TECHNICAL ASSISTANCE AND RESEARCH FOR INDIAN NUTRITION AND AGRICULTURE (TARINA)

2016 AT A GLANCE

TCI TARINA

TATA-CORNELL INSTITUTE FOR AGRICULTURE AND NUTRITION (TCI)

College of Agriculture and Life Sciences
Cornell University

TCI LAUNCHES ITS FLAGSHIP PROJECT: TARINA

In December 2015, the TCI was awarded a US$13.4 million grant from the Bill & Melinda Gates Foundation to help boost the nutrition profile of agriculture in India. With this funding, the TCI is scaling up its work on promoting a more diversified and nutritious food system. We aim to enhance the availability and affordability of nutrient-rich foods for the rural poor by influencing the design of ongoing and future agricultural projects, programs, and policies. We will achieve this through the integration of nutrition-focused objectives, actions, and metrics into agricultural initiatives that are committed to delivering adequate food to local populations, primarily in the states of Bihar, Odisha, and Uttar Pradesh, where the burden of malnutrition is greatest.

The broad objectives of the project are to:

1. Provide technical assistance in redesigning agricultural projects to ensure nutrition outcomes at scale.
2. Provide assistance and evidence for policy reform that enhances diet quality at affordable prices.
3. Build capacity to design and implement nutrition-sensitive agricultural programs and policies.

To implement these objectives, the TCI connects policy-focused academics from diverse disciplines with impact-focused implementation partners through a consortium called Technical Assistance and Research for Indian Nutrition and Agriculture (TARINA). Led by the TCI, TARINA links the research capacities of Cornell University, Emory University, the International Food Policy Research Institute (IFPRI), and the Tata Institute of Social Sciences (TISS) with the technical capacities of leading non-governmental organizations (NGOs) and development partners—BAIF Development Research Foundation, CARE India, Grameen Development Services (GDS), and Tata Trusts. Collectively, the consortium provides the leadership, expertise, and convergent action that are needed to tackle the complex problem of malnutrition in India (Figure 1).

Since TARINA's inception, the TCI has established a Center of Excellence (CoE) in New Delhi as part of its efforts to support the project and its main objectives. The CoE offers a mix of evidence, capacity, and advocacy for implementing nutrition-sensitive agriculture in the Indian context by providing high-quality products and services such as research papers, policy briefs, training manuals, workshops, and policy

Figure 1

seminars. As the center expands, it will serve as a central repository of information and knowledge to support building stronger linkages between agriculture and nutrition as well as a hub for a network of national and international experts working in this space. While the CoE was founded under TARINA, it is envisaged eventually to evolve into an autonomous entity that is able to sustain itself well beyond the life of the grant through the provision of demand-driven technical assistance and expertise.

HOW TARINA TACKLES MALNUTRITION: A FOOD SYSTEMS APPROACH

Over the past 50 years, the Green Revolution has ushered in new technologies that have enhanced staple grain productivity and transformed India's agricultural landscape. As farmlands planted with diverse crops were converted to monoculture fields of wheat and rice, land dedicated to nutrient-rich foods such as fresh fruits, vegetables, and pulses diminished. While significant progress has been made toward hunger reduction, Indian diets have become increasingly centered on staple grains. Today, much of the country's rural population suffers from chronic malnutrition and micronutrient deficiencies. Consequently, childhood stunting and wasting as well as anemia in both women and children persist at stubbornly high rates.

Since the Green Revolution, the food security challenge has evolved. It is no longer an issue focused merely on making enough calories available, but rather on enhancing food diversity and quality to address malnutrition in its many dimensions. Outdated agricultural policies biased toward staple grains cannot fully address contemporary nutrition challenges. As such, there is an urgent need to reorient agriculture and development policies toward nutrition outcomes.

TARINA aims to redirect agricultural policy away from "staple grain fundamentalism" toward a much broader food systems focus, which considers the need to integrate and build better connections between agriculture and nutrition. More specifically, it emphasizes agricultural pathways for improving the rural poor's year-round access to affordable, diverse, and high-quality foods that are rich in micronutrients.

TARINA's food systems approach to improving diet diversity and quality requires knowledge of factors that influence both agriculture and nutrition within and between stages of the food supply chain as well as within and between scales, from households to villages, districts, and beyond. Simply defined, a food system includes all individuals, enterprises, and institutions that influence the supply, demand, consumption, and absorption of food and micronutrients. Figure 2 outlines the interconnected components of a food system.

The food systems approach involves not only ground-level interventions at various stages of the food value chain through the redesign of agricultural projects and programs, but also policy reforms to ensure a level playing field for the production and marketing of nutrient-rich food crops such as fresh fruits, vegetables, pulses, and livestock products. This goal can be achieved through large-scale investments in transportation infrastructure, cold storage for perishable products, and local markets to reduce transaction costs.

Furthermore, policies could be adopted to offset strong price incentives for producing staple grains, which are generated by price supports, input subsidies, and investments in research and development (R&D). Establishing a "crop neutral" policy environment (i.e., one that removes biases towards a single crop or group of crops) is critical to creating a more robust and diversified food system that enhances the availability and affordability of nutritious foods.

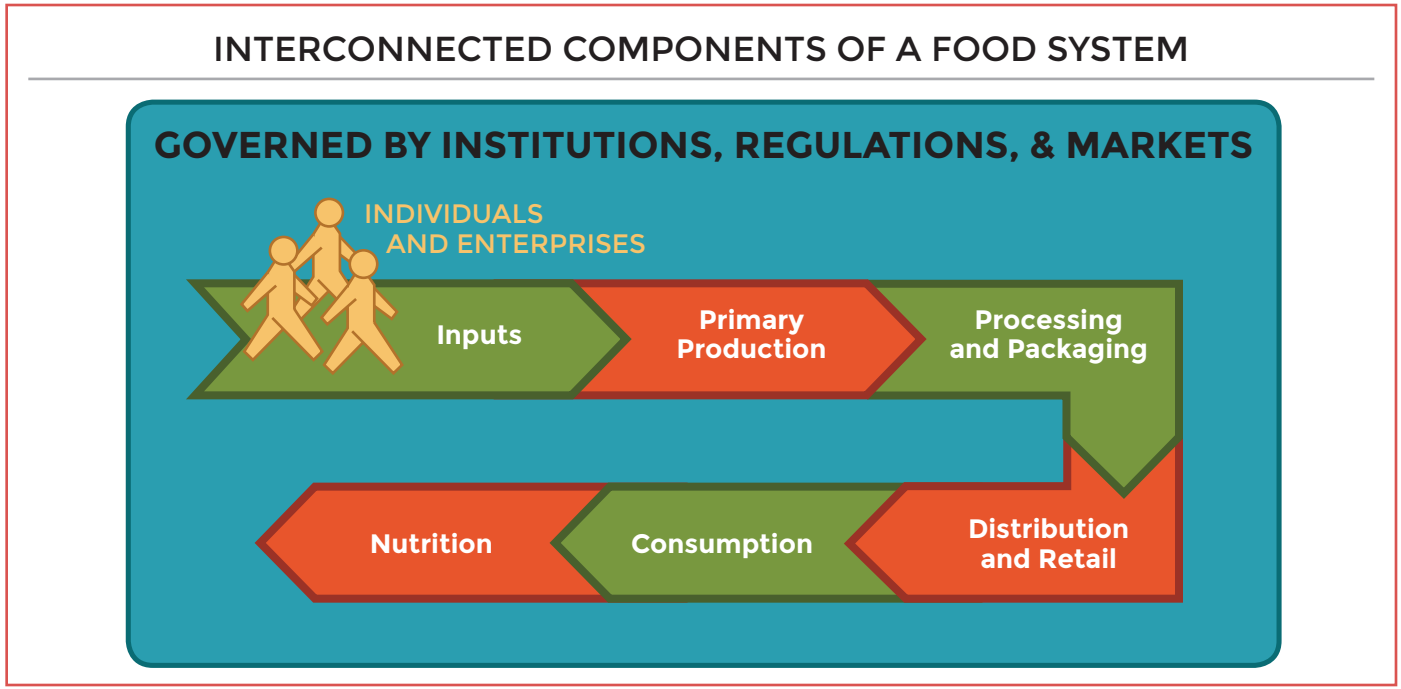


Figure 2

SHAPING FAVORABLE POLICIES TO ACHIEVE FOOD SYSTEMS DIVERSITY: AN AGENDA FOR ACTION

On August 5, 2016 the TCI held a public policy panel discussion in New Delhi on "Promoting Diversity in Food Systems for Improved Nutrition Outcomes in India" to celebrate the inauguration of TARINA.

Led by six distinguished speakers, representing the Government of India, academia, and the donor community, the panel discussion ignited a lively debate over the challenges that constrain food systems diversity as well as opportunities for shaping new policies to address these challenges.

The panelists underscored that India's excessively skewed policy environment, which subsidizes the production and consumption of staple grains, primarily wheat and rice, represents a major constraint. These crops are included in the country's Public Distribution System (PDS) and are given a minimum support price (MSP) to protect farmers from market instability.

On the production side, such policies have established a guaranteed price floor and government procurement of output from farmers, distorting incentives in favor of staple grains. On the consumption side, the PDS has subsidized staple grains for poor consumers, reducing

the dietary intake of more expensive non-staples such as fruits, vegetables, and pulses.

Two strategies were proposed to eliminate policy biases and encourage diversification of agricultural production. The first would involve removing policies that create price incentives and replacing them with an income support program through cash transfers to farmers. This would help bolster farmer incomes while also giving farmers the autonomy to make crop selection decisions.

The second strategy would involve expanding the PDS to include more nutritious, non-staple food crops. Assured procurement of these crops would not only encourage farmers to increase production but would also subsidize consumption, especially for low-income households. However, panelists argued that while this option might work well for pulses, it would be much more difficult for perishable commodities like fruits and vegetables, due to the high risk and cost associated with marketing and storing fresh foods. Many agreed that more appropriate policies for perishable crops include the strengthening of value chains, investment in post-harvest management technologies, and the development of government-supported cooperatives, similar to the Amul dairy cooperative.

Panelists identified food processing and cold storage as critical means of increasing incentives for the production of fresh foods. Investment in agro-processing industries and food retail enterprises that strengthen value chains and reduce transaction costs for farmers can raise farmer incomes and generate employment opportunities while also delivering high-quality, high-value foods to consumers. Furthermore,

Distinguished panelists (from left to right): Dr. Prabhu Pingali, Professor of Applied Economics at Cornell University & Director of TCI; Dr. Purvi Mehta-Bhatt, Deputy Director and Head of Agriculture for South Asia at the Bill & Melinda Gates Foundation; Dr. Ashok Gulati, Infosys Chair Professor at the Indian Council for Research on International Economic Relations (ICRIER); Dr. Shobha Shetty, Rural Development Sector Manager for the South Asia Region at the World Bank; Dr. P.K. Joshi, Director for South Asia at the International Food Policy Research Institute (IFPRI); and Dr. Suresh Pal, Member at the Commission for Agricultural Costs and Prices (CACP).

increasing the number of cold storage facilities, specifically pre-cooler and dispatch rooms as well as refrigerated transport vehicles, is necessary to reduce food wastage and the flooding of markets.

India's current pulse deficit was highlighted as an area of concern. Some panelists claimed that national trade policy lacks consistency and is unable to respond to fluctuations in demand and supply of pulses as well as other important food crops. Trade policies that supplement deficits in domestic production and export surplus are critical to avoid food wastage and loss of farmer incomes as well as to ensure a sufficient supply of nutritious food and micronutrients for the population.

Developing export markets was proposed as an avenue for selling domestic food surplus. By investing in food processing and exploring the country's comparative advantage in food exports, India may be able to meet international demand for processed foods and attract foreign direct investment to its agro-processing industry. An assured market with global companies has the potential to significantly raise incomes for smallholder farmers.

Reservations were expressed regarding any strategy for diversifying agricultural production that involves shifting land suitable for rice production to non-staples. Increasing agricultural diversity, while also bearing ecological and environmental limitations in mind, emerged as an important issue. Panelists called for greater investment in research, technology, and extension services for environmentally sensitive or climate-smart agriculture, with solutions that are specific to the natural resource base of India.

Although the dialogue focused primarily on methods for increasing the diversification of India's food supply, consumer education was emphasized as a critical means of enhancing demand for more nutritious, non-staple food crops. One of the strategies proposed would exploit innovation in marketing, particularly for new sources of protein such as reconstituted soya dal and other products that include nutrient supplements. Marketing combined with educational messaging will increase consumer awareness and overall intake of more nutritious foods.

Following the event, an "agenda for action" was devised by the CoE based on the main challenges and solutions that were shared and discussed. The agenda proposes a five-point pathway for moving India beyond its traditional focus on staple grains toward a more

PUBLICATION ALERT

Mehta, Vanya. "Shaping Favorable Policies to Achieve Food Systems Diversity: An Agenda for Action." Policy Brief No. 1, TCI-TARINA, Sept 2016.

Recommended Five-Point Pathway:

1. Encourage diversification of smallholder production systems towards more nutritious crops and livestock products
2. Reduce inefficiencies in smallholder participation in value chains for nutritious crops
3. Educate and create incentives to adopt environmentally sensitive agricultural management practices
4. Enhance consumer demand for more nutritious foods
5. Trade policies that supplement deficits in domestic production and export surplus

diversified food system. These five pathways are defined in a policy brief that was prepared by the CoE and disseminated to a wide range of stakeholders, with the aim of triggering increased action and policy reforms that improve nutrition outcomes in the future.

FOOD SYSTEMS DIAGNOSTIC STUDY (FSDS)

TARINA provides field-based technical assistance for designing, implementing, and scaling agricultural initiatives that ensure positive nutrition outcomes. It does this by integrating nutrition-focused objectives, actions, and metrics into projects and programs implemented by NGO and development partners in three Indian states—Bihar, Odisha, and Uttar Pradesh—where the burden of malnutrition is greatest. Project locations in each state are highlighted in the map on the following page.

At the onset of the project, the TARINA consortium determined it was necessary to undertake a rapid assessment of the food systems context in each location before interventions best suited to addressing local nutritional challenges could be properly designed and implemented. Therefore, the consortium launched a Food Systems Diagnostic Study (FSDS) that ran from February to March 2016 across the three project locations. The aim of the FSDS was to identify specific aspects of field settings that constrain or facilitate achieving the project's overall goal of creating a more nutrition-sensitive food system. The FSDS was intended to support the consortium's efforts to identify and design interventions for reorienting agricultural initiatives toward nutrition outcomes and to sharpen data collection for monitoring and evaluating the impact of these interventions over time (Figure 3).

The methods used for data collection at each project location included focus group discussions (FGDs) with

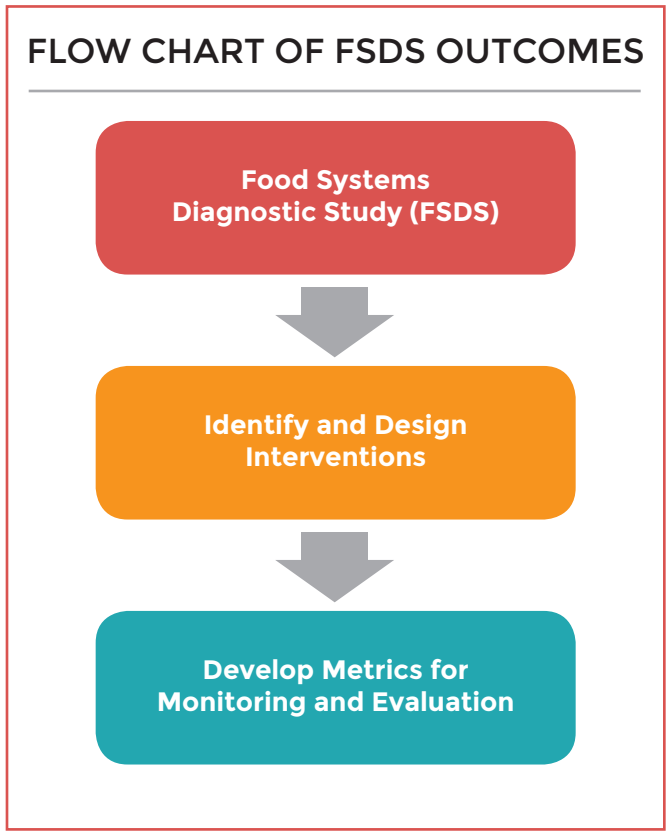
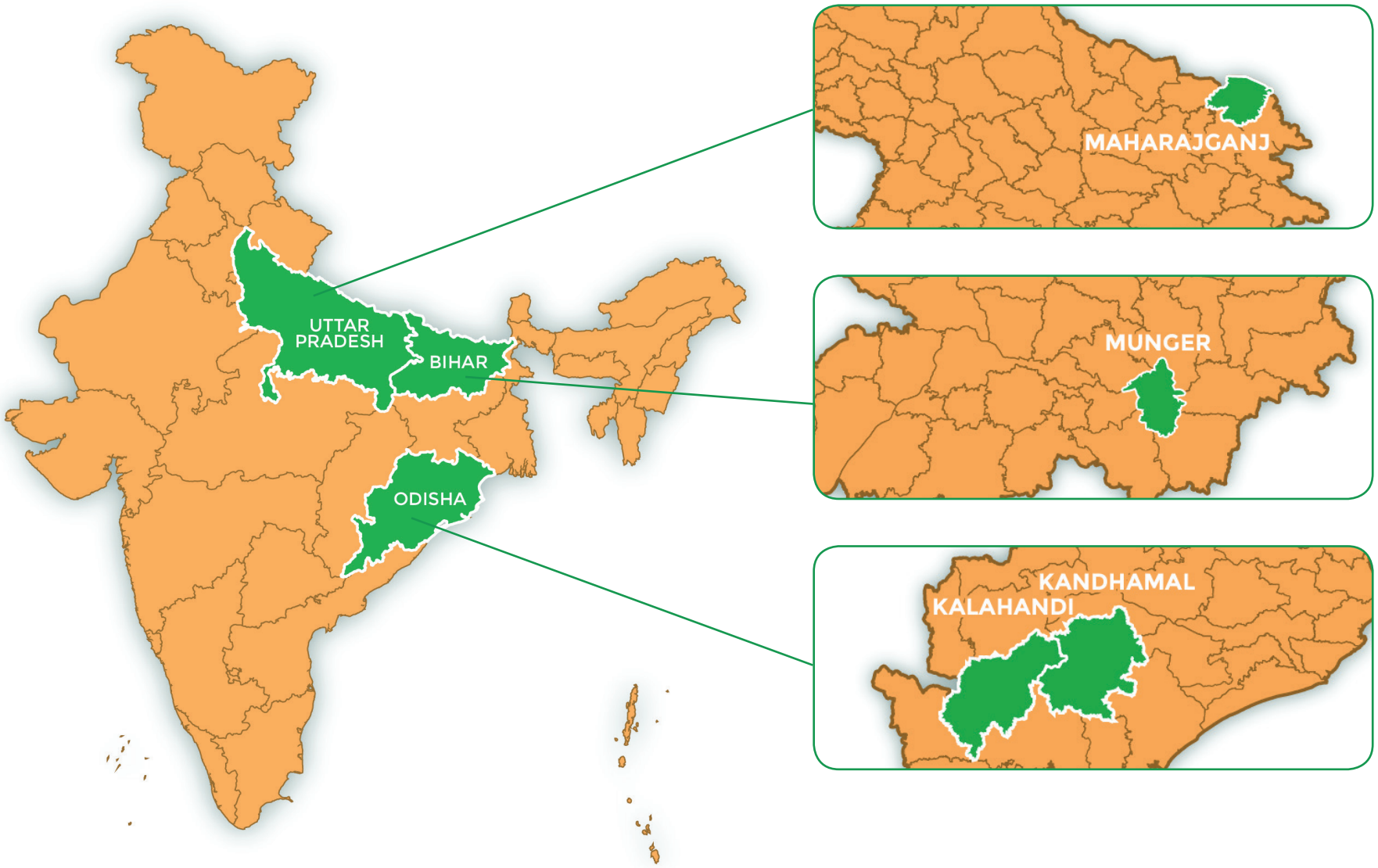


Figure 3

households and groups within villages, such as women's self-help groups (SHGs), producer groups, and literacy groups. They also included individual interviews with key informants, such as smallholder farmers, health workers, agricultural extension scientists, nutritionists, and veterinary officers.

In each village, the FSDS team completed a transect walk to document observations related to agricultural production; animal husbandry; food storage; and water, sanitation and health (WASH) practices. Additionally, the team visited local and regional food markets as well as field sites where existing agricultural and rural

TARINA PROJECT LOCATIONS



development initiatives are being implemented by NGO partners or other local organizations.

The FSDS was carried out over the course of four to five days at each location by a team of eight or more staff members from TCI, BAIF, CARE, and GDS. Two villages were visited per day, and the recording and summation of data collected took place at the end of each day. This was typically followed by an FSDS team consultative meeting, where general impressions from site visits were shared and interventions were devised according to the objectives and expected outcomes of TARINA.

The consultative process involved in the FSDS served as a platform for sharing inter-organizational knowledge and expertise. Ultimately, this led to the identification of opportunities for cross-fertilization between partners and across locations.

The FSDS resulted in a set of priority interventions that are currently being implemented by consortium partners. Each intervention takes into account the local context and was designed to either alleviate factors that constrain or maximize factors that facilitate achieving the project's goal of creating a more diversified and nutritious food system. Furthermore, findings from the FSDS have been used to develop metrics for baseline surveys that will be implemented across the three project locations in the coming year to track both project-wide and intervention-specific outcomes.

ONGOING AND PLANNED ACTIVITIES

As the primary grantee, the TCI is the convening agency responsible for coordinating the TARINA consortium as well as providing oversight and ensuring accountability among partners. Through the CoE in New Delhi, we are spearheading the monitoring and evaluation (M&E) component of the project. We are also making substantial research contributions to help further institutionalize nutrition-sensitive agriculture in India.

TCI has been working alongside consortium partners to implement field-based interventions that ensure nutrition outcomes at scale. Each partner offers a unique set of skills, knowledge, tools, and experience to help us achieve this goal. For example, BAIF is contributing its expertise in livestock breeding and in developing cropping systems for the diversification and intensification of agricultural production on small-to medium-sized plots. Additionally, CARE's gender transformation toolkit has been identified as an effective and potentially scalable approach to empowering women through gender-based dialogue, awareness-building, and behavior change. Similarly, GDS' Community-Led Total Sanitation (CLTS) program has also been identified as an effective and scalable approach for reducing open defecation through education, awareness-building, and behavior change.

TCI's research aims to support the efforts of consortium partners and to inform the design of nutrition-sensitive projects, programs, and policies. TCI research activities focus primarily on the following topics:

- Nutrition behavior change communication
- Linkages between sanitation and nutrition
- Pulses production, trade, and markets
- Intensification of goat feeding systems
- Labor-saving technologies for reducing women's drudgery
- Risk factors associated with mycotoxin accumulation across the food system
- Nutrition-focused metrics for food systems, agricultural policies, and programs

A key objective of the TARINA CoE is translating TCI research into policy action. Thus, we plan to continue generating policy briefs and initiating dialogue around

PUBLICATION ALERT
FROM THE CENTER OF EXCELLENCE

POLICY BRIEFS

Shaping Favorable Policies to Achieve Food Systems Diversity: An Agenda for Action
TCI-TARINA Policy Brief No. 1 • Sept. 2016
By Ms. Vanya Mehta

Sufficiency of Macronutrients and Micronutrients in the Indian Food Supply
TCI-TARINA Policy Brief No. 2 • Oct. 2016
By Dr. Julia Felice

Spatial Analysis: Visualizing Shifts in Agriculture in India
TCI-TARINA Policy Brief No. 3 • Oct. 2016
By Ms. Hillary Byerly

MANUALS

Guidelines for Incorporating Dietary Diversity Metrics in Agriculture-Nutrition Surveys
Operational Manual for Using Dietary Diversity Indicators in Field Research
TCI-TARINA Training Manual No. 1 • June 2016
By Dr. Soumya Gupta

Guidelines for Assessing Women's Empowerment in Agriculture *Operational Operational Manual for Using the Women's Empowerment in Agriculture Index (WEAI) in Field Research*
TCI-TARINA Training Manual No. 2 • Sept. 2016
By Dr. Soumya Gupta

Visit tarina.tci.cornell.edu to learn more.

strategic policy issues by engaging with government and other stakeholders, at both the national and state levels, through various policy fora, seminars, and academic conferences.

Finally, as part of the overall M&E component of the project, the CoE is preparing to roll out a baseline survey across the four districts in the three Indian states where TARINA is operating. From December 2016 through February 2017, data will be collected in 30 villages (15 controls and 15 treatments) within each of the four districts. Thirty households will be interviewed in each village, resulting in a total sample size of 3,600 households. The information gathered is expected to form part of a larger panel dataset, which will likely be augmented through an endline evaluation slated for December 2018 through February 2019. The final panel dataset will be used to assess the impact of field-based interventions and the extent to which project objectives were achieved.

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Endnotes:
1. ICRW press release (accessed at http://www.icrw.org/media/news/icrw-announces-winner-inaugural-paula-kantor-award-0). Used with permission.
2. Text originally appeared in the CGIAR feature website Recognizing Women in Science (accessed at https://cgiargender.exposure.co/recognizing-women-in-science). Used with permission.

RESEARCHER SPOTLIGHT

Dr. Soumya Gupta wins inaugural Paula Kantor Award for Excellence in Field Research

A former TCI Scholar and current TCI Postdoctoral Associate, Dr. Soumya Gupta was awarded the 2015 inaugural Paula Kantor Award for Excellence in Field Research. The Kantor Award has been instituted by the International Council for Research on Women (ICRW) in memory of the legacy of their former colleague Dr. Paula Kantor, who was a research expert in the field of gender and international development until her tragic demise in 2015. Soumya was presented the award at the ICRW's 40th anniversary celebrations in New Delhi in January 2016, in recognition of her dissertation research at TCI.[1] Her work examined the extent to which women's empowerment in rural communities of central India is influenced by agricultural management practices and how these practices, in turn, influence the quality of women's diets and their vulnerability to iron deficiency.

Her research is among the first to systematically and empirically assess the empowerment status of women in India as it relates to agricultural determinants and nutritional outcomes. It recognizes the fact that while women's empowerment influences agricultural choices, it can also influence nutritional outcomes.

"I am honored to be the first recipient of the Paula Kantor Award for Excellence in Field Research. There is a great need for better data (and metrics) in the field of agriculture, nutrition and women's empowerment. In light of that, the Paula Kantor award acknowledges the importance of gathering primary data for evidence-based research. At the same time, the Award also recognizes the tremendous effort that goes into designing a field-based data collection activity that is methodologically robust, contextually relevant, and ethically sound. I am inspired by Paula's work and life, and with this award look forward to continuing my research on the linkages between nutrition and agriculture with a focus on women's empowerment, and contributing to policy reform in a meaningful way."

Soumya is continuing her association with TCI as a postdoctoral associate with TCI's flagship project TARINA. She is based at the Center of Excellence and is providing technical research inputs as part of the TARINA consortium in India.[2]

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