

# Image Support System for the Southern Plant Diagnostic Network

## www.ipmimages.org

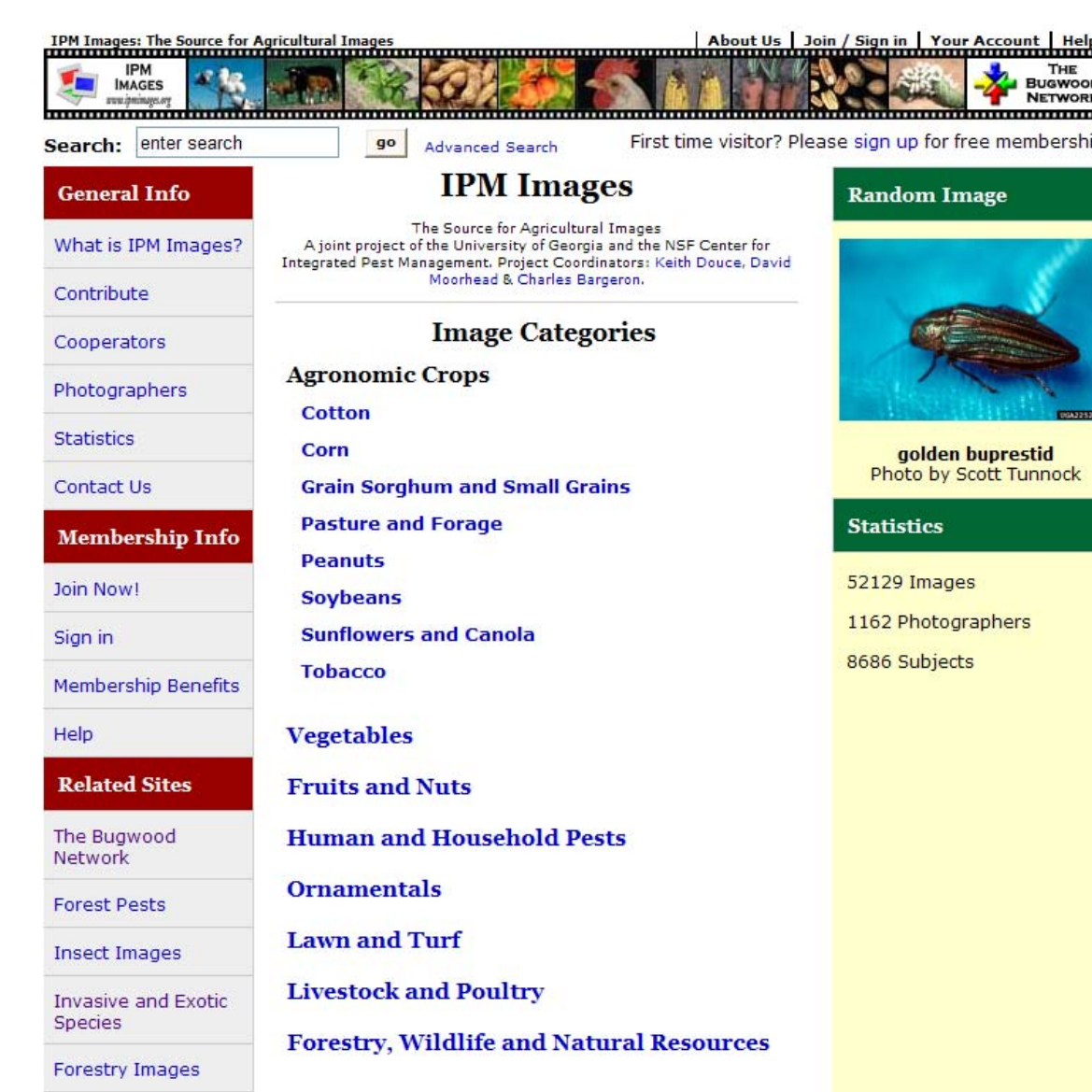


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Extension agents and researchers are often in need of high-quality images of pests and diseases for use in a wide variety of educational projects. These projects may range from simple presentations at conferences to training personnel to recognize certain insects and diseases. Finding accurately identified, high resolution images of an organism can be problematic, especially if it is a new and emerging threat to a commodity.



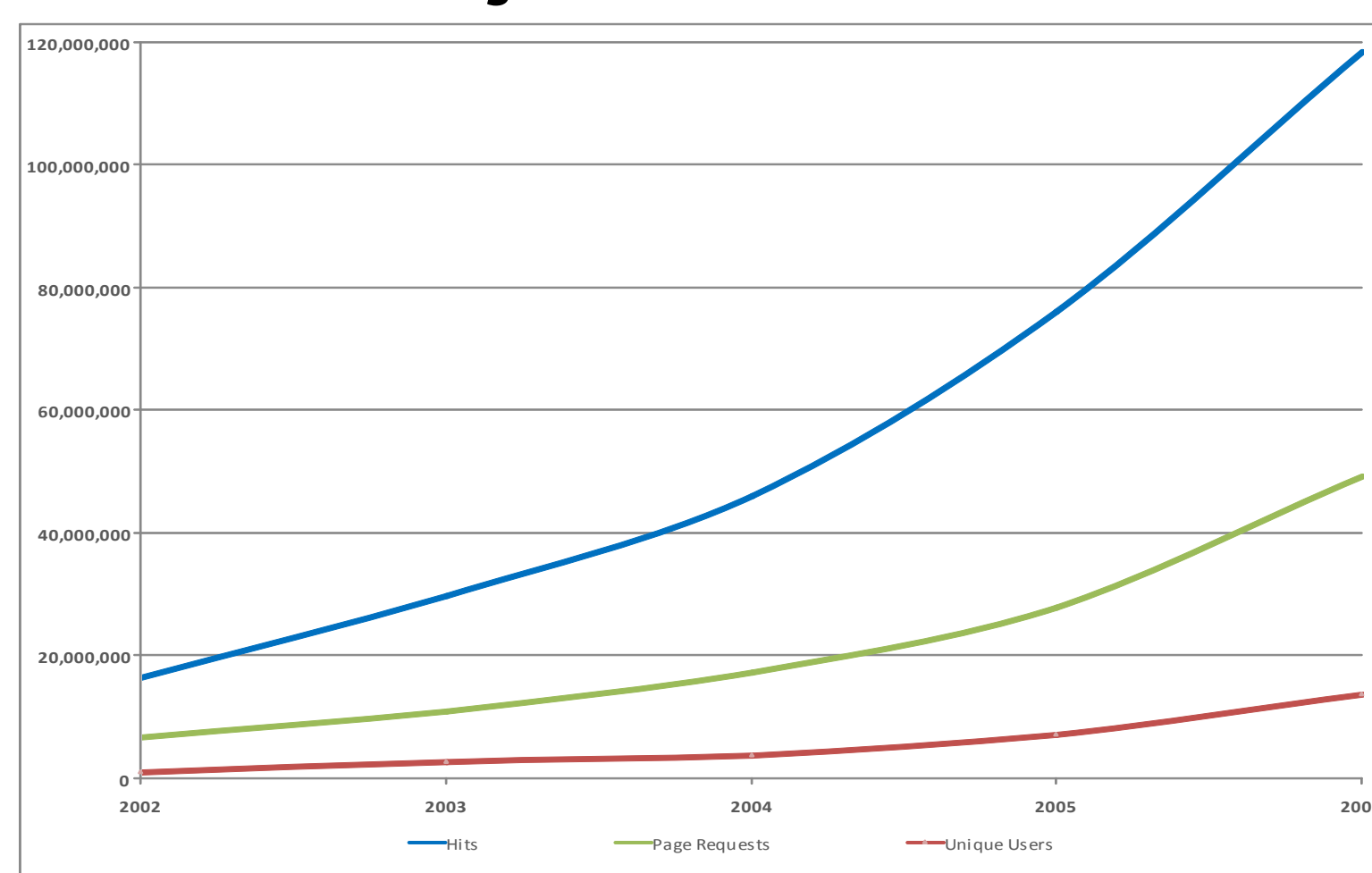
With input from the SPDN members, a list of 248 insects and 93 pathogens were selected for the SPDN list. The Bugwood Network collated these from species mentioned previously on the SPDN website, pest alerts from the state and federal governments, and pests listed on state commodity loss reports. The list includes both native and exotic species that are either currently active in North America or have the potential to be introduced. Additional organisms are added to the list as other pest alerts are published or by the request of any of the SPDN members. The taxonomy of the species on the list is frequently verified to ensure that the most recent scientific and most appropriate common names are used. The source for these names is also listed to provide a reference for the validity of the taxonomy.

A simple interface was created to show the scientific and common name of the organism, as well as the number of images currently available for damage or symptoms and each of the life stages. The list may also be filtered and sorted according to pest status (exotic, native, introduced, limited distribution), commodity, and federal quarantine. This filtering allows for discrimination between those pests commonly found in a commodity and those that are of greater concern such as the exotic or invasive species.

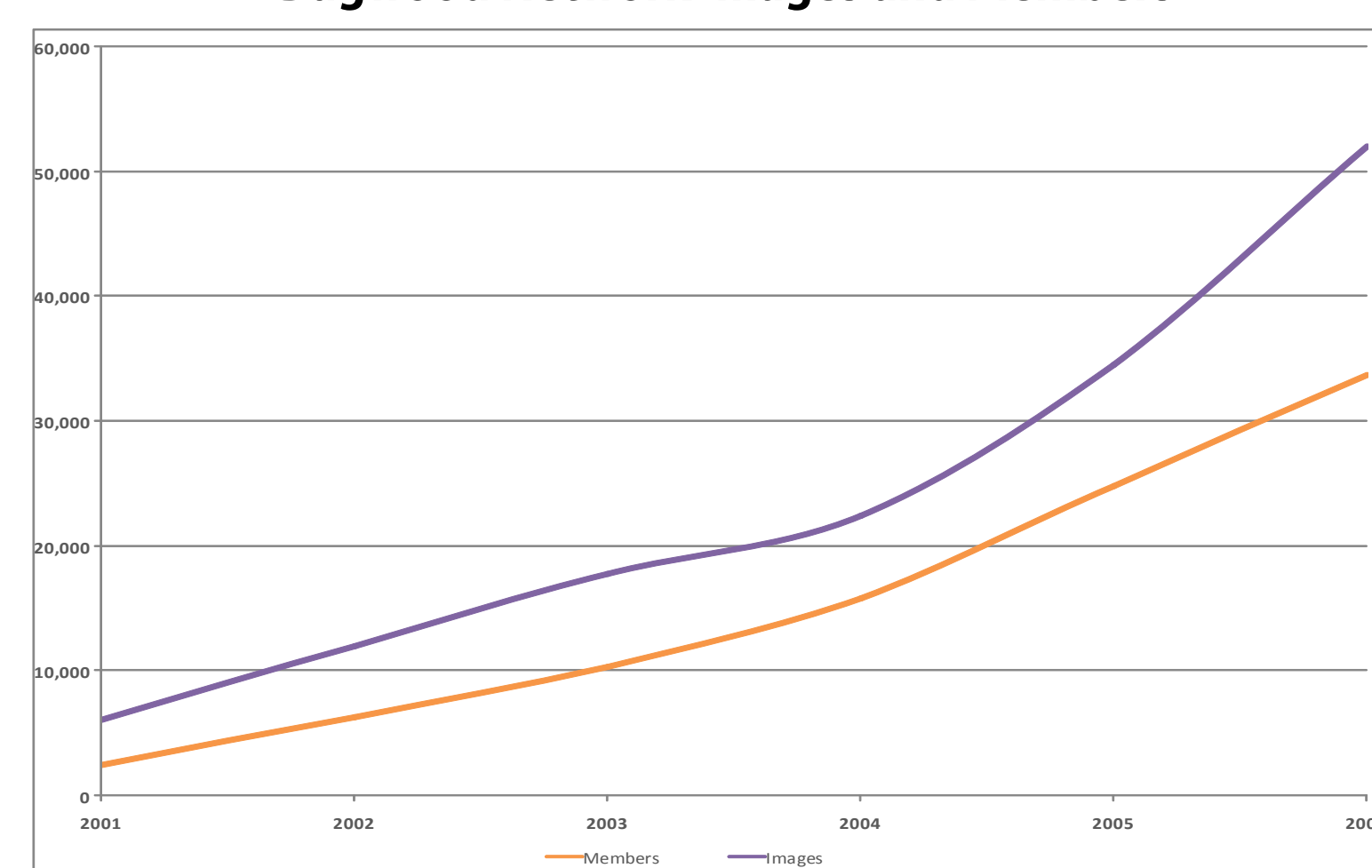


In 1994, the Bugwood Network ([www.bugwood.org](http://www.bugwood.org)) began an image archive and database system as part of their goal of providing a reliable and easily searchable source of high resolution and quality images. More than 53,000 images covering over 8700 subjects have been added since its creation. It continues to grow as a worldwide resource with over 1,100 contributors in 45 countries. The result has been a dynamic on-line resource which has had 11 million unique users in 2006.

Bugwood Network Traffic



Bugwood Network Images and Members



The Bugwood Network has partnered with the Southern Plant Diagnostic Network (SPDN) to provide image support for their educational publications and professional training. The purpose of this collaboration is to not only identify the images already available to the SPDN through the Bugwood Network, but to also identify the deficiencies in the collection of images and acquire new images to fill in the gaps. The end result will be an image archive that documents all of the life stages and damage created by the species of concern to the SPDN. Those using it will be able to quickly and efficiently find the representative images they need when creating educational materials and download them for use.

Some of the objectives of the partnership were to:

- Identify the species of concern to the SPDN
- Provide an interface to easily access these images
- Obtain images of the listed species including all life stages as well as depictions of damage and symptoms
- Cross-reference the images used in the SPDN training modules with those available in our system
- Update species list and acquire images as new pests are identified as threats

## INSECTS 248 SPECIES

Common Name	Scientific Name	Order	Family	Pest Status	Adult	Larva	Pupa	Egg	Damage	Cycle	Feature	All Images
crown gall	Agrobacterium tumefaciens (E. F. Smith & Town.)			Native					8			10
striped cucumber beetle	Acalymma vittatum (Fabricius)	Coleoptera	Chrysomelidae	Native	6	1			6			14
honey bee	Apis mellifera (Linnaeus)	Acar	Tarsonemidae	Limited	4							12
pecan leaf casebearer	Acanthia juglandis (Lubarski)	Lepidoptera	Pyralidae	Native	3	2			5	1	12	41
pecan nut casebearer	Acanthia nuxvomella (Newstead)	Lepidoptera	Pyralidae	Native	5	4	1	5				15
cranberry webworm	Acrobasis vaccinii Riley	Lepidoptera	Pyralidae	Native	5	1	3					9
green stink bug	Acrosternum milvum (Say)	Hemiptera	Pentatomidae	Native	10	13	3					26
pea aphid	Acyrtosiphon pisum (Harris)	Hemiptera	Aphididae	Limited	4				5			11
honeylocust woolly adelgid	Adelges quercus (Kalt)	Hemiptera	Adelgidae	Limited	2	1	1	54	1	1	1	114
small five spotted beetle	Aethina tumida Murray	Coleoptera	NBIdulidae	Limited	8	6	2	1				18
oak leafhopper	Agrius digitatus (Fabricius)	Coleoptera	Buprestidae	Exotic	3	3	1	1		5	13	
general ash borer	Agrilus planipennis Fairmaire	Coleoptera	Buprestidae	Limited	27	12	1	5	30	47	176	
black cutworm	Agrotis ipsilon (Hufnagel)	Lepidoptera	Noctuidae	Native	2							2
granulate cutworm	Agrotis subterranea (Fabricius)	Lepidoptera	Noctuidae	Native	2					1	3	
orange spiny webworm	Alopecurus (Quaintance)	Hemiptera	Aleyrodidae	Limited	1				1			4

## PLANT PATHOGENS 93 SPECIES

Common Name	Scientific Name	Pest Status	Sign	Symptoms	Sexual Stage	Asexual Stage	Infestation	Fruiting Bodies	Feature	All Images
Alfalfa Mosaic Virus	Alfalfa Mosaic Virus	Native								1
gray mold	Botrytis cinerea Pers. Fr.	Native	12	27						6
Chlorophyllid blight and root rot	Calorhiza racemosa Terash.	Native								1
oak wilt disease	Ceratocystis fagacearum (T. W. Bretz) J. N. Burd.	Limited	5	80	2		4		6	171
intensive dieback of ash	Chaetia faginea Kowalski	Exotic								0
white pine blister rust	Cronartium ribicola J. C. Fisch.	Established	48	94			5	5	1	186
Cucumber Mosaic Virus	Cucurbiturivirus CMV	Native	3							3
dopeweed	Dielsia destructiva Radin	Established	32				1			35
choke disease of grass	Epichloa typhina (Pers.) T. & G.	Established								0
fire blight	Erwinia amylovora (Burrill) Winslow	Established	17				2			19
take-all root rot	Gaeumannomyces graminis var. Tilletiae (Turner) Dennis	Established								0
take-all root rot	Gaeumannomyces graminis var. Saccii (Sacc.) A. & D. Oliver	Established	2						1	3
zonate leaf spot	Grewia graminis M.N. Gilman, J.L. Crane & S.B. Gilman	Native	5							5
...	Gymnosporangium									

Since June 2006, over 1150 images have been added to those species on the SPDN list. Priority has been given to those species which do not have any image currently available and those that do not have all of the life stages represented. Literature searches for researchers who have studied these organisms have proved useful for finding original and detailed images. Many of these contributors are located in the countries the exotic species originate from and these connections may facilitate further international working relationships.

The SPDN is also creating training modules for its personnel by drawing from the images in the Bugwood Network image archive and pulling images from its members. As new images are added to these programs, they are also added into the image archive and listed under not only the subject, but also the modules to which they belong.

The list of species, images used in training modules, and information on how to submit images are all available at <http://www.ipmimages.org/spdn/>. We are continuing to increase the utility of this resource for diagnosticians and others by acquiring images for those species and life stages not represented in the image archive. If you would like to submit images, please contact us at [bugwood@uga.edu](mailto:bugwood@uga.edu).