make use of the packaged news and stand out too. You simply have to work hard.

Start by critically evaluating the incoming item:

- Who is staging the press conference or issuing the press release?
- What is the reputation of scientists and others involved in pitching the story to you?
- Do they have an agenda?
- Who is funding the work? Do the funders have an agenda?
- Are they offering something truly newsworthy, important and interesting?

If the answers raise doubt about the value of the story, it may not be worthy of your time and byline.

Before the press conference or media event:

- Call the key people and ask what they plan to say.
- Call knowledgeable others. Ask what they think of the story and what questions they would ask if they were attending.
- Check the record of the key people involved. If they have a reputation for pitching pseudo-science or old news in new packages, you might find a better use for your time.
- Prepare questions and prioritize them. You may get only one chance, and you want to use it asking your “money” question.

At the press conference or media event:

- Sit as close to the front as possible. You will want to make eye contact with the speakers and position yourself to be called upon for questions.
- Try to be the second person to ask a question. Being first is tricky because you don’t yet know how questions will be treated. But by the third query, others will leap in and you may lose the opportunity.

- Get the names, including spelling, of every speaker.
- Listen to the preliminary speech but don't feel bound by it. You are not a secretary taking dictation; you are a journalist with your own priorities and your own obligations to your audience. Listen, especially, for twisting of facts and obvious spin; you will want to clarify the record during the Q&A.
- If the speaker says he or she won't take questions, ask anyway. Don't be afraid to shout. If you don't get answers, try to catch the speaker leaving the event unless the venue's security rules block you from doing so. Even then, extend your card and ask if you can call.
- Remember that everything said is fully available to all reporters present. That means a response to another reporter's question is fair game for you to use. The reverse also is true so that your questions can inform your competitors. In other words, if you are working on an exclusive angle to the story BE CAREFUL with your questions.
- Don't limit questions to the official press conference subject. For example, if a seed distributor stages a press conference to tout new varieties, don't hesitate to ask about allegations that he or she has been peddling fake hybrids to farmers.
- Don't leave early unless you are on a tight deadline. You never know when a question is going to trigger an unexpected response. Some speakers will hang around after the official ending, answering questions informally.

After the event:

- Seek other experts and alternative viewpoints to round out your story and verify information.
- Do research about the context.
- Start your story with the most interesting information. The fact that someone spoke at a press conference is not the most newsworthy detail unless an official called the conference to clear up allegations of wrongdoing. So save the press conference reference for lower in the story. You should distinguish, though, between statements made at a press conference and quotes you gathered during a one-on-one interview.

Other "packaged" news

Scientific journals can be the most original and authentic sources of news on the bioscience beat:

- Take time to learn which are most relevant for you. A local scientist should have good recommendations.
- Sign up for email alerts from research institutions and prominent journals such as Nature. Often, those publications will give journalists access to content without requiring a subscription.
- Sign up for embargoed news from prime sources of science news. That means pledging not to publish or broadcast the story before the specified embargo time and date. HONOR THAT PLEDGE or risk being cut off from future embargoed news. However, if another reporter breaks the embargo, everyone else usually is released from the pledge.
- Peer-reviewed articles may appear daunting. Break them into manageable parts by starting with the abstract or introduction. Comb through the discussion and conclusions sections. Then, if you can get an interview, ask the scientist about the details of the research. You can double-check your understanding of complex subjects by reviewing third-party sources. Even Wikipedia and other such open sources can be useful in screening for gaps in your knowledge; keep in mind, though, that they aren't 100 percent reliable and, therefore, not suitable for quoting. Many top publications refuse to cite them ever. Never lift wording from them for use in your story.

Interviewing Scientists

“Nothing is more frustrating than talking to a journalist who has no background information about the subject matter,” said Nigerian Plant Breeder Moses Adeolu Adebayo.

Indeed!

The first, second and third rules of interviewing are prepare, prepare, prepare. Know as much as possible before you head into the field.

Before the interview:

- **Set objectives.** Some interviews are for information, but you may have other goals such as gaining an opinion on a given policy, adding a personal touch to your story, or profiling the scientist. If your mind is clear about what you need, you will focus your time accordingly.
- **Research the scientist.** Know in advance the scientist’s area of expertise and the financial backing for the research. For the credibility of your story, you must be prepared to ask about any conflicts of interest or obligations to funding sources. To guard against manipulation, assess the scientist’s reasons for granting the interview. Check the scientist’s postings on Facebook, Twitter and other social media.
- **Research the subject.** There is no excuse for failing to know what has been reported in the popular press. Scientific papers may be more difficult to access and read, but you should comb through key papers and skim abstracts of related publications. Also helpful are related reports published by universities and NGOs such as the institutions in the CGIAR Consortium.



- **Talk to other experts.** A quick call to another scientist might yield useful suggestions for questions. The same is true for knowledgeable government officials, lobbyists and farm groups with a stake in the research.
- **List questions and prioritize them.** While this is an essential step, don't expect to use the questions as a set-in-stone script during the interview. That would make for a static exchange with no follow through and exploration of the scientist's answers.
- **Consider requests for an advance list of questions.** If the scientist asks for an advance list and you decide to provide it, be clear that it is a rough guide for the interview. Explain that a single answer to each prepared question rarely is enough; you will need to probe for explanations and understanding.

During the interview:

- Arrive on time.
- Inform the interviewee of your general plan while also keeping the tone conversational. "This is for a two-minute spot in a radio feature story about virus in cassava, and voices of frustrated farmers will be included as well."
- If the scientist asks to speak off the record, define what that means. Options might include not using the scientist's name, not using the material at all, or using the tip to get the information from another source. Negotiate to keep as much as possible on the record. Don't make deals your editors won't back. If you do make a deal, honor it.
- Prioritize your questions again. Some journalists start with easier questions in order to warm up the scientist. Some lead with the tough questions. Whichever strategy you use, make sure you will get to key questions before time is up.
- Ask clear questions, point by point. If you try to cover three different points in one question, you invite confusing answers.
- Control the pace to get the facts straight. Often the scientist will lecture or skim over details that are well known in his or her professional circles. Don't be afraid to break in with basic questions. When did that happen? Who did that? Where was that event? (And fact-check the minute you get home, both because you're more likely to remember uneasiness from the field and because discovery of an error or misunderstanding can cause your story to unravel.)

- Don't turn your questions into displays of your vast knowledge of the subject. Good questions are like good writing – clear and direct, informed by deep knowledge but simple in their expression.
- Keep your audience constantly in mind. If an answer is confusing or too technical, ask the scientist to help you translate it. Ask for examples and metaphors. Ask the same question in different ways, and tell the scientist why you are doing so.
- Listen. Don't be afraid of silence. Your best information may come after the scientist pauses to think for a moment.
- Get the potential practical impact. You should ask how farmers will get the technology, Emmarold Mneney, Principal Research Officer at Mikocheni Agricultural Research Institute in Dar es Salaam told Tanzanian journalists. “Ask them about the short-term impact of what they are developing,” Mneney said. “That will be critical.”
- If the scientist asks to review your story before publication or broadcast, offer to call and read back the parts describing his or her work, but not the whole story.



Emmarold Mneney

After the interview:

- Review your notes and recordings as soon as possible, sifting for direct quotes and information you might use indirectly. Even the paraphrased material should be attributed unless it is common knowledge.
- Identify information gaps and points that need clarification.
- Verify facts. If you find inaccuracies, it's possible you misunderstood something the scientist said and will need clarification. It's also possible the scientist was just wrong.

Now you are ready to write the story. Quote accurately. You may need another interview with this scientist for a future story. If you've done the advance work, "the scientist will be excited to talk," said Moses Adeolu Adebayo.

Using data effectively

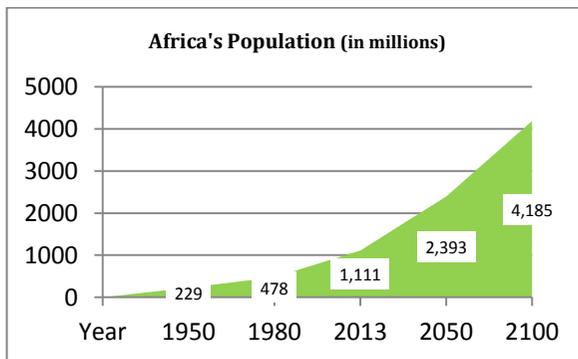
Today's world is one of data-driven journalism. Given new technology and extraordinary resources via the web, we can build the graphics ourselves to display the data we use to bolster our story.

A story about Africa, for example, could say that its population was 1.1 billion in 2013. That seems like a lot of people. But the number doesn't truly say much standing alone. What if the writer added the fact that the population had been 229 million in 1950? Wow! Now we know that the population roughly quadrupled in a couple of generations.

Further, what if the writer included U.N. Population Division projections that Africa would be home to some 2.4 billion people in the year 2050 and 4.2 billion in 2100?

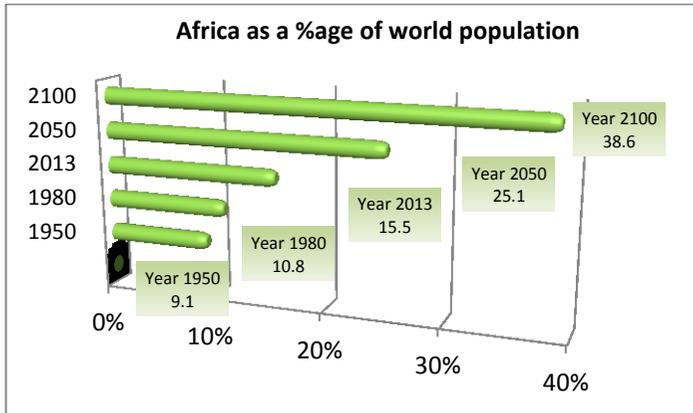
OK! Now we have a data set, creating a chance for multiple dramatic stories and eye-catching displays.

Here is one way the data could be shown with just a few minutes work on Microsoft Excel software:



Note: Years 2050 and 2100 are projected, assuming medium fertility
Source: U.N. Population Division

Or, if the writer wanted to depict Africa's population as it stands in relation to the rest of the world, it could be done like this:



Source: U.N Population Division

Again, the graphic was done in a few minutes on standard software.

The point here is that data can add drama to your stories and your displays. And it's easier to use than ever before, thanks to the Internet and modern computing tools. News organizations around the world not only are using more data, they also are creating entire "data-driven" beats to mine treasure troves of numbers for previously untold stories.

Science beats, in particular, offer prime opportunities to make use of data. When it comes to agricultural sciences, a wealth of data is available from government reports, scientific studies, and international organizations. Studies of farming, nutrition, and various measures of food security are readily available to reporters.

Tips for finding data

You can find databases aplenty online. And many increasingly offer data in formats that can be readily manipulated. The U.N. Population Division cited above, for example, offers its data sets in a spreadsheet format as well as conventional text. The Food and Agricultural Organization of the United Nations offers tools for statistical analysis and visualization. The list goes on and on. BE CAREFUL, though. Junk statistics are readily available online too. If you suspect the numbers are coming from a less-than-reputable organization or one with a controversial agenda, don't use them.

- Ask scientists to recommend data that could illustrate their research topics. Some may offer data directly related to their studies. Others may steer you toward background data such as measures of global yields for a given crop or

nutritional deficiencies in a given group of people. If you find a data set on your own, you might check it with an expert to make sure it is valid and relevant.

- Search-and-analysis tools such as [Google Public Data Explorer](#) are increasingly available online, offering links to the World Bank, the International Monetary Fund, and many other useful sources. With fewer than five clicks on Google's explorer, you can create a visualization showing mobile phone subscriptions in your country, your region or the world from 1960 to the present. In Africa, a pioneering model is the [Kenya Open Data Initiative](#).
- If your biosciences story takes you into the health realm, you can find a database of clinical trials in 185 countries at [clinicaltrials.gov](#). Other comprehensive collections are taking shape to cover the environment and many other subjects.

Tips for using data

- Numbers like company. Rather than leave one number standing alone in your story, you can add value by finding related numbers to show trends, change, and proportion. As with the population example above, this can add a “wow-factor” and also give you material for appealing graphics. Don't overdo it, though. Some editors set a limit of three numbers per paragraph in order to spare the audience confusion.
- Numbers call for perspective. Help your audience grasp the significance of numbers by drawing comparisons. With the population example above, for example, one way to put Africa's population in perspective would be to say that in 2013 it was slightly larger than the populations of Europe and Northern America combined. In a different example, if you say the cassava yield was 10 tonnes per hectare, you could say that is roughly the weight of three compact cars per hectare.
- Always check your millions and billions. It is easy to drop a zero or slip a comma into the wrong place. Best to check against the original source of the numbers.
- Do the translations. If your audience thinks in shillings or cedis or any other local currency, convert amounts that had been expressed in euros or dollars. Also convert sums from the past into current dollars. For example, if you say “Ten years ago Farmer XX was earning XXX shillings from her papaya trees,” adjust that income for inflation.

- Use common sense. If a number sounds too big or too small, check it out.
- Back up your own calculations. If you calculate sums, percentages or other figures on your own, ask a colleague to do the calculations independently – just to be safe. You want to dazzle your sources and audience with data skills; errors do not help.

Tips for presenting data

- If this challenge intimidates you, start small by creating simple graphics like those shown above. Practice will prepare you for more complex tasks like importing, cleaning, and manipulating databases. When you are ready for those steps, you will find a wealth of guidance online. One useful source is [Data Journalism Handbook](#) originating from a workshop at MozFest 2011 in London.
- Play with the tools available to you online and in your computer software packages. This is fun! And the data toy box is growing amazingly. The World Bank's [Better World Flux](#), for example, is a visual communication tool designed to help explore and explain the status of UN Millennium Development Goals.
- If your stories appear on a website as well as in print or broadcast format, you can find snazzy and free new tools online for creating interactive visualizations, timelines, and infographics. For example, if you wanted to show the regulation of biotech crops across Africa, your online readers could move their cursors over different countries to learn the status of the regulation in each case.
- Make friends with the graphics experts in your newsroom. They probably know the tools already and welcome collaborators.
- Consult the publications staffs at research institutions and universities. Ask them to show you how they did it.
- Don't forget to credit the sources.

III. Writing

Beginning the story

The typical scientific article about food research would be gobbledygook to most of the people who grow, cook, sell, and eat the food. Our job as journalists is to draw readers, listeners, or viewers into the story and then guide them through the science.

Nowhere is that task more crucial than at the top of the story. Before you write the opening paragraph, ask yourself *why* anyone should want to read the piece. That *why* is your hook for catching the audience. Cast it creatively.

Identify the target audience: A story about crop research might speak to farmers, policy makers, business leaders, consumers – or, all of the above. Identify your audience and craft your opening to speak directly to it.

Open by connecting: Noel Kingsbury did it this way in the opening lines of his book, *Hybrid: The History and Science of Plant Breeding*: “Shopping for food: we all do it, whether at the supermarket, or from traditional neighborhood shops, or in a market. It’s the modern equivalent of what our ancestors would have done in long-gone hunter-gatherer days.” Kingsbury effectively forged a connection between a general audience and a book that would delve deep into bioscience.

Extend an invitation: In essence, your opening paragraph should represent an invitation to your target audience: “Please come with me.”

Set a brisk pace: Avoid long titles, job descriptions, and technical jargon that could slow the entry into the story. Ask yourself what you would say first about the story if you were explaining it to a friend.

Work the tools of good writing: Even if your story deals with formal, complex science, you can open it with human angles, dramatic data, engaging color, clear language, and political or consumer controversy.

For example, here’s a scientific report:

Wild tepary beans (*Phaseolus acutifolius*) contain arcelins and arcelin-like (ARL2) proteins that are co-expressed with other proteins of the α -arcelin, amylase inhibitors and phytohemagglutinins (APA) locus. Arcelin and ARL2 protein from a wild tepary bean accession G40199 were transferred into common bean cultivars ICA Pijao and Rojo. Inbred backcross lines were developed and selected for segregation of the proteins at BC2 F2:3 generations. – [Abstract](#) in *African Crop Science Journal*, Vol. 19, No. 4, pp. 255 – 265, P.M. Kusolwa and J.R. Myers, Sokoine University of Agriculture, Morogoro, Tanzania.

Here's a related story for a general audience:

Beans are known worldwide as an inexpensive source of protein and other nutrients. In Tanzania, though, much of that nutrition has been going to bugs rather than to people. Tanzanian farmers have been losing nearly half their bean harvests to the insects commonly known as weevils. And scientists are racing to develop beans that can resist the destructive pests. Tanzania's struggle against the weevil is just one chapter in the story of the tension between farmers and the ever-evolving pests that attack crops in the field and after harvest. – Samson Kamalamo, [Des Moines Register](#), Oct. 16, 2013, and *Changomoto (Swahili)*, Dar es Salaam, Tanzania.



Follow through on your invitation: Once you have drawn the audience into the story you have accepted the responsibility of a good host. Lead your guests through the complexity with accuracy, clarity, and fairness.

Engage them as if the very status of agriculture were at stake. Indeed, it is. As a journalist you have the platform to heighten public interest in this all-important subject. Veteran Ugandan journalist Joachim Buembo put it this way in a challenge to East African journalists: “I would like to see agriculture and biosciences covered with the same passion as football and entertainment. If agriculture isn't working, I'd like to see Africans feel as bad about that as they do when Man United's fortunes dip.”

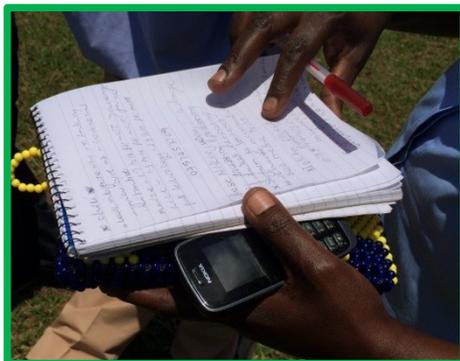
Structuring the story

Journalists are in the building business. Whether we think about it or not, we build a structure each time we put a story together.

The default organization for news stories is the inverted pyramid, which arranges information in a descending order of importance. Conditioned to this tried-and-true format, most journalists routinely reach for a summary lead each time they start to write. Done well, the pyramid quickly tells the audience the essential who, what, when, where, why, and sometimes how.

However, this section will challenge you to crack that mold, to experiment and create with structures that best fit the stories you have to tell. Nothing may beat the pyramid for breaking news. Many important news stories, however, don't break; they slowly crack, trickle, or unfold. Take, for example, important developments in biosciences. Alternative structures can offer better opportunities for guiding readers through their rising and falling action, dramatic peaks and valleys – all building toward resolution of a fundamental problem and ultimately toward a conclusion.

The most important reason to consider alternative structures is that they can enable you to drill deeper into the science without losing your readers.



Narrative structure

One compelling way to tell a story is to tell it as – well, a story. Tie the story to a forceful character, a journey, a quest, or some other vehicle that can carry the audience through the complexities of the related science. Use anecdotes, quotes, and vivid scenes to move the narrative to its climax.

Say a team of wheat breeders is working to develop local varieties that resist the devastating stem rust called UG99. You could tell the story of wheat genetics by following the team through its trials and errors, successes and failures. If you work the human part of that story effectively, the audience will hunger for the whole thing, science and all.

Another example could inspire African journalists who have covered biotechnology bills for years, straining to come up with fresh leads on the slowly unfolding story. Amy Harmon, writing for the New York Times, told the U.S. version of that [story](#) as a fascinating narrative by following a county council member in Hawaii who was torn between GMO foes on one side and scientists and farmers on the other side. In the detailed account of Council Member Greggor Illagan's lonely search for facts, Harmon lays out the controversy and the farmers' predicament. So gripping is the drama that the reader barely is aware of having taken a potent dose of science.

Tick-tock structure

Close to the narrative, is the story that follows an issue, problem, or person along a timeline. It's an effective structure because it allows for movement, pacing, and drama. Effectively, it takes the reader/listener/viewer on a journey through time.

In the case of the UG99 story, this account could begin with the dramatic moment a Ugandan scientist saw that the wheat in his field trials was shriveling and dying before the plants could form heads of grain. It looked like stem rust, something scientists believed had been eradicated decades earlier. Month by month, this story could follow the confirmation that stem rust had resurfaced amid mounting world-wide alarm as the wheat killer spread up the coast of East Africa and into the Middle East, where it threatened Asia.

One caveat: A tick-tock story often reaches back to points in time when the reporter was not on hand to observe events personally. When you rely on others to recreate points in history, it is important to say so in the story. In other words, when you reconstruct elements of the story, attribute the past events to reliable observers who had first-hand experience.

Hour-glass structure

Journalists have delivered impressive adaptations of a structure that generally is used for academic papers. The structure lends itself particularly well to opinion writing, but also can serve as the framework for powerful news and feature stories. Generally, it begins by summarizing the gist of the story in what's called a nut graf or nutshell paragraph. Then it turns on a quick transition that alerts the reader that a different format and pace is to follow. Finally, it winds into a narrative or a tick-tock.

The advantage is that the busy reader can gain the benefits of a summary lead while those who want more can get that too.

One reason to consider the hour-glass for science stories is to report the basic news while also setting up a structure for drilling into the science. If you were breaking news about virus-resistant cassava, for example, everyone who reads the story could learn that a team of scientists have made significant advances in breeding cassava to resist the viruses. Those who push further could learn how the feat was achieved.

Tips for creating structure and filling it in:

- ***Before you start***, plan your structure and do the reporting accordingly. Sketch out the frame of the story, identifying what you already have and what you need to get.
- ***Write to draw*** readers through the structure. Each paragraph should serve as a “hook.” You are taking the audience through a carefully constructed “building” and you don’t want anyone stumbling on unexpected obstacles.
- ***Guide readers up and down the ladder of scientific abstraction*** in keeping with an honored writing principle described by S. I. Hayakawa in [Language in Thought and Action](#). In the story of the virus-resistant cassava, for example, you might intersperse the genetics involved in breeding the cassava with the human toil of the scientists as they sorted through multiple efforts for exactly the right gene or genes that would endow the cassava with resistance while retaining the characteristics that farmers and consumers value. In doing so, you will be breaking the complexity of the science into manageable bites for readers who are not schooled in the science.
- ***Use metaphors and other literary tools***. Most science writers collect various tools for explaining science to a general audience. In the case of the cassava research, for example, you might want to explain how a sample of cassava tissue contains all of the genes needed to develop the whole plant from roots to leaves. One oft-used tool is to liken the plant’s full set of genes to an orchestra. The stringed instruments might play in one part of the plant while the brass section is silent. And the order could be reversed in a different part of the plant. Throughout the plant, though, the full orchestra is present, and the silent sections can be turned on as needed. Skilled science writers, like skilled carpenters, collect such tools and use them as needed.

Balancing the story?

Balance is essential in bicycle riding. The question of whether it is equally necessary in journalism stirs debate.

What if someone swears that planet earth is flat? Must you report that assertion, even knowing it to be false?

Such phony balance can take your stories to ridiculous points – at best, leaving your audience in a he-said-she-said state of frustration; at worst, confusing the public with false claims.

Still, the balance question can be complex on the biosciences beat. If a questionable claim gains widespread circulation, journalists need to address it in order to accurately inform farmers, consumers, and policymakers.

Example from the GM debate

Take, for example, the claim that foods from genetically modified crops could cause mysterious allergies.

Critics of the crops say “yes” while scientists say “no.”

The diligent reporter would not leave the audience confused because the subject is not so mysterious after all.

The evidence: Experts know that an inserted gene often prompts a plant to produce a new protein, and certain proteins can trigger allergic reactions under certain conditions that depend on the form of the protein and the sensitivity of the consumer. Those pesky proteins are known to scientists. They can be avoided in GM experiments. And the proteins that are introduced can be evaluated and tested for potential allergy problems.



So, this story doesn't call for balance but rather for facts.

Less nuanced examples, are graphics suggesting that human babies' heads will emerge from ears of maize and medical syringes will pump bio-chemicals into

tomatoes. Such graphics do not balance a story; they simply scare the audience without providing real information.

Balance checklist

In deciding whether and how to balance a story, you should ask:

- Is there evidence behind each point of view? Be skeptical if a position is based on speculation rather than on facts determined by reliable research.
- What is the quality of the evidence? Research findings that have been reviewed and replicated by other scientists are the gold standard. Anything short of that calls for caution. Ask scientists uninvolved in the research to help evaluate its quality.
- Who produced the evidence? Be wary if it came from a source with a financial stake in the outcome or an advocacy group with a controversial agenda. A science degree alone does not make a source valid and trustworthy. Especially suspicious are those who claim sudden discoveries or breakthroughs; most reputable research proceeds slowly.
- What is the weight of the evidence? It's not true balance if one side is buttressed by one or two papers appearing in obscure or opinionated publications while the other side is supported by a body of research that was replicated, published, reviewed, and endorsed by a majority of scientists in that field. No matter how much you want balance, don't rely on bogus science. Instead, seek the most rigorous oppositional point of view, not the most sensational.
- When covering science—but especially when seeking balance— never leave an interview without clarifying anything you don't understand.

Seeking truth, finding trouble

The expectation of balance also can raise trouble for journalists when critics require “absolute proof” that a product of bioscience research is safe, or “absolute truth” that a theory is correct. Attempts to balance coverage of climate change have run into mind-boggling friction over such demands.

Scientists don't speak in terms of “absolute truth,” but rather in terms of theories that have held up through repeated testing and careful examination of evidence. Proofs are for math and logic classes, not for the real world where nothing is 100 percent sure.

While the public often assumes theories are speculative, scientists weigh the facts on which a theory is based and assess whether action is warranted – whether, for example, agriculture should prepare for climate change.

Key point

The top-notch journalist will dig for facts that speak to various claims and report the facts, rather than a frustrating exercise in balance based on weak evidence and false claims.

Fact-checking and the Delicate Art of Quote-Checking

A trustworthy byline is the gold standard in journalism, and the surest way to build trust is to fact-check your stories scrupulously.

Even many journalists who work on hard deadline squeeze in a few minutes to double check names and basic information such as dates and titles. Those with the luxury of more time tear down their reports to the level of the original notes, challenging every line and going back to review every study and report cited in the stories. The process is brutal, but well worth the dividends it pays in terms of accuracy and trust.

Start early:

- Fact-checking begins during the reporting process. Most journalists develop finely tuned lie detectors. If something a source is saying seems fishy, ask for supporting evidence, proof, and corroboration. Then investigate on your own.
- Even direct quotations should be checked for accuracy. If a quote is inaccurate, don't use it. If you need it or something like it, find a different source. If the original source is essential to the story, negotiate.
- The exception might be a newsworthy person saying something questionable. That should go on the record, and your story can use facts to set the record straight. In general, though, every word in your story is your responsibility.
- Find extra sources even if you don't have room to quote them in the story. Most top news organizations enforce a two-independent-source rule, especially for information attributed to unnamed sources.
- Remember the old newsroom maxim: "If your mother says she loves you, check it out." It may overstate the principle, but it does capture the essence of the inquiring journalistic mind.

Challenge sources and yourself:

- If your facts square with those reported in other stories, you can draw some comfort. But beware! The other stories might be wrong. If so, you are in double trouble. Your story is inaccurate, and you also are exposed for having lifted from other writers – errors and all.

- Consider the sources. Did the information come from reliable experts and observers? Might some sources have tried to manipulate you for the sake of a cause or for personal gain? Are the sources backed by peers – for example, by published findings in a peer-reviewed journal?
- Consider the context. A certain quote may be accurate word for word, but misleading nonetheless if you wrap it in a context that changes the meaning. Examine your own attitudes toward the subject. If you started with a bias, it may be reflected in the context you have created. In the interest of fairness and accuracy, try to think of other valid perspectives on the subject.

Extra vigilance on science stories:

- If your report covers a scientist's research, you could allow that source to check the accuracy of particular paragraphs describing the research. If some ask to review the entire article or broadcast report, politely explain that the norms of journalism call for you to take responsibility for the overall piece. Reporters who have yielded that responsibility have seen scientists riddle their stories with technical jargon and extraneous detail. The upshot is a ruined story and strained relations with the source.
- Cultivate scientists and other experts who are not the focus of the story. Call them to check the credibility and accuracy of your information. Beyond accuracy, their comments can add depth and texture to your report.
- Keep reliable data sets and other basic information at hand. You can use them to double check your facts, and you also can draw data into your report to add weight to the points you are making.
- Develop your own “toolbox” of plainly worded definitions and explanations for scientific concepts. Check their accuracy in advance, so you can draw on them in a hurry to help your audience through complex subjects. For example, your tool for explaining DNA might be “DNA often is called the stuff of life because these master information molecules carry codes that enable all living organisms to develop, live and reproduce.”



Backup from fact-checking sites

Fact-checking is so crucial to journalism that specialized organizations have formed to help with that cause. Google “fact-check,” and you will find a wealth of them, including [FactCheck.org](#) in the United States and [Full Fact](#) in the U.K. Much of their work relates to checking statements made by political candidates and their prominent backers. Those statements sometimes relate to science, so the sites can be useful.

In Africa, a leading site is [Africa Check](#). It was started by a group of journalists in South Africa with backing from the Agence France Presse Foundation, the Journalism Department at the University of Witwatersrand and other sponsors. It also won Google funding after winning an International Press Institute competition.

Among other subjects, Africa Check delves into certain science topics – for example, its guide for evaluating [health claims](#) begins with this advice: “When testing the legitimacy of health claims it pays to embrace your inner sceptic. Do not take anything at face value. Instead, ask: ‘Who has made this claim, what are their credentials and can those credentials be independently verified?’” The section is a must-read for journalists covering claims that GM crops cause diseases, allergic reactions, and impotence.

Africa Check also presents a useful guide to understanding and reporting on opinion polls. If you run into claims that a majority of people in Country XYZ oppose certain agricultural technology, this guide can help you evaluate the claims.

While useful, these sites are no substitute for your own vigilance. Journalism is about more than a set of facts; it is a constant process of judgment calls. You are responsible for framing the facts, for presenting them in the appropriate context, and supporting them with strong reporting.

Working with professional fact checkers

Writing for a magazine with a fact-checking staff does not let you off the hook. You will need all of your original source records so that you can answer questions and produce the notes and tapes needed to support the story. As the lead reporter, you are closest to the original information, and that makes you the best guard against misinformation.

IV. Pitching your story, social and multi-media

Pitching, promoting, distributing your story

In the old days (1990s), pitching a story idea to a top-of-the-food-chain media outlet often was agony. You had to write an impressively convincing proposal, assemble your clips handsomely, package them in some striking way, such as an elegant envelope, and get them delivered by hand or other receipt-requested (and expensive) system to show you were a pro. Pitching today is in many ways easier—you can send your clips electronically, for example, and the editor can (and will) Google you, unearthing the pieces you’ve written and the comments and dialogues you’ve engendered. You don’t have to provide any physical package whatever.

Equally important, you usually can discover lists of assignment editors and their crucial email addresses if you’re clever and persistent. When you find the right editor, Google him/her for all possible information on likes/dislikes, interests, and style. If you don’t personally know the editor, think about whether a friend or colleague might. Use intelligence aggregators like [NNDP Mapper](#), the Notable Names Database that aspires to “track the entire world,” and [Moreover](#), which runs a useful news desk.

Familiarize yourself with the publication’s style (and don’t bind yourself with your own house style; it may well impede international publication). Notice if the pub is formal (Wall Street Journal, for example), or fairly informal (London Guardian). If the pub has an actual style book (New York Times), find it and read it. While most do not, some pubs, like SciDev, have their own set of peculiar [pitching requirements](#) that you must follow.

Yet despite its many advantages, today’s system has one big problem: there is no room for waste. Every word, every element in your pitch must produce for you. The editor you’re pitching may well receive 1000+ emails daily—and your carefully crafted proposal will be just one more annoyance, unless you can make it persuasive. You need to fit in: here’s the story I hope to write, here’s why I’m the best person (here are my clips and portfolio), and here’s why it’s right for you. To do that effectively, you should:

- Start with the subject line: What’s the most compelling aspect of your story? Whatever it is, put it here. Do you have a timely hook? Put it here in the subject line.
- Your first sentence can be a summary of what you’re proposing, or you can lead with the hook, elaborating beyond the subject line. Say how you’ll get

your story—written reports, elite interviews, archives. If you have good or unusual access, say so.

- Provide a nut graf, containing the story’s crucial argument and information—though not so much that your story idea could be easily stolen (a danger not to be underestimated).
- Give your credentials briefly, including links when possible (“I’ve written for most major media, including”)
- Close your pitch graciously, succinctly praising the publication.
- Be sure to proof your pitch carefully (perhaps turning off the automatic correct function on your computer), making sure you spell the editor’s name, title, and medium properly.
- Send it out—and be ready with your second-choice publication should you be turned down. If you don’t hear anything within ten days, assume a rejection and move on to the next pub.

A few tips on story hooks:

- See your opportunities. Even an utterly extraneous factor can get you an assignment. A big star (the U.S. president, a European prime minister, famous scholar, corporate CEO, or even a Hollywood celebrity) coming to town will focus world media on your country. If there’s a direct hook (Madonna interviewing farmers), build on that. But if not, try, “President Obama’s trip to Tanzania has focused world attention on this rapidly urbanizing but still agricultural country in East Africa....”
- If you’re pitching an evergreen—a story that has been around for awhile and will stay around—say so.
- Many people urge including graphics in a pitch. Generally, this is not a good idea with the top media that have their own powerful arts departments, but may well work with blogs and online pubs.
- If you have multiple platforms, say so, especially video and audio that can be posted online to match your print piece.

Resurrecting (updating and reselling) an old story

Few things are more satisfying than having an old story come to life again. This produces an imprimatur on your original story idea while also positioning you at the head of the pack. You’ve already done the research, elicited the phone

numbers, made the contacts, conducted the interviews, etc. The practical question becomes: which is the most important publication that is likely to be interested? And who constitutes the audience?

- Think about new audiences: convert an agricultural research piece to a consumer piece, for example, or a bioscience story to a business story.
- Make a local story international or vice versa.
- Rewrite a news story as a feature or a feature story as opinion.
- Consider the travel pages—everybody is interested in food.

Promoting and Distributing Your Piece

As soon as your piece appears, start to promote it. Yes, email it to your lists, as before. But more importantly, get on social media. Push your piece into the center of the conversation on your topic. If you're not sure whether who's driving that conversation, use Twitter's powerful search engine, and jump in.

Social Media

[Headline](#) in Science: “Science Communication Requires Time, Trust, and Twitter.” (20 December 2013)

We live in an amazing era of direct access to elites via social media—Twitter, Facebook, Flickr, Tumblr, LinkedIn, Pinterest, Reddit—which let you describe yourself, your interests, and your work in your own terms. You can post photos, articles, ideas, quotes, videos, and you can react to those posted by others. You can use social media seriously, frivolously, or both. Above all, you can personalize your sites to distinguish yourself from the crowd.

But this direct access to elites won’t last forever in our fast-changing world. Leap in today, if you haven’t already.

Preliminary steps:

- Spend a morning looking at other people’s (especially journalists’) sites for ideas.
- Secure a vivid photograph of yourself or a graphic that says something about you (easily changed, so don’t stress).
- Write a short bio—don’t think comprehensive, think interesting.
- Choose a handle (Twitter) or ID highlighting a crucial trait—geographic location, for example, or talent (think ScienceGuy). Handles are not easily changed, so do stress.

We’ll review the two most currently dynamic media—Twitter and Facebook—as examples.

Twitter

Editors at major American and European media want you and the pieces you write for them to be seen on Twitter. They count the social media postings—and they expect you to tweet, and to be retweeted and favorited. If you don’t take any interest yourself—promoting your own pieces—your numbers are likely to be low. At a minimum, always hit the tweet and other social media buttons accompanying your pieces. Here are some tips on doing more:

- If you're shy or unsure of how to start look for clever phrases or ideas in other people's pieces to quote rather than relying on your own imagination.
- In tweeting your own work, find neutral, non-boastful phrases, such as "My take on {with link}" Or "My piece on..."
- Some tweeters go a step further: My piece on XX is currently the most viewed article on XX.
- Raw appeals work for some: I'm trying to increase my "likes" on the Ladylike Lessons FB page. I do daily fun and exciting updates! Help me out!
- You can extend the life of your piece with an ICYMI (In case you missed it) tweet a few weeks later.
- Be alert to newcomers. Even famous people will start with relatively few followers, and will themselves eagerly search for more—at least briefly. Get their attention with savvy, witty, timely tweets about them and their work.
- Induce prominent journalists and scientists to engage with you by tweeting or retweeting their work (and citing their handle), replying to their posts, or jumping into an ongoing conversation.
- Favoriting lets you make a nice gesture for someone (who will be notified by Twitter) while storing a tweet you want to retain.
- Master hash tags to position your tweets in the relevant conversation.

Equally important, Twitter is now an actual source in itself. As *Scientific American* news editor Robin Lloyd [says](#), "Twitter has become basically another major newspaper for me." Twitter offers the fastest, most immediate method of learning what scientists and other journalists are concerned about right now—not only letting you know what stories are about to break but giving you story ideas to pursue.

And it's not just science journos using Twitter—scientists do as well. Astrophysicist Neil deGrasse Tyson, who has a stunning 1.67 million followers, has developed the art of self-promoting modestly ("If interested, my occasionally ranting interview, posted yesterday w/ @NPR" or "Fan of [@MissMayim](#) Bialik? She's joining me live at BAM for an all Neuroscience StarTalk show.") He's also funny but authoritative ("If you do a push up on Earth, does Earth move away from you? Do you push Earth down? // Yes. By a wee bit.") Harvard's Calestous Juma (46,100 followers) is probably the most prominent scientific popularizer of agrig issues.

Facebook

At first glance, Facebook may look more personal than professional, but in today's journalistic world personal and professional lives often elide into one. Think of it as the holistic social medium that lets you post everything about yourself and your work—your articles along with their graphics, your talks and conferences, your comings and goings (if you're interested in writing internationally you can let your feed know you're available in different venues), your photos and videos. Ask yourself about each element: Am I appealing? Will this encourage an editor to give me an assignment? The trick is to do this without looking like an egotistical maniac. But that's mainly a matter of employing good manners from the old days—thinking about other people first, commenting on their posts and hitting their Like and Share buttons, overall being a generous friend and colleague -- which, on social media, brings its own rewards.

Here are some tips:

- Think through how your page will look to strangers as well as to colleagues—your own photo, the background graphic, the top post—do you want to project serious? Humorous? Engaged? Profound? Hip? Connected? All of the above?
- Study the Friends lists of journalists and scientists you admire and hit Add Friend when you know someone—even if not all that well. FB is meant to expand your network, so go ahead and do that.
- Practice your multimedia skills—design, photography, videoconferencing—on Facebook. These days editors often expect you to write, illustrate, shoot, and record your article—FB gives you an opportunity to experiment, post, and get feedback.

Social Media for Scientists

A 2011 [study](#), “How Scientists Use Social Media to Communicate Their Research,” found that 77 percent of life scientists participated in some type of social media, and 85 percent saw social media as affecting their decision-making. But scientists are more likely to use their own network sites, such as LabSpaces.net, rather than Twitter or Facebook. LabSpaces allows them to communicate to the masses, but from within the walls of a gated web community, says the study.

Social media also are created by and for scientists to share research and especially problems. For example, [ResearchGate](#), is “built by scientists for scientists.” Forbes blogger Alex Knapp [quotes](#) one of the founders saying scientists have three motivations: first, you can build your own profile within your field by posting your pubs and research; second, you can engage with other scientists seeking advice or suggestions on a particular topic; and third, you can keep up with work in your field in a more focused way.

The New World of Multimedia

In the old days of the 20th century's rich and powerful media, a top paper or broadcaster routinely had segregated departments—editorial, design, support, technological—that operated as independent kingdoms. Now the entire fiefdom may be you and only you. You may be expected to set up your appointments, provide audio and visual recordings, photograph the story, fact-check, propose or even devise charts and graphs, suggest call-outs and captions as well as headlines, experiment with animation, and even post the entire text-plus-graphics into an online format that is then published pretty much as is.

Ours is now the ultimate do-it-yourself profession. You must master the technology even while holding onto your old skills of writing brilliant, creative prose.

Yet there's a lot to be said for this new state of affairs: we're in charge of our pieces, and while we still must negotiate with editors and sometimes department heads, we can put our pieces forward just the way we think they should be.

What's more, the necessity of thinking about the whole piece can encourage you to reflect in new ways on what you're hearing (and recording) in an interview: Does this scientist have a convincing manner and an authoritative voice? Is there anything in the body language that should give me pause? What will my audience think when they hear or see this scientist? Can I use audio and video effectively to take an urban audience on virtual visits to farms?

Here are a few tips:

- Good technology is incredibly cheap these days. Even in the U.S. and Europe, some journalists are producing video and still images with little more than a smart phone or a flip cam. Research your options ahead of time. Product assessment may be the one area in which the Internet and crowd-sourcing have proved accurate.
- Even if you can't afford the best machine for each purpose—audio, video, photography—you can probably afford a pretty good multipurpose smart phone or tablet that at least gets you started, so that you can show your editors what you can do.
- But your multimedia work isn't necessarily for one source. Multimedia can offer you an opportunity to take your story to a different level—and to a

different outlet, especially if your main employer doesn't yet have a fully developed web presence.

- Think short and simple. Many of the best news video pieces run only a minute or two in length. They don't require a production crew, just a journalist with a camera and an eye for editing.
- Play with the audio and video editing software you can find free online. Eventually you may want to invest in more sophisticated editing tools. The point is to get started and learn as you go along.
- Explore who else is covering your areas of interest, and see what they're missing—a good print story that needs photos? Or good photos that would be enhanced by audio?
- Keep your multimedia well organized. Often a hot story will explode and all the major media will need copy or context—an audio interview of a crucial scientist or photos of a now inaccessible area can suddenly often you an invaluable entrée.
- Multimedia journalism appeals to new audiences, including young ones who aren't interested in reading but who still want news and features. Think of story elements that will appeal to the young and deploy those elements to expand your audience.

Some mainline journalists object to multimedia because of its roots—and influences—from the entertainment world. But the advantages of multimedia are so clear that they are likely to triumph over current misgivings.

Practical suggestions:

Sound

- Be aware of the importance of sound. Reaction to YouTube has revealed that people will watch a video with poor quality images, but they will not listen to poor quality sound. The upshot is that you can use tablets, phones and flip cams to record video while capturing sound will be more of a challenge.
- Check to see if your digital audio recorder has a plug for an external microphone. If so, you can buy the external mic to record excellent audio without purchasing an entirely new video system.
- If your video cam does not have a plug for an external mic (many consumer devices do not), you can use a digital audio recorder and sync the sound into your video during the editing process.

- Be sure to purchase a windshield for your microphone if one is not included in the original package. You also can buy one for a digital audio recorder if you've taken that option.
- Be aware of background/crowd/traffic noise and monitor sound on headphones during recording if at all possible. This will save you time in the editing room!

Video

- When shooting video, don't place your subject in the center of the frame. Instead, think in "thirds" and try to have the interviewee's face in the left or right third of the frame.
- Invest in a tripod to avoid the shaky-cam effect.
- Shoot with the sun to your back rather than to the back of your subject. Otherwise the subject will be backlit, and the image will be flawed.
- Be prepared! Always carry back-up batteries and your charging cord.
- Additional video tips: [Lifehacker – 8 ways to shoot video like a pro.](#)

Video editing software

Start with free or low-cost video editing programs. Free software can tend to have bugs – those listed below do not. Many can be downloaded directly to your computer from the Internet, including:

- [VSDC Video Editor](#) – a capable free editing software. Its only flaw: be sure during installation to avoid installing the ads, optional web browser and desktop add-ons.
- [iMovie](#) – very useful if you are using a Mac.
- [Sony Vegas](#) – offered in both professional and consumer versions. The consumer versions can cost as little as \$30. It is a very reliable program with a lot of functionality.
- [Adobe Premiere Elements](#) – also reliable and useful. It integrates with other Adobe software that you may be using.
- [Cyberlink Power Director 12](#) – gets good reviews and is easy to use.

Note: Checking around online, you will see recommendations for software called Lightworks. However, it has a very high learning curve and is not suitable for video-editing novices.

Also note: One point to keep in mind with any video or audio editing software, is that it should be able to output various file formats. For video, that should include AVI, MP4, MKV, MPG, WMV, 3GP, FLV. For audio, the formats you may need are MP3, WAV, WMA, FLAC, PCM, OGG, AAC, M4A. The reason [Windows Movie Maker](#) is not on the above list is that it only outputs WMV files.

Final note: Editing audio and video takes time. It also is a lot of fun and very gratifying.

V. Ethics

Journalism Ethics

When your byline goes on a story or your voice goes over the airwaves, you are inviting the audience to trust you. To betray that trust is to weaken your own credibility. More important, it is to undermine the public's right to accurate information, a fundamental human freedom.

In practice, ethical norms differ from country to country. Even so, widely accepted international standards have evolved. If you aspire to work internationally, it is crucial that you honor those standards.

The following guidelines were compiled, in part, from the [International Federation of Journalists](#), the [BBC](#), and the [Associated Press](#).

Professional integrity

Never plagiarize. Whether another writer's words are used verbatim or paraphrased, they must be credited. The rule holds for material from press releases too. Brief, credited excerpts from another work are acceptable, but it is not acceptable to copy a whole article for publication under your byline. Institutions increasingly use plagiarism detection software, so chances of being caught are high.

Do not fabricate. A re-enactment of a story element should be labeled as such. Do not distort photos or video. Do not use composite characters even if they represent the best of the sources you actually interviewed.

Avoid personal conflicts of interest, and even the appearance of such a conflict, in activities such as financial investments, political participation and business interests. If a conflict cannot be avoided, disclose it.

Do not publish a story or shape anything in a story in exchange for money, advertisements or other consideration. Do not accept gifts, travel or other things of value from sources outside journalism and professional training programs. Also, do not pay for information, interviews or photos.

While reporting in the field, identify yourself as a journalist and make it clear that you intend to broadcast or publish the quotes and information that you gather.

Responsibility

Disclose sources unless there is good reason to withhold their identities such as a threat to personal safety. If you promise confidentiality, keep your word but

explain in the story why the identity is being withheld.

Remain fair and open-minded when weighing the findings of your reporting. Give subjects an opportunity to respond to allegations that might cast them in bad light. When the truth is not clear, seek and weigh relevant information from multiple informed sources. Avoid unfounded speculation, especially when it comes to pseudo-scientific claims.

Personal opinion, analysis and commentary should be labeled as such. Avoid subtle bias and distortion through omission, emphasis and context; for example, report newsworthy negative findings of research as well as positive results. Use multiple sources to avoid the appearance you are advocating the opinions of one scientist or one official.

Check the accuracy of every element of your story, even those attributed to others. Avoid misrepresentations and questionable accusations. Do not strive to “balance” a story with claims that reputable scientists have shown to be false or misleading.

If after publication you find you’ve made a substantive mistake, acknowledge and correct it.

Respect human dignity and privacy. Be sensitive when covering victims of trauma and violence, especially children. Do not sensationalize their stories or re-traumatize the victims. While covering violence and trauma, care for your own emotional health in order to maintain your professional stamina.

Avoid facilitating discrimination based on race, sex, disability, sexual orientation, language, religion, national origin and physical appearance.

Understand and avoid libel, slander and defamatory statements.

Within the general law of your country, resist interference by government and other officials in professional matters of journalism.

To the extent possible, make sure that headlines, photos, graphics and other accessories do not misrepresent the story.

Reflect sensitivity to general standards of decency.

A note about ethics

Journalists often are falsely accused of unethical tactics when the real motive on the part of government officials and activists is to suppress coverage. Belgian journalist Jean-Paul Marthoz [noted](#) in an article for the Committee to Protect Journalists: “In authoritarian countries, calls for journalists to exercise a sense of responsibility or decency are mostly code for censorship.” Further, he said, “Authoritarian governments also have a way of playing up alleged ethical breaches

when it fits their interests in order to discredit troublesome journalists and even to downplay physical assaults on reporters at work.”

The best defense against such attacks is strict adherence to the highest ethical standards. Any ethical breaches on your part could blur the truth behind false accusations.

Appendices

Glossary of Bioscience Terms and Concepts

Basic Explanation of Genetics

Basic Explanation of Plant Breeding



B4FA

Biosciences for Farming in Africa