Path Forward 2.0 Report

May 16, 2022

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Executive Summary

This report describes the results of an in-depth analysis conducted by the IR-4 Path Forward 2.0 Task Force of the alternative strategies to insure sustainable IR-4 operations under a diminished funding environment. More specifically, it focused on identifying options for the three IR-4 operational areas – Quality Assurance Unit, Regional Analytical Laboratories and Regional Field Programs – with the goal of maintaining and improving high quality operations and efficient ways of working. A number of documents from the original Path Forward initiative were reviewed along with current data on budgets and activity. In addition, focus group interviews were conducted with headquarters and regional staff, and representatives from the IR-4 Commodity Liaison Committee and the United States Environmental Protection Agency.

Specific issues and opportunities are identified for the three operational areas. An analysis of the information available to the Task Force generated the following recurring and cross-cutting themes – management and reporting systems, communications and coordination, transition and succession planning, and technology. In addition, an analysis of the current regional organization structure and alternative structures is presented. Finally, a series of recommendations are offered including greater support for information technology, internal and external communications, and training needs and specific attention to potential analytical laboratory backlog solutions.

Acknowledgements

The members of the Path Forward 2.0 Task Force express our appreciation to IR-4 Executive Director Jerry Baron and the Project Management Committee for this opportunity to contribute to the long-term sustainability of the IR-4 Project. We also thank the many participants in IR-4 who contributed their time and expertise and provided candid feedback to support the work of the Task Force. Their insights and experience made the work of the Task Force considerably simpler and meaningful.

Introduction

The preparation of this report was premised first and foremost with recognition that IR-4 is an incredibly well-run program with excellent and dedicated staff. It is a model program that is driven by stakeholder engagement and delivers meaningful and tangible results through excellent collaboration among multiple public and private partners. It is noteworthy that these results have been delivered during an extended period of flat budgets and therefore diminished funding.

The Project has also successfully navigated through a very daunting relocation during a world-wide pandemic. The relocation resulted in significant staff turnover. The relocation was driven by external situations but managed with vision and foresight by the staff and leadership of IR-4. Special recognition is due to the Executive Director, Jerry Baron, for his visionary and steady leadership throughout this period and the Project Management Committee for their guidance and support.

This relocation and much of the re-staffing, although substantially complete, has provided an opportunity to creatively rethink and refresh the Project and to position it for future challenges. This report is written with the intent to build on the phenomenal strength of the IR-4 Project by focusing on several areas where additional attention is likely to yield significant positive results.

Background

In 2016, the IR-4 Project Management Committee established ad hoc workgroups to explore several areas of relevance critical to the future of IR-4, including funding, future needs of pest management products for specialty crop stakeholders, potential alternative structures, and IR-4 relationship with our host institutions. The workgroups developed position papers and contingency plans for several of the topic areas. Products of the workgroups contributed to IR-4 establishing the Integrated Solutions research initiative, support for modifying the IR-4 USDA National Institute for Food and Agriculture (NIFA) grant process to allow host institutions to collect a modest amount of indirect costs, and more proactive activities by the IR-4 Commodity Liaison Committee to support increased funding. Several of the outputs of the workgroups were implemented and helped IR-4 remain efficient and operationally relevant during a period of flat funding.

The need for IR-4 services continues to increase while federal funding has remained stagnant at $11.9 million for more than a decade. Flat funding limits the ability of IR-4 to meet the crop protection needs of farmers, which in turn limits the ability of the specialty crop producers to provide quality products. Due to increasing costs, the IR-4 Project has reduced new research efforts by almost 14 percent over the past three years.

Effective in FY 2021, the NIFA IR-4 grant award allows 10 percent indirect cost recovery. The 10 percent translates to 11.11 percent of the total direct costs actually awarded. Assuming a continual flat funding award of $11,070,513, the allowable indirect costs will result in an effective reduction of $1,229,934 in operating funds for program delivery. This reduction was not experienced in FY2021 since the participating institutions agreed to forego the indirect cost recovery since the change was not known until the FY2021 programmatic activities were actually initiated. However, this effective reduction in operating funds will be realized beginning in FY2022. If flat funding continues, then the IR-4 Project will likely be forced to further reduce research efforts.

In anticipation of this reduction, the IR-4 Project leadership initiated the IR-4 Path Forward 2.0 initiative. A task force was appointed consisting of:

- Rob Hedberg, former National Program Leader in the USDA National Institute for Food and Agriculture
- Barbara Madden, former Minor Use Team Leader in the US EPA Office of Pesticide Programs
- Janis McFarland, former Head of Regulatory and Stewardship at Syngenta Crop Protection in North America
- Ray Ratto, co-owner of Ratto Brothers, a family owned vegetable farm in Modesto, CA

- Dan Rossi, former Executive Director, Northeastern Regional Association of State Agricultural Experiment Station Directors

The Path Forward 2.0 Task Force (Task Force) was appointed on August 25, 2021 and Dan Rossi was asked to chair it. The charge to the Task Force was to develop strategies to insure sustainable IR-4 operations under a diminished funding environment. The specific objectives included:

- Identifying alternative structures of IR-4's Quality Assurance Unit with the goal of maintaining high quality compliance, equilibrating work assignments while reducing the cost of the use of contractors and/or elimination of redundant lines
- Exploring the option of downsizing of one or more of the regional analytical laboratories and savings achieved and efficiency improvement through concentrating resources into a smaller number of expanded laboratories and/or the use of contract laboratories
- Assessing the current organization of regional field operations
- Analyzing current and alternative budgeting models
- Examining how core activities can be narrowed
- Identifying alternative non-traditional funding sources

The Task Force formally began its work on October 21, 2021.

At the October 27-29, 2021 Project Management Committee (PMC) meeting several decisions were made that directly impacted the Task Force assignment. First, two resolutions were passed:

> *IR-4 Headquarters has the authority to make decisions about QA audits, inspections, and other associated assignments and funding.*
>
> *The PMC recommends the closure of the Michigan laboratory by July 31, 2022.*

In addition, the PMC directed the Task Force to focus on aspects of the first three objectives with attention paid to the resulting potential impacts on operational efficiency and budgets.

These decisions significantly impacted the original charge to the Task Force. In particular, the two resolutions addressed significant issues raised in the first two objectives of the charge. As a result, the Task Force refocused its efforts on identifying options for the Quality Assurance Unit, Regional Analytical Laboratories and Regional Field Programs with the goal of maintaining and improving high quality operations and efficient ways of working. These options will be important for more effective and efficient operations of the IR-4 Project under a diminishing budget environment but would be also relevant if the budget scenario changes.

Methods

The Task Force reviewed the following original Path Forward reports to determine what information would be useful in addressing the new charge:

- *IR-4 Path Forward Update* dated October 2017
- *IR-4 Strategies for Implementing a 10% Indirect Cost Charge*
- *Efficiency Efforts*
- *Alternative Sources of Funding for IR-4*
- *Organizational Assessment Final Report*

The Task Force also reviewed

- IR-4 funding distributions to regional and headquarters operations for 2018-2021
- IR-4 laboratory sample sets, food residue and performance field trials, environmental horticulture field trials and biopesticide/integrated solution field trials by region for 2018-2021
- IR-4 quality assurance metrics for 2019-2021
- Organizational charts for IR-4 headquarters and national program
- *Laboratory Efficiency and Backlog Elimination Strategy Report* dated September 1, 2021

In order to assess the functionality of operations, it was decided that the Task Force would interview the various participants in the IR-4 Project. It conducted a series of 90 minute virtual focus group meetings between January 7 and February 28, 2022. In most cases the participants were provided a series of questions to consider prior to meeting with the Task Force.

The schedule of meetings were as follows:

January 7	IR-4 Executive Director and Associate Director for Regulatory Sciences
January 10	Regional Laboratory Coordinators
January 10	Commodity Liaison Committee Members
January 12	Regional Field Coordinators
January 26	National Quality Assurance Unit Manager
February 18	Headquarters Research Planning and Product Performance Team

February 21 Headquarters Regulatory Sciences Team

February 23 National Information and Communications Officer

February 23 US EPA Minor Use Team Leader in the Office of Pesticide Programs

February 28 Regional Quality Assurance Staff

Findings

Based on discussions with key staff, the following salient issues were identified relative to the specific operational areas included in the Task Force charge:

Quality Assurance Unit

Priority Setting – Given separate regional budgets, IR-4 operations have been regionally driven. This system has worked well but it has limitations. The QA Unit Manager has limited authority over regional operations. As a result the system is not as flexible as it could be to adjust to shifts in priorities and lacks consistency across regions. Some auditors focus specifically on certain types of audits (laboratory or field) and sites have had limited opportunities to be audited by QA auditors outside of their region. Historically, headquarters has had less than optimal ability to set priorities and coordinate activities across regions to insure consistency and efficiency. There could be benefits of sharing QA resources across regions periodically to help complete time sensitive deadlines. There could also be benefits to having auditors occasionally participate in audits outside their region for development opportunities.

Technology and Shared Data Bases – The Electronic Quality Assurance (EQA) data base appears to be working well. The regional staff are very comfortable with it. It provides easy access to information and the ability to track the status of projects. However, the current EQA was introduced in 2013 and needs to be evaluated against newer technology.

There was an expressed need for improved technology to allow for additional data and information sharing and access to a single source list of all trials being conducted including residue, performance and IS. The ability to track data books is also important. There is a considerable level of raw data being tracked and mailed to different sites that might be better and more efficiently done electronically. Electronic data books would also be beneficial. Technology to allow more data and information sharing, is somewhat constrained by the different information technology platforms used by the different institutions participating in the Project It was noted that there is ongoing work on streamlining existing data bases at headquarters.

Communications – There appears to be a good level of communications and collaboration among the QA staff across the regions and between regional QA staff and headquarters (and specifically the National QA Unit Manager). The use of contractors, particularly in the North Central region has created some challenges. In addition, there is currently a plan being developed on how to address the QA needs due to the changes in the North Central region which

will impact the workload of the other regions and that plan will need to be communicated as soon as possible.

There is also fairly good communications between the QA staff and regional laboratories and regional field coordinators. Communications between QA and field research directors is improving but is complex given the large number and geographical dispersion of research sites. Scheduling for key audit milestones can change rapidly due to weather and study conditions. In the past there have been examples of the quality assurance team being left out of some planning which impacted scheduling of resources. Given the significant number of new study directors, quality assurance and compliance communication and training needs are critically important. The QA Unit Manager is working with the Associate Director for Regulatory Sciences to help improve communications, coordination and collaboration across regions and with headquarters to work together as one Project while meeting specific regional needs.

Training of Staff and Partners – The training of new field research directors occurs in each region. The Western region provides training opportunities including webinars that are shared with other regions. There is a national education workshop every three years. Coordination from headquarters to help develop additional training materials that could be adapted for regional needs could be beneficial and could help improve consistency across the Project. The availability of more systematic training materials to share across regions would be valuable.

Professional Development – There is some training available to QA staff but they could also benefit from additional cross-training and development opportunities to grow. Some of the staff are active professionally in organizations such as the Society of Quality Assurance and maintain their accreditation. Continual professional development and opportunities to grow should be encouraged for all QA staff.

Regional Analytical Laboratories

Central Depository for Methods – There is a sense that it would be very useful for all labs to post all successful working methods in a central depository so other labs have access to this information. This is especially important before the Michigan Lab closes its doors.

Collaboration between Labs - Currently, there is a strong collaborative effort among labs. This collaboration should be applauded and encouraged moving forward. In the past, collaboration between labs was limited and instead a more competitive culture existed that was not necessarily to the benefit of the IR-4 Project or growers.

Division of Labor between Labs – It has been suggested that perhaps one of the IR-4 laboratories could specialize in certain functions, such as method development and early storage

stability analysis, and have the remaining labs concentrate on analysis of residue field trials. This idea was considered problematic except for possible work on storage stability. It may be feasible for storage stability analysis to be centralized and decoupled from field analysis, but it is unclear if this is a time/resource benefit.

The main reason there was no support for having one lab taking the lead for method development, is the labs do not have the same equipment so having one lab concentrate on developing a method may not be applicable when analyzing samples in another lab. It also is not feasible for all labs to have the same equipment since USDA Agricultural Research Service (ARS) labs are equipped by ARS not by IR-4, and within IR-4, the labs, and the institutions in which they are located, deal with different vendors to supply and service their equipment. A second concern about one lab taking the lead on method development is this would be a disservice to recently hired chemists and would limit staff development and overall Project strength. Finally, if only one lab works on method development and that lab runs into a problem then the entire program could be stalled.

Backlogs – Even though considerable efforts and financial resources have been invested in reducing backlogs, the problem still exists. The current problem is in part due to the pandemic which differentially impacted different laboratories. Backlogs affect the submittal timelines. Another concern is when backlogs occur at a given lab and how this subsequently disrupts work on priority projects.

Currently there are no procedures in place to reevaluate work assignments later in the process after work has begun to determine how things are going and if projects may need to be reassigned and sent to another lab. Once a lab agrees to work on a chemistry even if that lab runs into a problem, they are expected to resolve the issue. This can lead to a backlog if the lab is not able to solve a problem. This situation is not only an issue for the IR-4 Project but can be very demoralizing for lab staff. When projects are assigned, it is not always known what the scope of the work will be and whether the lab is equipped to do the work. It was suggested that there needs to be procedures put in place to reevaluate work assignments later in the process after work has begun to determine how the analysis is progressing and if projects may need to be reassigned to another lab.

There is also the issue of how projects are counted, and that one field trial is not always equivalent to one lab analysis. For example, some of the triazole fungicides can require three different analyses for each field trial. Similarly conducting field trials using multiple active ingredients represents a single field trial but does not represent a single analysis.

Communication/Team Atmosphere – While the regional laboratory coordinators (RLCs) communicate regularly and there has been increased collaborative effort among them, communication could be better from IR-4 headquarters and the PMC. In some cases, the RLCs are asked to provide updates prior to the PMC meetings but get little feedback as to the outcome

of the meeting. There could be better communication from regional directors to RLCs regarding staffing, funding issues and other updates coming out of the PMC meetings.

It is also important for the regional directors to support a team environment and encourage communication between the RLCs, the Regional Field Coordinators and the QA.

Additionally, there could be better planning and communication between the labs and headquarters surrounding issues that are expected to become problematic. For example, recent changes by the European Union regarding lab analysis and the ban on use of certain chemicals in lab analysis will likely impact the IR-4 Project and slow things down in the future. It would be useful to have processes in place to address these types of concerns early.

Contract Labs – The advantages and disadvantages of relying on contract labs to complete the work for IR-4 was considered. One concern is that contract labs are unlikely to be willing to take on difficult projects and that for growers with specific needs, the IR-4/ARS labs are their only answer. For example, it is uncertain if contract labs would be willing to work on the triazole compounds. Additionally, there are some chemistries that call for the use of expensive glassware potentially reducing the willingness of contract labs to undertake their analysis. It is also unclear if IR-4 projects would be given any priority at contract labs when competing with chemical companies unless a certain level of business could be guaranteed. In general, there may be a place for contract labs to help prevent a backlog when issues arise, but regularly relying on contract labs to complete work on IR-4 projects may not be advisable.

Funding – Some of RLCs did not have a clear understanding of how their labs were funded. There could be better communication from regional directors to RLCs regarding staffing, funding issues and other updates coming out of the PMC meetings. There was a discussion about the feasibility and possible benefits of a fee for service/hybrid model for funding the labs. Overall, there was general agreement that before such a proposal could be implemented, metrics would need to be developed to account for differing levels of difficulty in analyses.

Regional Field Programs

Cross-Region Collaboration – Over the past several years, a cross-region cooperative approach has taken hold such that the group of Regional Field Coordinators (RFC's) work as their own primary mutual support network and information sharing team. This trend is very positive.

Regional Quality Assurance – There is support for having the QA function in the regions with use of contract QA where appropriate. Good working relationships between QA, researchers and the field research directors exist in some regions.

Budgets – There is some concern regarding the long-term sustainability of the field research program since the current $6,500 reimbursement for field trials is not competitive with other funding and individual field researchers sometimes subsidize their IR-4 trials from other funding sources. This may become problematic as current researchers retire and newer researchers, who do not have the long-term investment in the Project, may not be willing to subsidize the field research. It is worth exploring increasing the reimbursement amount for field trials to reflect the true value of their work.

Additionally, the RFC's appear to be somewhat disconnected from the budgeting process, how decisions about budget cuts are made, and how the PMC allocates funds. Right sizing the regional presence due to fewer trials will mean that some centers will not receive as much work as they can perform and need to maintain critical capacity.

Further, the new Indirect Cost Recovery (ICR) provisions have added considerable pressure on the funding for program activities and created an administrative burden for some RFCs. (However, for our planning purposes it is important to note that Congress and the Administration have both demonstrated support for increased funding that would more than offset the IDC financial impacts. It is probable, though not certain, that these constraints will be eliminated once Congress passes a full year appropriations bill.)

Capacity – Uncertainties about the registration requirements for biological crop protectants and other emerging technologies make it hard to project the right size and attributes for the field research program in the future. However, the need for environmental horticulture, integrated solutions, and crop safety and efficacy trials may increase even if the number of residue trials declines.

While external to the Project, there is a sense that there are fewer and fewer Extension appointments in pest management and pesticide evaluation and that it is difficult for universities to find candidates when these positions are posted. The RFCs rely heavily on a small cadre of experts and loss of one of these key cooperators could leave a large gap. There seems to be a need to advocate for more pest management education and staffing within academic institutions.

Internal Communications – While the RFCs appear to be connected horizontally with each other, they may be somewhat disconnected relative to the cross functional activities and decision making for the program as a whole. Strengthening communications both vertically and throughout the matrix of program functions warrants attention. Some staff feel isolated at times and this inhibits the sense that the program is one team working for shared success. Conversely, it seems that staff throughout the Project are anxious for this sense of cooperation, coordination and communication to keep growing.

External Communications – There is a sense that few people, even those closely associated with the Project, fully grasp the function, value and importance of IR-4. Persistent outreach to targeted audiences such as grower groups, academic faculty and administrators, and other

stakeholders and beneficiaries is needed to improve both the understanding of and support for the Project. There is a need for improved outreach materials to assist RFCs to perform this role. Both internal and external communications could benefit from additional attention and a stronger web presence. The Project could benefit from increased attention to communicating the societal, nutritional and food security benefits derived from the IR-4 Project. Some ad hoc efforts at enhanced communications and coordination have been initiated at the regional level but this is a function that could be most effectively orchestrated at a national level to avoid redundant efforts and provide consistency.

Institutional Knowledge – There is a need for better capture, retention and accessibility of institutional knowledge. Additional attention to developing and documenting standard operating procedures and institutional knowledge seems warranted particularly in the regions.

Training - Coordinated cross-regional development of training materials could be orchestrated at the national level with strong regional participation to promote engagement and ownership of the process and outcomes.

Accountability – The supervisor of record for many staff is often a university faculty member or administrator who is often only marginally knowledgeable about the IR-4 Project while the day-to-day reporting and oversight is likely to come from someone at headquarters or another university in the region. It appears there is significant opportunity to improve this process with development of standardized core expectations for different roles. There should also be protocols for the people who give staff day-to-day guidance to also provide input into their formal performance reviews.

Analysis

An analysis of the findings identified four recurring and cross-cutting themes – management and reporting systems, communications and coordination, transition and succession planning, and technology. In addition, an analysis of the current regional organization structure and alternative structures was conducted.

Management and Reporting Systems

IR-4 has a complex management structure rooted in its successful history. The complexity stems in part from the distribution of funding and authority among four regional host institutions, a national headquarters office and two different USDA agencies (NIFA and ARS). IR-4 also has multiple funding sources with different reporting and accountability requirements. There are also multiple reporting lines for almost all staff roles. Finally, IR-4 has multiple program types with very different data requirements (for example magnitude of residue, crop safety and efficacy, environmental horticulture, integrated solutions and biopesticide registration support).

This dispersed hierarchy is an inherent component of how the IR-4 Project developed. It is a testament to the Project that so many different institutions and functions have worked together so successfully over the years. However, this dispersed authority and oversight also inhibits consistency and the sense of one team working towards shared success. It may impede efficiency, nimble response and performance accountability going forward.

A new evolving culture that values collaboration and cooperation over competition is taking hold in multiple functional areas of the Project. Concurrently, there is real need and hope for this collaboration to grow across the functional areas and throughout the Project.

Starting with the FY 2021 budget, the NIFA grant was consolidated and is now awarded to headquarters. Headquarters will fund the regional operations through sub-awards. Thus, headquarters now has fiscal responsibility and corresponding accountability for the entire grant. One could argue that this change could pave the way for a more centralized decision making model.

IR-4 has been very successful in meeting its mission and remains an excellent example of a stakeholder driven service with a unique and productive partnership between the federal agencies, the Land-grant University system, the agrochemical industry, commodity groups, and growers. Any changes will need to be exercised very carefully and require systematic evaluation and communication in ways to maintain system-wide cooperation and ownership.

Communications and Coordination

A common theme prevalent in nearly all organizational assessments is the level and nature of communications. While there has been increased attention to communications, additional needs, both internal and external, are significant. Internal communications platforms that help manage collaboration, documentation and work flow need to be enhanced. Relative to external communications, significant improvement has occurred over the past year. The website has been upgraded and more utilization of social media platforms has occurred. Additional attention to communications that better engage and inform stakeholders, potential staff, and the general public would beneficial. In addition, consideration should be given to the benefits of splitting the external or public facing platform and an internal or internet platform of the website.

Some ad hoc efforts at enhanced communications and coordination have been initiated at the regional level but this is a function that could be most effectively orchestrated at a national level to avoid redundant efforts. It would also communicate a more consistent and unified Project.

Increased coordination, horizontally and vertically, is necessary. Increased horizontal coordination across regions within functions (quality assurance, laboratory and field) appears to be already occurring. An effort should be made to capture and expand such innovation at the regional level. There is a need to encourage expanded coordination across functions. Finally, strengthening coordination and communications vertically would also help engage and integrate staff throughout the Project.

Transition and Succession Planning

IR-4 is undergoing a very complex transition that includes the relocation of headquarters from New Jersey to North Carolina and a movement towards a more cohesive national program. The Project has experienced a number of recent retirements and departures. There are concerns among new and experienced staff about maintaining continuity. Attention needs to be paid to insuring continuity and adequate back-up capability. Increased cross-training should be encouraged while the more experienced staff are still on board.

With the retirements and departures, both at headquarters and in the regions, there has been a significant loss of institutional knowledge already. The staff, experienced and new, are concerned about the potential of additional loss of institutional knowledge and inadequate documentation of standard operating procedures.

Many bright, enthusiastic new staff have been hired recently. They are operating under steep learning curves and reduced staffing resources. Existing procedures, which have grown over

many years, have good safeguards and redundancy built in but are not as efficient as the new and heavily burdened staff would like. These staff have also brought many creative new ideas and questions about the organization and existing processes. They are also seeking better resources, including increased use of digital tools, to carry out their roles and responsibilities. Such tools will require additional investments that could likely be constrained during the current budget environment.

Technology Needs

Another common theme is the need for additional investment of both human and financial resources in new technologies. Additional staff support for IT and new software adoption could benefit communications efforts including expanded website development, staff support and increased shared data base development. Considerable advances have been made in data handling and management and this should be encouraged and expanded. Another area for future investment would be the adoption of digital tools such as electronic field data books that would increase efficiency through reduced data entry, copying, and transmittal costs and reduction of potential errors.

Organizational Structure

In order to assess alternative organizational structures for the IR-4, it is important to understand the roots and rationale of the current structure. The current structure of IR-4 is that of a national program that is delivered through four regional components. The need for a national system for the registration of pesticides became very obvious in the 1950's. State Agricultural Experiment Station Directors, university extension agents, and the USDA recognized the need to develop processes for registering agrochemicals for use on specialty crops and for minor uses on major crops. The IR-4 Project was established on July 1, 1963 as Interregional Research Project Number 4 with the title: *Evaluation of Current Data and Needed Research to Determine Tolerance Limits of Chemicals for Minor Uses on Agricultural Products*. Because of the interest and concern expressed by the State of New Jersey, the national headquarters and overall Project coordination were placed with New Jersey Agricultural Experiment Station located at Rutgers University in New Jersey.

Recognizing the need to expand field and laboratory research capacity, regional offices and regional "leader" laboratories were established in each of the four USDA regions (Northeast, North Central, South and West) in 1975. The IR-4 Regional Offices/Laboratories were associated with the host Land-grant institutions. The national headquarters continued to be

located at Rutgers University. (In 2021, the national headquarters was relocated to the North Carolina State University in Raleigh).

Historically, the four regional units operated independently, receiving separate portions of the IR-4 grant from NIFA and under the leadership of a Regional Director. Each Regional Director was responsible for the staff, budget, and programs in their region managed by Regional Field Coordinators, Regional Laboratory Coordinators, and Regional Quality Assurance Coordinators. Headquarters provided overall support and coordination.

In addition, the ARS Minor Use Program has its own funding and it works in close coordination with IR-4 headquarters and the regions to conduct specialty crop residue and product performance at its dedicated sites. ARS also cooperates with environmental horticulture efficacy trials.

The IR-4 Project has successfully operated as a unique partnership between the USDA (including both NIFA and ARS and more recently the Foreign Agricultural Service), the State Agricultural Experiment Stations (SAES), the agrochemical industry, commodity groups, and growers.

Suggestions have been made to reconsider the current regional structure in order to realize cost savings. For example, one suggestion would be to combine the Northeast and North Central regions into region. Based on the analysis conducted during the original Path Forward initiative, it was concluded that the associated cost savings would be between $175,000 and $225,000 depending on potential staffing assumptions. A significant portion of the savings was derived from reduced QA staffing. This source of savings would no longer necessarily be available as a result of the consolidation given the recent management decision relative to QA governance.

A second option would be to consolidate to two regions – eastern and western. It was estimated that this model could result in a potential savings of $1,025,000. A significant portion of these savings (estimated at approximately $800,000) resulted from the closure of one of the regional analytical laboratories. Given the recent management decision to close the Michigan laboratory, those saving will soon be achieved without any change in the current regional structure.

The Task Force considered proposed changes to the regional structure. Besides the cost savings discussed above, there are potential benefits to restructuring IR-4 down to two regions eastern and western. There is a sense that there would be an opportunity for increased accountability, greater collaboration, communication, cooperation, and sense of team as well as more efficient training that could result from regional consolidation.

The Task Force also evaluated the potential costs of such a decision including:

- The potential real and perceived loss of service and responsiveness to growers.

  A physical presence in a region is important to insuring that the needs and interests of local growers are being addressed. Relationship building occurs that is critical for establishment of good communication and building trust.

- The potential disruption in terms of personnel and morale.

  Any change in the number and location of regional offices will have a direct impact on existing personnel and overall morale. While this impact can be somewhat moderated through good planning and communications, nevertheless there will always be some negative effect. In addition, retirements and other departures of individuals (voluntary or involuntary) often offer natural opportunities for reorganization as in the recent situation in the North Central region and the relocation of headquarters to North Carolina State University.

- The potential loss of goodwill from the institutions losing the regional offices.

  The institutions that host IR-4 regional offices have a vested interest in those operations. They have made considerable in-kind financial and human resource investments in IR-4 and have determined that the intellectual, stakeholder service and other benefits outweigh the costs they incur for hosting IR-4.

- The potential loss of support from SAES directors in regions losing a physical presence.

  The SAES directors support the IR-4 project through off-the-top funding from the Hatch Multistate funding they receive from NIFA. There may be some loss of support from SAES directors in a region losing a regional presence.

- The potential loss of the 1890 Historically Black Land-grant University's participation by the University of Maryland Eastern Shore (UMES) if they were to lose the regional office.

  The UMES participation in IR-4 is very critical given their expertise and experience in serving important underserved populations that need the services of IR-4. Any reorganization of regions could impact on that participation.

- The potential loss of political support.

  As with the support of the growers and SAES directors, Congressional delegations may be less enthusiastic in their support for IR-4 funding if a regional presence was removed from their districts.

The Task Force has concluded that while some cost savings and other benefits from a change in the current regional structure could be realized, the potential downside is very significant and requires serious consideration. While one might argue that if one was starting from scratch, the selected regional model could be different, the IR-4 Project is not in that position. However, as agriculture changes, reconsideration of IR-4 regional structure may be appropriate.

Recommendations

In the following recommendations, the Task Force suggests a number of other actions to be considered to increase efficiencies and effectiveness in operations that will support the short- and long-term sustainability of the IR-4 Project. These actions are applicable during a diminishing budget environment but are also prudent if budget increases are forthcoming.

Recommendation 1 - Management

The national headquarters office should set strong performance expectations that accompany the funding it distributes annually. The evolution that has been occurring from a collection of independent regional efforts to a single cohesive national program led by headquarters should continue. The success of this approach will be dependent on headquarters acting in a service leadership role with active engagement, input and buy-in from the regions. Management should consider developing more clearly defined staff roles and procedures for headquarters staff to have more systematic input into performance of regional staff. Input from the regions would also be valuable to the reviews of headquarters personnel.

In order to address the disparity between the current cost reimbursement level for residue field trials ($6500) and the true value of the Field Research Directors' time, IR-4 management should consider, when resources are available, increasing the reimbursement level.

Recommendation 2 – Internal Communications

Internal communications platforms and practices should receive additional attention. The dispersed management of the program across multiple functions, regions and institutions presents unique challenges that can best be addressed through good communications. These needs include the array of data management platforms that can support better information sharing; planning and management communications systems that can work seamlessly across multiple institutions; systems to capture best management/standard operating procedures; and descriptions of roles and responsibilities of various staff positions.

In addition to deployment of the systems which support information sharing, it is important to increase cross-functional and cross-regional communications activities. Many aspects of the Project suffer from a silo effect. Although the current system has worked well in the past with long-term experienced staff, the influx of new staff has created the need for people to better understand how their particular role meshes with the other functions to deliver results.

There are many examples of people working in one function regularly engaging with their counterparts in other regions. This increased collaboration should be applauded and encouraged

moving forward. However, there are fewer examples of people actively engaging across functions within regions. Regional directors should increasingly play a role in improving better coordination among functions within their regions. They should also insure improved communication regarding staffing, funding issues and other updates coming out of PMC meetings.

Recommendation 3 – External Communications

External communications activities warrant additional attention. Considerable improvement has occurred over the past year. However there is still a perception that stakeholders close to the Project do not adequately understand how the Project is funded and functions. People outside the Project do not appear to have easy access to information that "markets" the Project and answers their questions. The Project could benefit from increased attention to communicating the societal, nutritional and food security benefits derived from the IR-4 Project. We have also heard that potential new hires and legislative staffers have not been able to find the information they seek on the current communications platforms. In addition, stakeholders have expressed interest in being able to have more user-friendly access to the status of projects. The development of a landing site on the website should be considered. Management should also consider assigning a single point of contact to each project who could provide status updates to stakeholders.

Recommendation 4 - Investment in Communications

Increased attention to internal and external communications require the investment of additional human resources to this area. The current national communications program consist of one full-time professional. While funding remains a serious constraint, a reallocation, even on a limited basis, will likely generate a considerable return on the investment over the long-run. If increased funding is forthcoming, then definite consideration should be given to increased investment of resources in this area. Another consideration may be the appointment of an advisory committee including regional staff to support the Communications Officer.

Recommendation 5 - Training

Increased staff cross-training across regions, across functions and across disciplines should be encouraged. Historically, IR-4 has had the benefit of long-term staff staying with the Project for much of their careers and becoming extremely proficient and experts in their roles. The relocation to NC State has resulted in a new generation of staff which may have more fluid careers. The new headquarters location provides a rich talent pool to hire from but also offers a

wealth of other career opportunities for IR-4 staff who have gained valuable experience through the Project. More frequent staff turnover may be a fact of life for the Project going forward. Increased staff cross-training will help minimize disruption, maintain program continuity and provide staff a greater sense of ownership and opportunity within IR-4.

Training of staff and partners to be prepared to work with new and emerging technologies should be prioritized. A team should be appointed to determine how best to develop training materials for headquarters and regional staff. Serious consideration also needs to be given to increased professional development opportunities across all staff within the Project.

The task force fully supports the PMC decision for IR-4 Headquarters to have the authority to make decisions about QA audits, inspections, and other associated assignments and funding. In the future, consideration should be given to an analysis of ways to broaden QA training to external stakeholders to further support the IR-4 program.

Recommendation 6 – Technology

There were a number of areas where additional investment in new information technology is needed in terms of both staff and financial resources across all operational areas. The Task Force suggests the appointment of a dedicated task force in the near future to identify and evaluate specific options, costs and potential funding plans.

Recommendation 7 – Analytical Laboratory Backlogs

The following options are offered for consideration in addressing the analytical laboratory backlogs and overall efficiency across all IR-4 and ARS analytical laboratories:

Opportunity to Reallocate Work – Develop a process to provide a "safety valve" or "off ramp" and identify back-up resources when a lab runs into challenges. It would be helpful to create procedures to reevaluate work assignments and to determine progress and identify additional resources needed to complete projects. Additionally, there should be a process developed to consider the complexity of a project instead of just counting the number of field trials represented during laboratory assignments and evaluations.

Early Input on Projects – Consideration should be given to allow the RLCs to screen the grower's priority list prior to the Food Use Workshop and perhaps when it is sent to EPA for the stoplight analysis. The RLCs could be asked to identify any potential issues that might prevent a

lab from being successful. For example, when registrants are making presentations on possible projects, the labs could determine if there are reference samples available to the lab, is there a working method, and is special equipment required to complete an analysis. Identifying issues earlier in the process may help the labs resolve them prior to IR-4 committing resources in the field.

IR-4 Headquarters Centralized Coordination of Lab Assignments/Priorities – Management should consider creating a position associated with IR-4 headquarters to function as a coordinator of laboratory work/priorities for all labs. Such an individual will need the right skill sets and experience. It would be important for the person to be a chemist with experience working in an analytical laboratory who understands the complexity/requirements of lab analysis and the quality assurance requirements.

This position could provide additional accountability when a lab runs into problems and projects are not completed on time. Having someone who understands what was going on in all the labs could help trouble shoot problems. The backlog issues that some labs have experienced are related to staffing shortages or getting stuck on an analysis and there is limited ability to reassign the project or divert other projects.

In addition, this position could provide coordination of lab analyses that are contracted out to commercial labs.

Create a Central Depository for Analytical Methods – To gain efficiencies across all the IR-4 and ARS analytical laboratories, consideration should be given to creating a central repository where all successful analytical methods developed are stored so other labs have access to this information. An adoption of e-notebooks would be ideal but at a minimum a central location of scanned pdf copies that everyone has access to would be desirable.