Description of 7th International IPM Symposium Themes

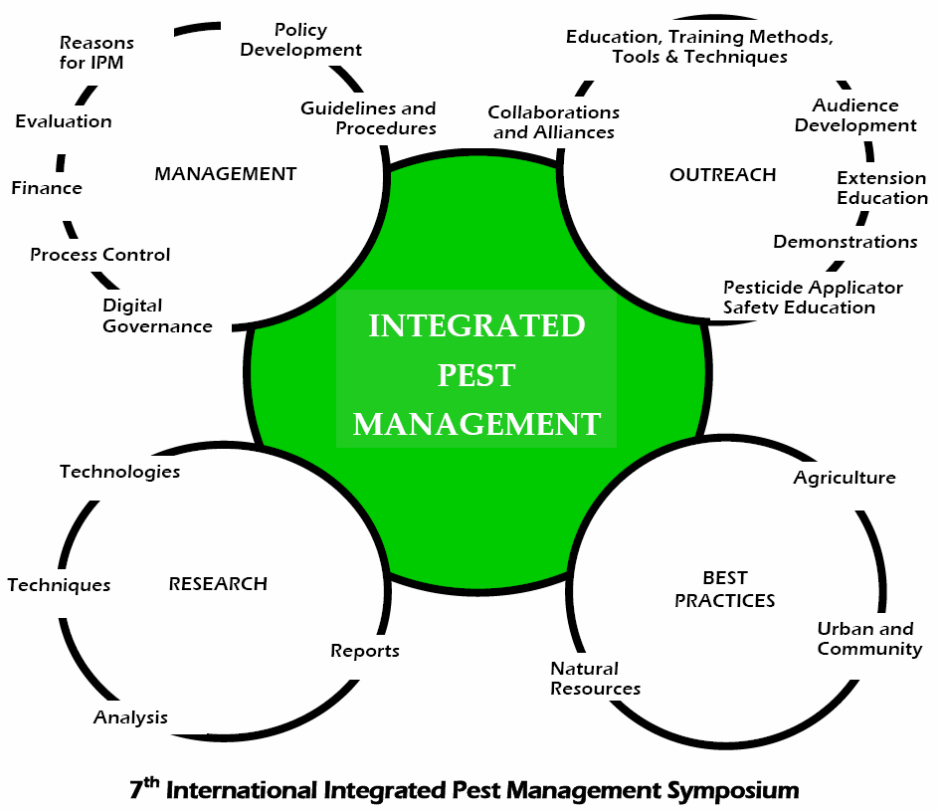
Integrated Pest Management (IPM) is a paradigm that operates in diverse and complex environments, and requires a customized and often innovative approach to orchestrate the many elements necessary for a successful program. During the 7th International IPM Symposium, all IPM Projects will be categorized in the following three groups:

1. **Agricultural IPM, including Production Horticulture:** Agro-forestry, Aquaculture, Alternative Livestock and Poultry, Production Livestock (Beef, Veal, Sheep, Goats, Swine and others), Dairy Cattle, Feed and Pasture, Field Crops, Herbs, Greenhouse, Horticulture Crops, Vegetable Crops, Specialty Crops, Production Floriculture and Ornamental Nurseries, Production Turf, Stored Products – Grains and Perishables, Food Processing, Packaging and Distribution Systems, etc.
2. **Urban and Community IPM:** Structural, Home, Turf and Landscape, Urban Forestry, Urban Wildlife, Interiorscape, Public Health, including Vector Management and Med/Vet IPM, etc.
3. **Natural Resources IPM:** Forestry, Natural and Managed Forest Lands, Parks, Opens Spaces, Right of Ways (land and water) etc.

A broad range of organizational tools, techniques and activities are needed in the delivery of effective and efficient pest management. These elements are categorized into four main themes:

1. **Management**
2. **Research**
3. **Best Practices**
4. **Outreach**

These themes, keywords, subcategories and examples of papers and presentations are described as follows:



Theme	Keywords
Management: An in-depth understanding of roles, responsibilities and availability of management tools is necessary for successful execution of an IPM program. This includes an understanding of public perceptions; reasons for establishing IPM practices; pest and pesticide risk analysis; international, national, regional and local governing policies, roadmaps and related activities; advisory boards; centers; commodity/project market trends; and strategies including certification, labeling, and enforcement. Management topics may also focus on new market opportunities; strategic planning and alliances, finance resources (funding, grants, grant facilitation and collaborations); business structures and analysis; human resource development; skill development and educational curriculums; quality standards, control and assurance; evaluation and impact assessment tools; supporting equipment for GIS/GPS data collection, radio frequency and infrared ID, web and satellite applications, and automated data and document maintenance; administrative and management guidelines, procedures and resources; and management decision making guidelines for various IPM user groups.	IPM related legislation, Law, Regulations, Policy, By-law, Ordinance, Resolution, Memorandum of Understanding, Enforcement, Compliance, Labeling, Certifications, Climate Change, Quality Standards, Roadmap, Biosecurity, Biocontrol, Website, GIS-GPS Pest Monitoring, Spatial Pest Mapping or Modeling, Integrated Databases, Service Index, IPM Layout Maps, Pesticide Risk and Perception, IPM Board, IPM Group, IPM Advisory Council, IPM Administrative Guidelines, IPM Project, IPM Program, IPM Process, IPM Decision Making, IPM Guidelines, IPM Standards, IPM Reporting, Pesticide Use Reporting System (PURS).

Management Sub-Categories	Description of Papers/Presentations
Policy Development	• Role of Government, Public-Private partnerships • Needs and challenges in developing IPM policies by Government/public agencies, and or private industry, associations, and organizations • Self-governance related to IPM success stories • Pest management related laws and regulations, enforcement agencies (e.g. USEPA; US FWS; USDA; DPR; DEC; Agriculture Commissioner; Ministry of Environment, Food and Agriculture; Consumer Affairs; Human Health and Welfare; etc.), • Coordination/collaborations among local, regional, national and international regulatory agencies, and private industry on common elements to promote IPM • Environmental laws (e.g. air and water quality, fish and wildlife, etc.) impacting implementation of IPM and pesticide use • Climate change, related policies and its impacts on future of IPM (agriculture and non-Agriculture) • Local, regional, national, international quality standards impacting delivery of IPM • Local, regional, national and international IPM Roadmap, stewardship • Biocontrol and Biosecurity related policies at all levels, food protection, quarantine, international plant protection, • Residue-free certification, OMRI, eco-labeling, GreenShield, Eco-Wise, Green-Pro, Bay-Friendly, Sustainable Site Initiative, GreenScapes, LEED and others

Supporting equipment and software in IPM Programs/Projects	• Interactive informational website • Online-IPM web services • Virtual training and certification • Continuing education programs • Innovative uses of GIS-GPS tools/satellite technology, imagery, integrated databases, service index, IPM Arc Layout maps, digital cameras, microscope-imaging • Approaches to geo-database modeling and managing of spatial data • Increasing efficiencies through connecting and integrating mobile workforces • Pest control and pesticide databases, inventory and assessment tools, analytical tools and techniques, management of monitoring and pesticide use records • Virtual training platforms, educational institutions and universities
Reasons for IPM	• Risks related to pest control activities, including use of pesticides and public perception • General Toxicology, historical data on pesticide use by categories and related risks, e.g., human health risks; impact on the environment and animals (non-target species); how people are exposed and methods to reduce human exposure; risk mitigation, • Broader range of barriers to IPM adoption o Psychological barriers o Institutional barriers o Resource barriers • Reasons for an integrated approach, surveys on public perception, evaluating risk reduction and mitigation • IPM concepts and managed ecosystems addressing pesticide resistance, pest resurgence, secondary pest outbreaks, species displacement, pollinators, environmental and health problems, and more reliable controls
Administrative Guidelines and Procedures	• Successful models and challenges related to organizational structures and operational guidelines of industry, institutions, departments, and universities who are involved in implementing IPM programs and projects • Governing boards, advisory groups, operational groups needed for successful implementation of IPM programs and projects • Studies on model administrative management guidelines and procedures developed by organizations
Program, Project and Process Development	• Setting up IPM programs and projects (how to reduce potential liability, client expectations, concept of risk, control action thresholds, communication with clients, collaborations with other affected groups, steps in setting up an IPM program, evaluation) • Standardization of delivery of IPM principles and processes through Global Quality Management Systems, such as ISO 9000, 14001, 22000; OHSAS 18001, Six Sigma, HACCP • Monitoring and decision-making guidelines or protocols for various IPM projects, e.g., vegetation management in parks, sustainable urban turf and landscape management, structural pest management, and school IPM programs • Individual organizational IPM programs sharing their experiences and progress (e.g., whole farm management, agriculture, post-harvest industry, food handling and processing industry, commercial, industrial, institutional, school, public agency,

	community, parks services, roads, airports, pest control service providers, etc.) • IPM reporting, pesticide use reporting and analysis • Uniform and consistent service quality standards in delivery of IPM
Finance, Grant Development and Management, Jobs	• Historical funding sources, available grants, future direction, challenges and harmonization of grant management, grant writing resources • National database for IPM related funding and cross-sectional funding • Scope of employment in IPM sector
IPM Evaluation and Impact Assessment	• IPM evaluation and impact assessments • Return on investment • Successful impacts of funding and future direction • Information on what evaluations and impacts are desired to write and implement a successful grant • Mathematic/statistical models measuring real impacts of IPM in agriculture and non-agriculture (e.g., right of way, rangelands, invasive weed management projects), non-agricultural areas (e.g., urban turf and landscapes, school IPM, community IPM, structural IPM, community-wide (municipality, county, etc.) IPM programs etc).

Theme	Keywords
Research: Systematic investigation to establish novel IPM methods, products, and services to better understand the basic and applied biology of pests and biotic interactions. Presentations related to advancements in pest management research techniques; discovery, interpretation and development of research methods; and research equipment, tools and technologies to help IPM practitioners understand not only the products of scientific inquiry but the processes, paving the way towards better research tools, techniques and analyses.	IPM Research, IPM Research Tools, IPM Research Techniques, IPM Research Analysis, IPM Report Writing, Pest Control Research, Pest Management Research.

Research **Sub-Categories**	**Description of Papers/Presentations**
Technologies Techniques Analysis Reports	• Research tools, equipment and technologies (hardware and software) • Research techniques: how to design and plan monitoring, and statistically design and replicate field trials (experimental, non-experimental); hypotheses testing; set up monitoring programs and field trials; measurement and sampling plans, methods, tools and techniques; data collection methods and techniques; meteorological monitoring systems; predictive tools; pesticide resistance monitoring; management of monitoring records; interpreting and using monitoring; and qualitative and quantitative evaluation methods • Research analysis: how to discover, interpret and develop research methods and write IPM research papers • Research reports: research (descriptive, applied, quantitative, conceptual, one-time/cross sectional, developmental and trend or prediction studies, field setting versus laboratory simulation, diagnostic and exploratory versus formulated studies, historical studies, co-relational research, and conclusion or decision oriented research Note: Research that is ready for adoption as best practices should be presented under the Best Practices theme.

Theme	Keywords
Best Practices: Finding and using the best ways (innovative, sustainable, etc.) of working to achieve IPM objectives for a specific program. A best practice strategy can help the IPM practitioner improve skills, use technology more effectively, reduce waste and improve quality, respond more quickly, reduce cost, become more effective and efficient, and protect human and environmental health. Discussions on these practices through "real world examples" will help train the user groups, and establish acceptance and adoption of new or proven innovative ideas, products and services. The theme will explore proven IPM best practices in the field of agriculture, urban and community, and natural resources environments.	Agriculture IPM, Non-Agriculture IPM, Urban and Community IPM, Natural Environments IPM, IPM Products and Services, IPM Best Practices, Pest Control Best Practices, Pest Management Best Practices, IPM Technologies, Sustainable IPM, Emerging Pests, Pesticide Risk Reduction, Precision Pesticide Application, Advanced Pesticide Technologies, Advanced Pesticide Application Technologies, Pesticide Drift Management Technologies, Emerging Pest Issues, Crops at Risk, Invasive Species Management, Integrated Vegetation Management, Right-of-Way Vegetation Management, Public Health Pest Management, Structural IPM, Invasive Weed Management, Home Garden Pest Management, Stored Product Pest Management, Aquatic Pest Management, Greenhouse IPM, Sewer Root Control.

Best Practices Sub-Categories	Description of Papers/Presentations
Agricultural IPM including Production Horticulture Urban and Community IPM Natural Resources IPM	• Understanding pest identification and classification • Emerging pest issues, crops at risk, invasive and exotic species, abiotic disorders • Public health significance of pests • Successful sustainable practices/strategies/management methods (tools and techniques, e.g., host resistance or tolerance; biological, cultural, mechanical, physical, and chemical control; resistance management) that resulted in meeting goals of IPM project • Challenges/issues in implementing IPM projects in various categories, e.g., education, research, technology, regulation, personal liability, public perception, etc. • Risk-reduction strategies • Novel products and services • Advances in reduced risk pesticide technologies, active ingredients, pesticide formulation, and precision application technologies • Sustainable production systems, sustainable agriculture, organic farming, organic versus IPM, sustainable landscaping, forestry, food production, zero carbon foot print, etc.

Theme	Keywords
Outreach: Outreach in the field of IPM involves connecting with practitioners of pest management, as well as their customers such as consumers, policy makers, budget and project managers, and user groups and beneficiaries who have the potential to influence the direction of pest management product and service markets by demand, while addressing human and environmental health concerns. This requires an understanding of stakeholder groups, collaborations and alliances; demonstration models; education and training methods, tools, and techniques; and the implementation/adoption process. Paper presentations could include testimonials on successful outreach programs based on a solid understanding of the needs of the targeted audience and the use of appropriate techniques to disseminate the needed information.	IPM Collaborations, IPM Alliance, IPM Demonstration, IPM Education, IPM Audience, IPM Extension Education, Pesticide Applicator Safety Education, PASE, IPM Marketing, IPM Outreach, IPM Communication, IPM Educators, IPM and Organic Pest Management, IPM Curriculum.

Outreach **Sub-Categories**	**Description of Papers/Presentations**
Collaborations and Alliances	• Successful models of collaborations and alliances in delivery of IPM projects and their impacts, including public /private partnerships, co-ops, individual initiatives, etc. • International collaborations • Building alliances for future IPM projects • Coordinator to coordinator • Successful partnerships • Roles of associations in pest management industry, such as technology training, networking opportunities, continuing education, legislative and regulatory advocacy, public relations, consumer research, etc. • Alliances with consumers
Demonstrations	• Successful demonstration models
Education, Training Methods, Tools and Techniques	• IPM curriculum (degree/diploma) in universities, training resources, e.g., IPM trainings, certification, courses, IPM advisor licenses, pesticide applicator licensing, and continuing education classes • Training curriculums in allied subject matter such as HACCP, GMP, sanitation standards for food handling establishments, national and international food safety and other industrial standards, fumigation standards and protocols, public health and safety standards, customer education, quality management systems, e.g., ISO, environmental standards, occupational health and safety standards, business management practices, information technology, etc. • Delivery systems: virtual training platforms, use of various technologies (hardware/software) in presentations, skill development for IPM communicators, virtual educational institutions, and universities • Hardware and software

	• Distinguishing IPM from sustainable agriculture and organic production systems
Audience Development	• Marketing IPM- policy makers, regulators, researchers, educators, project managers, service providers, product manufacturers, retailers, growers/farmers, consumers, approach to media, social networks, listserv, etc.
Extension Education – Agriculture	• Papers related to advances in Extension education, various tools and techniques, networking technology, social media • Public education and awareness, promoting IPM profession
Extension Education – Community	• Papers related to advances in Extension education, various tools and techniques, networking technology, social media • Public education and awareness, promoting IPM profession
Pesticide Applicator Safety Education (PASE) and Worker Protection	• Advances in PASE, curriculums, national and international models, need for various categories of PASE training modules (e.g., fumigation, greenhouse, structural, termite, aerial, agriculture, industrial vegetation, forestry, landscape, aquatic (vegetation, fish/mollusks, mosquito and biting flies), progress in digital media in delivery of PASE