

## DO UD/'Priority Development and Rankings

### Instructions for Assessing Priorities

One of the key objectives for the BMSB Working Group meeting is to assess priorities based on outputs generated from a number of completed and ongoing projects on BMSB and on the pest status in new regions.

Consider the list of priorities identified within each category at the **December 2015 BMSB IPM Working Group Meeting** and follow the instructions below.

### Scoring/Ranking Priorities

1. Within each category, score each priority from 0-100 on level of importance / relevance. This approach provides greater capacity to distinguish relative importance among priorities. *You can use the same score more than once.*
2. Consider all categories and indicate the top five priorities with an “\*”. They may be in a single category.

### Post-Meeting Ranking of Priorities

1. Within each category, scores for each priority will be averaged to provide an overall rank among all priorities.
2. Across categories, all priorities receiving a “cross-category” high priority designation will be pulled and ranked according to total number of designations/votes received to provide an overall cross-category ranking.

### Overall Top Five Research, Extension, Regulatory and Consumer Priorities Rankings, June 2016

<u>Priority</u>	<u>Total</u>
Biocontrol agents--identification and study of parasitoids, fungal pathogens, and predators (native and foreign)	15
Education programs to growers and the general public	14
Development of IPM-friendly management tactics	14
Evaluate efficacy and host range of candidate classical biological control agents	11
Development of IPM friendly management strategies (trap style and efficacy, overwintering site selection, insecticide timing, repellent - push/pull, efficacy of treating exterior plants/landscapes)	9
Deliver economic thresholds / action thresholds	9
Evaluation of parasitoid host specificity	9
Educating professionals to pest ID and diagnosis of injury	7

**Research Priorities Rankings, June 2016**

<b>Priority</b>	<b>Title</b>	<b>Mean</b>	<b>Number Responding</b>
2	Biocontrol agents--identification and study of parasitoids, fungal pathogens, and predators (native and foreign)	96	24
1	Development of IPM-friendly management tactics	91	23
5	Evaluate efficacy and host range of candidate classical biological control agents	84	24
18	Examine interactions between native and exotic parasitoids (additive, synergistic or antagonistic)	83	23
9	Evaluation of parasitoid host specificity	79	23
6	Further study of pheromone-based monitoring (e.g. active space, trap design, attractants)	77	24
16	Response of indigenous natural enemies in relation to BMSB densities and their potential for management	77	24
4	Studies of basic BMSB behavior (host preferences, movement, responses to visual cues)	75	24
8	Investigation of host-plant volatiles as attractants	75	23
11	Determine factors affecting population densities	72	24
7	Define damage diagnostics, economics of injury and threshold	71	23
12	Impact of landscape and habitat on population (local)	69	24
17	Host utilization, preference, and range	69	23
14	Develop economic models that include injury, monitoring and management costs	68	24
3	Examine overwintering biology (e.g. triggers for seeking and leaving sites; overwintering mortality factors)	68	23
19	Evaluate effects of BMSB management plans on beneficial agents, including pollinators	67	24
15	Crop susceptibility and timing	65	24
27	Determine conservation bio control efforts for indigenous natural enemies	64	23
13	Studies of basic BMSB biology (physiology, generations)	64	24
22	Assess secondary pest outbreaks related to chemical control of BMSB	60	23
32	Methods development and improve rearing protocol for long term sustainable colonies	60	23
24	Examination of potential for trap-cropping	59	23
26	Use of toxins in combination with attractants	58	23
21	Mapping and assessment of distribution	58	23
10	Identification of potential repellents	58	22
20	Develop forecasting models to ID new risk areas, presence and where BMSB is and will not be	57	23
25	Standardized sampling methods	56	23
33	Determine low and high temperature thresholds for all stages	56	23

23	Role of the gut symbionts and their potential for management	56	23
35	Study potential for damage of harvested/value-added crops by contamination with BMSB	54	23
42	Validate current physiology and phenology models in laboratory	54	24
40	Evaluate long term sub lethal effects on BMSB (e.g. effects on reproduction)	53	23
30	Evaluate potential impacts of cultural control measures	52	23
28	Determine how far will BMSB travel to overwintering sites	50	23
36	Develop baseline insecticide toxicity data for resistance monitoring	50	23
34	Determining monitoring strategies for urban areas	49	23
43	Risk analysis of overwintering populations in natural landscapes	49	23
39	Assessment of displacement of native stink bugs	49	23
37	Standardize multiple methods for screening of new insecticide materials	48	23
41	Evaluate regional landscape-level/watershed-scale population distribution	48	24
48	How far do BMSB travel after leaving overwintering sites?	47	24
38	Assessment of economic impact in urban environment	45	23
29	Determine why BMSB appears to not be present in coastal plains	45	23
44	Evaluate impact of orchard groundcover management	45	23
31	Determine the impact of elevation on overwintering sites	43	23
46	Examination of cross-attraction of BMSB and green stink bugs	37	23
47	Evaluate potential impact of vertebrate predation	34	23
45	Development of toxicants and inhibitors for plant transgenic delivery	29	23

### Overall Top Five

Priority	Title	Total
2	Biocontrol agents--identification and study of parasitoids, fungal pathogens, and predators (native and foreign)	15
1	Development of IPM-friendly management tactics	14
5	Evaluate efficacy and host range of candidate classical biological control agents	11
9	Evaluation of parasitoid host specificity	9
17	Host utilization, preference, and range	6

**Extension Priorities Rankings, June 2016**

<b>Priority</b>	<b>Title</b>	<b>Mean</b>	<b>Number Responding</b>
1	Education programs to growers and the general public	93	24
2	Deliver economic thresholds / action thresholds	86	24
5	Educating professionals to pest ID and diagnosis of injury	82	23
6	Education programs relevant to development of biological control projects	79	23
4	Coordinate efforts of state and regional extension programs	79	24
3	Develop revised and unified management plans	78	23
7	Include education programs relevant to classical biological control	74	23
11	Educational programs relevant to invasive biology using BMSB	67	23
8	Develop treatment recommendations and guidelines for urban environments	67	23
12	Initiate public awareness campaigns - posters, public service announcements, educational materials, etc.	65	23
10	Educational programming for structural and landscape industries	65	23
9	Extension outreach and education programming for urban environment/homeowners	64	23
14	Raise awareness of importance of BMSB as pest - APHIS, local political channels, etc.	64	23
15	Use BMSB as an opportunity to educate children	57	23
13	Demonstrate field application techniques for chemical control	51	23
18	Establish links between eXtension community of practice (COP) and StopBMSB.org	49	23
19	Evaluate large scale treatment facilities of export cargo	47	23
16	Direct homeowners to local politicians for complaints	44	23
17	Structure extension groups by commodity or region	42	23

**Overall Top Five**

<b>Priority</b>	<b>Title</b>	<b>Total</b>
1	Education programs to growers and the general public	14
2	Deliver economic thresholds / action thresholds	9
5	Educating professionals to pest ID and diagnosis of injury	7
3	Develop revised and unified management plans	6
6	Education programs relevant to development of biological control projects	6

11 Educational programs relevant to invasive biology using BMSB

5

### Regulatory Priorities Rankings, June 2016

Priority	Title	Mean	Number Responding
1	Product testing and labeling of new active ingredients/products - only low toxicity/IPM compatible	75	21
3	Define the economic and ecological threat	74	21
2	Use of toxins in combination with attractants (regulatory status)	70	21
5	Coordinate interagency and interdisciplinary funding	68	21
4	Expand use of existing registered products	55	21

### Overall Top Five

Priority	Title	Total
1	Product testing and labeling of new active ingredients/products - only low toxicity/IPM compatible	5
5	Coordinate interagency and interdisciplinary funding	5
3	Define the economic and ecological threat	4
2	Use of toxins in combination with attractants (regulatory status)	3
4	Expand use of existing registered products	3

**Consumer/Urban Priorities Rankings, June 2016**

<b>Priority</b>	<b>Title</b>	<b>Mean</b>	<b>Number Responding</b>
1	Development of IPM friendly management strategies (trap style and efficacy, overwintering site selection, insecticide timing, repellent -push/pull, efficacy of treating exterior plants/landscapes)	89	22
2	Preventative measures for reducing entry into human-made structures - outreach needed	76	22
3	Define triggers for movement into homes	72	22
4	Important biological control agents around residential areas	66	22
6	Evaluate efficacy of insecticides/killing agents for homeowners	58	23
7	Forecasting population size	56	22
9	Evaluate materials for home-garden and home-landscape protection	55	22
5	Determining repeated entry and exit by BMSB from overwintering sites	51	22
8	Evaluate the use of environmentally "friendlier" treatment options than insecticides such as heat	45	22

**Overall Top Five**

<b>Priority</b>	<b>Title</b>	<b>Total</b>
1	Development of IPM friendly management strategies (trap style and efficacy, overwintering site selection, insecticide timing, repellent -push/pull, efficacy of treating exterior plants/landscapes)	9
7	Preventative measures for reducing entry into human-made structures - outreach needed	6
9	Define triggers for movement into homes	6
2	Important biological control agents around residential areas	4
3	Evaluate efficacy of insecticides/killing agents for homeowners	4
4	Forecasting population size	4
5	Evaluate materials for home-garden and home-landscape protection	3
6	Determining repeated entry and exit by BMSB from overwintering sites	2
8	Evaluate the use of environmentally "friendlier" treatment options than insecticides such as heat	2