

**THE 2009 LAUREATE LECTURE: THE AFRICAN GREEN REVOLUTION NEED NOT BE A  
MIRAGE**

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Let me one more time thank the John Ruan family for making this possible, not only for me but really for the cause of the poor. I think it's just a magnanimous generosity on their behalf to have done that. And on behalf of everybody else, I really express my gratitude to you.

And thanks again also for everybody to have been here and to be part of this recognition for me. I'm very grateful for your being here.

I have put together a piece that I'm going to share with you. The essay I wrote is titled, "The African Green Revolution Need Not Be a Mirage." I'll share that with you, but this is a topic that has been discussed over and over again, and so I would give it my touch – not only as an African, but with one particular trait of character that I know I share with Norm Borlaug, and that is to work for the cause of the poor. And if in the process of doing this I offend some people, I'm not trying to be as [inaudible] like Norm Borlaug was, but just this is an expression on my behalf that this cause is very important to me.

Another thing that is very important to me, particularly of late, has to be to say thank you. And I'm going to take the first few minutes to express my gratitude to some people. In the process of doing that, I know I may neglect to mention some names, but that's a risk that I take. I'm going to focus on individuals that have really made a difference in my professional life.

And you've heard enough. I have never made a point of talking about the poor background I have come from. I've never used it, and I have never made it a handicap for me. The first time that I expressed it was about two years ago when I was designated a distinguished professor of Purdue. I used it – when I said that, I prepared a statement that I read in front of the board of trustees of Purdue at the time. And wanted to make two points.

One, just to take a moment to express the journey that I have had – where I came from and where today I'm designated as distinguished professor of one of the greatest institutions in this country. That, I thought, was a moment to be made a point of.

And the second point of my making a statement out of that was to express my gratitude that this union, this country, how imperfect it is, it continues to be a land of opportunity for people like myself. That here, I come from the background where I started, and to be given this opportunity to excel to the best of my ability and get to this level, I wanted to make a point of.

From then, I think the next time it came up was – Ambassador Quinn is experienced in dealing with the Laureates, to get the information that he wants out of them, and so he said, "We're going to get you on the phone, and we just talk; we just talk." And I was rambling, and the moment he heard that walk of 20 kilometers, he said, "This is it." And so that really led to, "You know, tell me more about – what kind of home did you live in?" and that. And so it came out.

The reason why I'm stating this is – the one person that has been the most important in my development, as you heard last night, is my poor mother. One lesson that I had learned from her was that she never wanted our not having enough to be a handicap. In fact, what she used to say was, "Poverty is not leprosy. It doesn't have to show. It doesn't have to define who we are, what our character is."

While she was making a point out of poverty, I extended that education. So no handicap – that was either real that I have had, or what others have perceived in me – I never made a point of that handicap limiting me. That was a great education for me to have gotten from my poor mother. I'd like to acknowledge her for all of the wisdom that she has really instilled in me; the great foundation and values of hard work, personal pride, sense of purpose, loyalty and integrity that I made, sets of characters that define me, are all values that I have learned from her.

Another person that I'd like to acknowledge is my wife, Senait; if you would get up. If you think she looks very beautiful, her children and I will tell you that she is even more gorgeous on the inside. I know of no one who loves life more than Senait. Your unconditional love, your devotion and commitment to me and our children have made it easier for me to focus on work. You've been the rock, the patron saint of the family, and the glue that held us, all of us, in the home together. Thank you.

Just to tell you the kind of sacrifice that she had made, and I want to go into detail and tell you the circumstances that led us. When we first got our assignment to go work in the Sudan, I was very desperate to just have had this job, and so I took it. A lot of people that knew the difficulty of life in Sudan thought I was crazy, but I really jumped on it. And when we got there, for nearly six months – she and I and our 13-month-old daughter were there for about six months – to feed us, she cooked on charcoal and made it possible, and we had that hard a startup to go through.

And then when I joined the faculty, I was not sure if I could really hack it in academia, and so I was working very hard, never sure that this was the right choice for me. And she made it very possible, because she stayed at home. And my only one responsibility, because it was a joy for me and it was a way to relieve the burden on her was, every night it was my responsibility to bathe the kids, wash them, read to them, tuck them to sleep, and then there I go – I go back to my office to work for a few more hours. And that was the arrangement that we made. We traveled, and I missed many things, but she took care of raising the children, and I'm very grateful for that.

I don't have time to give due credit to our children individually, the daughters Jalle, Kuleni, our second daughter, Lello, Ebba. These were the first four children, and then I think we have Galana, too. And we all agree that we all try to be good people, but everybody knows that the guy with the biggest heart is the young man here. And then thanks to Kuleni, we have another son, Sean. Your mom and I truly believe that our greatest accomplishments have been raising you all. We're proud of how you excelled in what you did, but most of all who you've become as human beings. We've enjoyed being your best cheerleaders all your lives. And thank you for being my cheerleader this week.

Then in my professional development, I had the fortune of working for three of the best plant breeders in the world, in my view. You heard the story yesterday, the first person who guided me into plant breeding and genetics was my college professor, Dr. Brhane. Dr. Brhane, if you would get up. From him I learned that science, education, is not only to serve oneself but to serve a community, to serve society. And he instilled that in me from the first day that I started working with him, and that is a lesson that I had kept and sustained me for all these years. And thank you for that.

And then after I finished... Well, maybe I'll start with graduate school, and these two other individuals are no more with us, but their widows are here, and I'll ask for them to get up. The first one is Sue Axtell. Sue, if you would get up. As you heard the story, John Axtell literally picked me up from Africa. He went on collecting sorghum, and he came back with an assistantship for me to come and study under him.

We worked very well together. One of the wonderful things of mentors in my view is – mentors not only encourage you but they immediately see attributes that you didn't even know you have. And that was the case with John Axtell. He knew from the beginning that I had potential, and he committed himself to nurturing that potential in me. And the confidence that he gave me ended up serving me for life. And again with John, he embodies [that] life is about people. He said, "It's all about people, Gebisa." And so if he had to err, he always erred on the part of people, and I tried to pick that up. And I'm forever grateful.

Sue and I also had a personal relationship that we developed over the years. I remember this very clearly in my early days, when I was struggling to make tenure at Purdue. I wasn't sure I really made the right choice coming here, because I knew working in Africa was really what motivated me. But John wanted me to come back and be on the faculty because he thought I would grow better and become – that I could hack it in academia and I would do more from here.

My wife, Senait, also wanted us to come back. And so I couldn't talk to either of them, even though both of them had my interests. But I found an ally in Sue. So Sue and I would go to lunch occasionally and talk about this struggle that I'm going through, whether or not I made the right decision. Sue has stayed a friend and a confidant for me. Whatever we talked about was not to be shared with John or with Senait.

When I finished graduate school, I joined ICRISAT, and my first boss there was Lee House, who has since passed away. And his widow, Fadia House, is here. Fadia, wherever you are, if you would get up.

Lee was an old hand, a Rockefeller employee, and Ralph Cummings, Jr., hired him. One of the first things Lee told me was, "Let me give you the same advice that Ralph gave me." And he said, "Don't lose the forest for the trees." He said, "There may be a few victories here and there that would be very tempting, but keep your eye on the ball." And I never forgot that, and he was a great mentor to me.

And then in terms of international development, I had a couple of mentors that I really learned a great deal out of. One was the director of international programs at Purdue at the time, Woods Thomas, who from day one thought I had good insights and encouraged me, even as a young assistant professor, to be among the individuals that made decisions for the programs at Purdue.

And then Lowell Hardin, 92 years old today. And I've been on the faculty 25 years – there has never been a week that I haven't had a one-on-one session with Lowell Hardin. What an education that has been for me, and I continue to do that to this day. And he used to be the director of agriculture of Ford Foundation, helped establish the international agriculture research center concept. And so I grew a lot by working with him.

I have collaborated with a long list of collaborators internationally and at Purdue, and I would not mention all of them, in Europe and Africa – and many of my African collaborators are here.

But you heard on the documentary last night the kind of wonderful relationship that I had with the Purdue biochemist, Larry Butler. He, too, had since passed away, but his widow Mary and his son Frank are here – if you would get up and get acknowledged. Larry's enthusiasm for the work that we were doing was immense, and I tried to live up to and sustain that enthusiasm for the work even since he passed away.

And then I'll mention two other people in the professional world, very senior plant breeders, earlier on, for somehow I linked with them, and they have been great supporters for me. One was a good friend of John Axtell. He worked in industry. He had grown to be the vice president of a company. And in 1978, my last year of graduate school, he came to visit Purdue, to visit his friend, John Axtell. And Dr. Axtell was busy, and he said, "Bruce, I don't have the time, I'm sorry, but I'm going to send you out to the field with a graduate student."

So I spent long hours out in the field with Bruce Maunder. Bruce, if you would get up. That was 1978, and Bruce went back to Texas and sent a note to Axtell and told him he hadn't missed anything – he had a good session with a graduate student. And it was a friendship that was developed that day, and then about five

years later when I developed the sorghum hybrid in Sudan, I wanted to put together a seed workshop. But I wanted to learn from those that knew the most. And two of the people that I invited was, one, Bruce Maunder, and then Mr. Barwale from India. Both of them were generous enough to accept my invitation and help come and kick off the hybrid-seed industry development in Sudan. But Bruce remained a good friend since I came back, and he has been a great mentor, and I'm very grateful for that.

Another person that, sadly (I'm reporting a lot of sad news here), was another senior plant breeder. When a lot of people in the sorghum breeding and the sorghum industry thought Purdue made a huge mistake by hiring me, these two people really showed interest and encouraged me. And the other guy was Darrell Rosenow, who just passed away this week. I have traveled around the world on the behalf of sorghum research; it was Darrell Rosenow more than anybody else, and I had a huge respect for him. I remember when I was applying for my job at Purdue, Purdue asked him what his assessment was – this was 25 years ago – and he told them he doesn't know a better sorghum breeder in the world than I. Half of it was a lie, but it really was very important to me.

Over the years I've worked with a lot of graduates in post-docs, approximately 30 graduate students and 10 post-doctoral staff. Many of them, as I keep saying, were smarter than I am, and I am very grateful to their services. I'm going to single out one who is here today. There may be more, but the reason I mention him is he was a young kid, an African young man who came to graduate school at Purdue. He heard the story of the sorghum-hybrid development and the background of the work that took place. He walked up to my office and said, "I want to be you. I want to be like you." And that was Issoufou Kapran." Issoufou, are you here?

And then we put together a master's thesis project for him, and then there was some germplasm that I had worked on in Sudan, and we did that. And sure enough, a few years later, that hybrid for Nigeria was developed out of that master's thesis. And we've been working together, and today he works for AGRA, the Alliance for Green Revolution in Africa. So he stayed the course, and he had his wishes, and I'm very fortunate to have played some role in that.

Another person is my technician for the last 25 years that I've worked with, Terry Lemming. Terry, are you around? Yes. Rain or shine, every day whether he was ill or not, he showed up, and I'm very grateful for that.

I want to mention funding agencies. Like every member of academia in this country, you hustle to one agency and another. But I think the two that really carried me through was the U.S. Agency for International Development and the Rockefeller Foundation. I'm very grateful for the support I have received from them.

I have had growing responsibilities in a number of agencies through the INTSORMIL, the USAID-sponsored CRSP program that I've been associated with for 25 years. But the Rockefeller Foundation people have been very generous in picking me up early on in my career, putting me in various kinds of assignments, to be a board member here and a study-group member here and so on. And I have had a long-term association with them. I think it's a very growth engagement for me to have worked with them, including the year that I spent helping create AGRA about two years ago, and now serving as a member of the [CGIAR] Science Council. I think all of those were attributes that came from those development.

Purdue...I've served under four presidents, five deans, and four department heads. As you can tell, for an academic member, the president's office is too far, and you won't get to work with them. But among the deans, I think I've seen him around here – sorghum is not an important crop in Indiana; international activities have been looked at, at various situations in the past. But the one dean that really changed the course for us, and John Axtell and I knew this, was Bob Thompson, who was a dean at Purdue. Bob, thank you. And since then I think it got a lot better because Bob picked Vic Lechtenberg. He was mentored under him, and Vic picked it up, and then when Vic left, Randy Woodson and Jay Akridge – they've been very good to us over the years.

I've also worked under several department heads. Marv Phillips hired me. I thought he took a chance on me, and I was very grateful for that. And then Bill McFee. He has since retired. Bill is around. He flew his own plane to be here with me, and I appreciate it.

And then the last head we had, the one that I really developed a very intimate, personal relationship, and he came, traveled to Africa with me and saw my work and has been a great supporter, a great friend – Craig Beyrouy. Craig, are you here? Thank you.

And then I'll mention the fact that several retirees that I have developed friendship with – Bill McFee I mentioned. Marion Baumgardner – Marion, are you here? Yes. John Huie? John here? Thank you, John, thank you. So several of them paid their way to come be with us, and I'm very grateful for that.

I'm sure I've forgotten a lot of people and did not include them, but I apologize for that.

I'm going to talk to you a little bit about the essay that I put together, and I won't rush it, but I hope I get through that. So the title I gave it is, "The African Green Revolution Need Not Be a Mirage."

Sub-Saharan Africa remains the only region in the world where hunger and poverty prevail. Food security and livelihoods for millions continue to deteriorate. In the last 20 years, the number of Africans that live below the global poverty line has increased by more than 50 percent, and over one-third of the continent continue to suffer from hunger.

The population of sub-Saharan Africa continues to grow, and most – greater than 70 percent – reside in rural areas, eking their living from tilling the soil and herding livestock. To meet the dietary needs of a growing population, improve livelihoods, relieve the pressure on land, and stop the degradation of fragile natural resources, African agriculture needs to be revitalized.

Both the land and the people of rural Africa have been pressed into a treacherous corner by repeated calamities of harsh biological and environmental stresses, including erratic rainfall, shifting seasons, recurrent drought, and associated buildup of pest diseases and noxious weeds. Although remarkably resilient, very resourceful, and astonishingly ingenious in their local wisdom and skills for managing the land and plant and animal genetic resources, African farmers are approaching the end of their wits.

Modern agriculture can offer relief and save Africa. There is powerful science and sufficient resources to bring about productivity gains and enhance the conservation of natural resources and farmlands.

My thesis here is that an African Green Revolution can be a reality. We have the know-how to boost crop productivity, trigger profitable enterprises and opportunities, and chart a sustainable livelihood for rural and urban Africans. This can be made possible – provided that we have the will to commit to avoiding past mistakes, strengthen Africa's institutions, empower its professionals, challenge its leadership, and inspire its people to launch science-based economic development.

I hasten to add that I am convinced – and many Africans may disagree with me – that Africa will not be able to make this essential science-based development of its agriculture and economy without significant external assistance.

I am even more certain, however, that no amount of external funding will bring about such a transformative change unless it is locally led by inspired citizenry and driven by unequivocal support and commitment from African leaders and policymakers.

How the Asian Green Revolution missed Africa: In the 1960s, when the Asian Green Revolution was being launched, independent Africa was being born. So much of the human institutional capacities essential for an agricultural revolution in Africa were weak or nonexistent. The discoveries of the miracle crop varieties that ignited the Asian Green Revolution were in wheat and rice: two globally important crops, but not the true

staff of life for Africans. That now is outstanding: plainly and simply, Africa was not ready for a science-based development campaign at the time.

At the end of the Second World War, and into the mid-1960s right after the flurry of newly independent nations in Africa, few Africans with graduate degrees in the agricultural sciences existed. Across the continent, very little functional science infrastructure was in place. The vestiges of a few of the entities left behind by colonial leaders had no substantive research programs that were aligned with Africa's national development.

In the euphoria of independence, Africa was bracing itself to put in place the essentials of government for self-rule and development, including institutions dealing with politics, education, agricultural research, public health, economy, and trade. With the rolling motion of outrage of our colonialism, and the long drawn-out fight for independence, were still fairly fresh, the great lure of socialism from the East was titillating – a promised building of utopias, where the newly found riches would be shared with the masses and all would be well.

With such a backdrop, bracing for a long-haul, painful journey of science-based economic development might have appeared to be an unnecessarily bitter pill to swallow. Nevertheless, with the prompting of foreign governments and agencies, the need for rural development was soon recognized. Investments were made from both internal sources and through foreign development assistance for building key institutions, including those of education, research, and technology-transfer.

Agriculture was to be emphasized. As a result, the 1970s and 1980s saw an increasing flurry of development of activities across the continent of Africa. The seeds of development sown then have been crucially important in supporting the modest human-capacity building and institutional-development successes achieved.

An improved research infrastructure now exists in nearly all African countries as a result of those early efforts. The colonial agricultural-research farms would only test the stations for commodities of European interest, such as cotton, coffee, tea, and cocoa. Unfortunately, even when these budding research programs expanded into field crops and livestock, because of the lack of human capacity, the scope of their research remained very limited. They focused more on adoption of improved technologies than on developing new stocks from local sources.

Why I think it will work this time: The impetus for modern agriculture that started in the 1970s grew significantly in the 1980s. A large number of African men and women were sent to pursue graduate education in the agricultural sciences at European and North American institutions. It was also in this decade [that] the shift from importation of technology to a new paradigm of developing homegrown technologies was met.

A new approach, dubbed “farming systems,” emerged. Farming systems emphasized developing locally relevant and appropriate technologies by accentuating the need to first understand better the local farm and household environments before designing solutions. This was also the advent of social science in Africa and rural development and, as well, the birth of interdisciplinary approaches.

The flow of support for Africa agricultural research and development received great momentum in the '70s and '80s. As a result of these early efforts, today there is a developing, though not yet robust, agricultural research infrastructure in Africa. A healthier research culture developed. For example, formerly there was very little exchange of information among national agricultural-research programs. Today there is a greater networking among the NARCs in Africa.

Significantly increased linkages with international agricultural-research centers – the IARCs – foreign universities, and other scientific organizations are now in place. African scientists and leaders of programs readily engage in global collaboration, serving as members of scientific teams or on advisory boards of many regional international programs.

More importantly, as a result of those investments, there is today a growing recognition of agricultural research as an engine of change in economic development. I see a bright ray of hope for a new agricultural revolution emanating over the continent of Africa. An appearance of an earnest commitment has swept the continent, matching the desire to succeed at the professional level with visible support and encouragement at the leadership ranks.

The palpable resolve to succeed and apparent hopefulness from within is receiving some synergy from the new foreign assistance to Africa. The roaring foreign assistance voice being heard is getting refined and redefined, albeit slowly; but the movement of its rush is being felt.

Some may call this the second coming of Green Revolution to Africa. But thanks to the growing list of allied forces I have watched develop behind it, this may well be the first earnest effort.

To lead this resurgence of interest for a new African revolution, the Sasakawa-Global 2000 program was the first to appear over the horizon with a renewed vision for African agriculture. As we have come to witness now, this was the last battle waged by Norm Borlaug, and with the modest success he witnessed his last hurrah as well.

The SG 2000 program focused on promoting the use of appropriate technology packages of improved seeds, agronomic practices, and organic fertilizers. More significantly, the program also drew attention to the key essential that Norman Borlaug had always espoused: namely, science and technology, financial resource support, and interventions of policy and leadership. This vision was apparent in the makeup of the leadership of this program – that included Norm Borlaug, President Jimmy Carter, and philanthropist Ryoichi Sasakawa.

The next technical assistance program to appear on the scene with audacity equal to the SG 2000 was the Rockefeller Foundation's Biotechnology, Breeding, and Seed Systems program, operating regionally in east Africa and southern Africa. The value and novelty of this program was indicated in its layout, under one management, of the key component of technology development, deployment, and adoption as part of its soil portfolio in Africa.

The Rockefeller program's vision and strategic framework included a technical assistance program, support for African agricultural education, crop research, development of a private seed industry, and agrodealership in the input market for selected countries.

The third program structure and effort that arrived in Africa with the mantra of "African Green Revolution" was created by the coming together of the Bill and Melinda Gates Foundation and the Rockefeller Foundation. The program, now just over two years beyond inception, is the new Alliance for Green Revolution in Africa.

AGRA came in with the promise of a good level of research support and unbridled commitment to the cause. The stellar reputation of the partners – the Rockefeller Foundation and the Bill and Melinda Gates Foundation – in philanthropy and advocacy for the poor offers hope and espouses some confidence that science-based development can be achieved in Africa.

However, these and other external agencies cannot accomplish an African Green Revolution without an earnest public-private partnership that is primarily homegrown. For those that sense a tinge of bias here, let me confess that I should perhaps mention that I've had the good fortune of working with each of the above three organizations in differing capacities. I was a research and development program collaborator with SG 2000, was an advisory board member with Rockefeller programs in Africa, and was on the program design team for AGRA.

I have but a few reservations. The global complacency with respect to agriculture since the 1990s has threatened to derail these gains. Instead of the more focused agricultural development efforts of the previous two decades, the last 15 years have seen decreased investments in building human and institutional capacity over the continent.

New challenges to continued growth have emerged. The over-reliance on external funding for agricultural development has led to a lack of firm national strategic frameworks and agendas for national development. This has created an unhealthy partnership with outside agencies, making the recipient national programs highly susceptible to frequent paradigm shifts generated by foreign agencies. These shifts often come about merely for programmatic survival of donor institutions, even though rationalized in terms of enhancing the effectiveness of development programs of recipient nations.

External agencies have grown so powerful that they undermine the voice and effectiveness of national programs. Growing pressure from foreign agencies to increase spending on rural social services divert the focus away from long-term science-based development. Badly needed external assistance has become a perennial necessary evil.

One concern is how to get out of the neglect and misdirection of the last 20 years of technical assistance. I see the kinds of problems that developed.

One is the hurricane of structural development that went on for a number of years: the lack of funding for capacity building, also for institutional building, and then the flurry of NGOs as agents of change. What this means to me is, particularly for the last 25 years, there wasn't confidence in African institutions to build their own programs. Basically, "We don't trust you; we'll give you external cadres of technical assistance, and we'll feed you with food produced elsewhere." And that certainly had not worked. The pain of neglect associated with over-reliance on foreign aid has been recognized. The lack of substantial local investment has most heavily failed in mission-oriented agriculture and rural development.

Yes, the continent has made some gains in education, and agricultural research has made some progress. In places, promising agricultural technologies have been spotted; some tested with success and even adopted. With modest additional support, the capacity to generate new technologies for Africa can be created and sustained. The need to revitalize the capacity-building and institutional-strengthening effort in both public- and private-sector domains cannot be overstated.

However, Africa's record in current constraints on technology transfer remains dismal. The growth observed in agricultural education and crop research was not matched by a concomitant growth in the technology transfer in institutions.

Similar to agricultural research programs, technology-transfer organizations in Africa have also been weakened by frequent changing of approaches to technology-delivery processes over the years. Because of these frequent shifts in approach, many interventions have not generated a noticeable impact. Agricultural-extension service was part of the early institutional development program in many countries. Efforts to build the close linkages between agricultural research and extension were not effective, due to the weak human-capacity and infrastructure base.

Private-sector institutions are weak in all African countries. Without strengthened markets and institutions and a robust infrastructure to support the emerging private sector, science-based development will be hard to sustain.

The neglect of public extension programs resulted in the emergence of NGOs as agents of change, an industry that has ballooned in the years since.

As detailed in my testimony to the U.S. Senate Committee on Foreign Relations in March, the reasons for Africa's failure in reaching the farmer with vital results of research are many. These include a very weak institutional capacity, infrastructure limitations, ill-equipped agents of change, unique biophysical problems, a lack of proper incentive for change, and generally a stubborn mindset and culture that have remained recalcitrant and unsensitized to the power of science-based development.



What to do to increase the chances of success? The generous financial support and eminent leadership coming forth to advance the African Green Revolution recently are remarkable developments. But crucially important as they are, these vital resources do not guarantee success in generating desired research results or in the adoption of improved practices.

The call for an African Green Revolution is not merely to increase crop yields but also to use it as a vehicle of change to livelihoods for the better. Generating such a transformative change is not likely to be primarily a function of money expended. Bringing about sustainable change will take greater commitment for a more humble cadre of development agents. It will require an uncommon recognition of the empowerment of local people, local institutions, and local governments for a more sustainable change.

Badly needed is a transformative process that changes minds and creates a culture of recognition and acceptance of science-based technologies that are both profitable and sustainable. Creating a demand pool for technology is a requirement if science is to become the agent of change for productivity and profitability and for increasing the need and likelihood of natural resources and conservation.

First and foremost, the new African Green Revolution needs to be laid by African nations. The national agenda for development needs to be set and guided by local organizations seeking external assistance only when inadequate local capacity sets limitation, thus minimizing the external overrides. The primary resource investment in African development needs to be made from within and leveraged with external aid, and not vice-versa. The leaders of African development should possess a clear understanding of Africa and Africans. Able Africans should not be relegated to followers in response to the power of the external resource flux.

The vital essential is a commitment and ownership to the goal of science-based development by local leaders and policymakers. It must be remembered that when Norm Borlaug launched the wheat revolution in India and Pakistan, those two nations had already laid the foundation for the oncoming success. To this end, government leaders need to be truly committed to the cause of an African agricultural revolution, one that is possible to achieve only if the leadership gives it their unfettered support and backing.

Governments should commit, and the state, of course, in a multi-sector approach, to vitalize rural development, advance education, promote science, and encourage private-sector initiatives.

A social and political environment that encourages the best and brightest of Africa to engage in the agricultural sciences and science-based development needs to emerge. Individuals who understand the problems, ask the right questions, and visualize the possible ramifications that can arise out of the directed interventions should be encouraged and supported. Bright Africans have done wonders around the world when given the chance to be gainfully employed in highly conducive and productive environments. A new and dynamic local cadre can do the same in Africa if provided with functional institutions, policy support, and encouragement.

For such a drive to succeed, an economic-policy environment that encourages entrepreneurship and private investment is a must. Private-sector institutions are weak in all African countries. Without strengthened market institutions and the robust infrastructure to support the emerging private sector, science-based development will be hard to sustain.

In sum, we will need to key in on the essentials of success in bringing about this badly needed intervention to African agriculture. I am confident that we know *what* we need to do to succeed in Africa. We just need to agree on the *how*. Agricultural sciences can offer technological solutions for increasing production and conserving national resources to catalyze economic development in Africa, as they have in other geographies.

Solutions for many of the current problems are already available or can be readily obtained. More research can be conducted to improve on stop-gap solutions and address the new problems that arise. The more intractable problems of agriculture and natural resources will, of course, demand even further research commitment.

A note of optimism about Africa. I've grown greatly optimistic about Africa lately, as there appear to be improving trends in several areas, including governance, democracy, peacebuilding, and earnest development efforts in the continent. Conflict resolution by Africans has been on the rise since several wars on the continent stopped. More than 50 democratic elections have taken place in Africa in the last five years – although the more established African democracies of Nigeria, Kenya, and Zimbabwe have faltered lately.

Economic reform in the continent has been very encouraging with the improved investment climate and some openness for emergence of the private sector. Annual economic growth in the continent of Africa – greater than 5 percent with single-digit inflation – has been encouraging. With the expansion of new infrastructure and road-building across the continent, the increasing telecommunication networks, and the slow, yet growing, access to water and energy, as well as expansion in primary, second, and tertiary education – all of this suggests that investments in nation-building may be at an all-time high in many countries.

Within the continent, the agricultural sciences have entered the highest level of African political debate in the last several years. African leaders have put agriculture on their annual agenda and made a historic pledge to commit 10 percent of their national budget to food security and agriculture-led growth through the Comprehensive African Agricultural Development Program.

Dozens of African countries have developed comprehensive agricultural-development strategies, a first step to lead and set national agendas for growth. Many nations have proclaimed a targeted science-based annual productivity growth greater than 6 percent by 2015. Regional and subregional organizations have been put in place to facilitate technology generation and transfer.

Foreign assistance to Africa is getting redefined and is under study by various agencies. There is an increasing engagement by foundations, nongovernmental agencies, and the emerging private-sector activity. It appears that unprecedented levels of financial resource support may be obligated by foreign government and donor agencies in support of African agriculture.

That was the clear message of the G8 summit in 2009, where donors committed more than \$20 billion to support a renewed global effort and invest in comprehensive, country-led plans.

The case for African development may have finally been made clearly, both at home and abroad. Between these ambitious pledges from external donors and domestic commitments, and the palpable resolve to succeed heard from African voices, this may be an opportune time for believing in a real change coming to Africa. Perhaps a new era for agricultural development has emerged.

With this resurgence of interest, I believe that we can lead African agriculture programs to focus on programs and approaches that generate badly needed impact. I am convinced that insightful agricultural research can address the diverse array of African agricultural problems and render lasting solutions.

Though not yet strong enough, there is now an institutional base in Africa to launch an earnest effort for a credible agricultural revolution. The world has shown in the past that it has the capacity and the means to offer immediate relief for the problems of the African poor at times of major crisis.

Let us show that we also have the will to rally towards building momentum to catalyzing science-based development with a renewed sense of purpose and energy.

I pledge to do all that I can to show that there is nothing inherently wrong about Africa. Agricultural sciences can trigger badly needed solutions in Africa, as they have elsewhere.

I challenge everyone, including those who I know possess far greater knowledge, wisdom, and energy than I do, to rise up to the call of a new agricultural revolution in Africa. I'm certain that we can eradicate hunger, create profitable livelihoods for the poor, and enhance the conservation of our natural resources in the continent of Africa. The African Green Revolution need not be a mirage.

Thank you.