



2022 State Of
**THE PEST
CONTROL
MARKET**
Report

An exclusive research report examining the most common pest pressures reported by cannabis cultivation companies and how operators are managing them.



IN PARTNERSHIP WITH



‘PROTECT YOUR GROW’



Zoëcon Professional Products, the professional pest control division of Central Life Sciences, has been at the forefront of pest control since its founding in 1968, when Dr. Carl Djerassi and his team developed the first insect growth regulator (S)-Methoprene. That molecule ultimately revolutionized insect control and paved the way for many more innovations across a wide variety of markets.

At Zoëcon, we place an emphasis on staying in tune with the latest trends and demands within our industry. This is why we chose to support *Cannabis Business Times'* exclusive research on pest challenges facing today's cultivators and how they are managing them. And, as society's concern for environmental responsibility grows, so does ours. That's why we're bringing environmentally friendly insect control innovation to the growing cannabis market with the expanding Essentria® line of products.

Backed by years of pest expertise, Essentria® products utilize the natural chemical compounds of specific plants to provide repellency and control against insects without posing an environmental threat. The Essentria® family is formulated with essential oil based active ingredients including rosemary oil, peppermint oil, geraniol, clove oil and thyme oil. These botanically based insecticides are FIFRA Section 25(b) Exempt.

Essentria® G Granule Insecticide is an outdoor granule solution ideal for around the perimeter of grow units. It utilizes proven methods to provide rapid knockdown of labeled insects. Essentria® G Granule Insecticide is an easy-to-apply, hassle-free and environmentally friendly form of insect control for cannabis growers.

Creating an insect control product that protect cannabis plants while protecting our environment was a natural choice for us. And we're proud a family of products provides cannabis growers effective insect protection users can feel good about. Trust the botanical line of Essentria® products and its plant-based active ingredients to get the job done for you in an environmentally friendly manner.

MEL WHITSON,
Senior Field Technical Service Manager
Zoëcon Professional Products



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2022 State Of THE PEST CONTROL MARKET Report

BY **JOLENE
HANSEN**

**Unwelcome
insects** and
mites can
find their
way into
even the fin-

est horticultural growing facilities. When pest issues arise, control can be challenging under any circumstances. But as cannabis cultivators know and understand, the pest control restrictions imposed on cannabis cultivation can complicate managing problematic pests safely and effectively.

To better understand the pest control challenges and decisions facing commercial cannabis cultivators, *Cannabis Business Times*, with support from Central Life Sciences and in conjunction with third-party researcher Readex Research, conducted exclusive cannabis industry research for this 2022 "State of the Pest Control Market Report," *CBT's* first industry report on pest control.

In order to include only the pest control data most significant to cannabis cultivation operations, the majority of the research results presented here are based on participants who indicated they currently own or work for a licensed commercial cannabis operation that offers cannabis for sale and is located in the United States, one of its territories or Canada.

Through the study data presented in this 2022 "State of the Pest Control Market Report," commercial cannabis cultivation operations can find insights into pest control struggles, practices and successes of their cultivation peers, as well as pest control trends across the cannabis industry. This compelling research provides a benchmark for cannabis cultivation pest control that will make valued comparisons possible in future years.

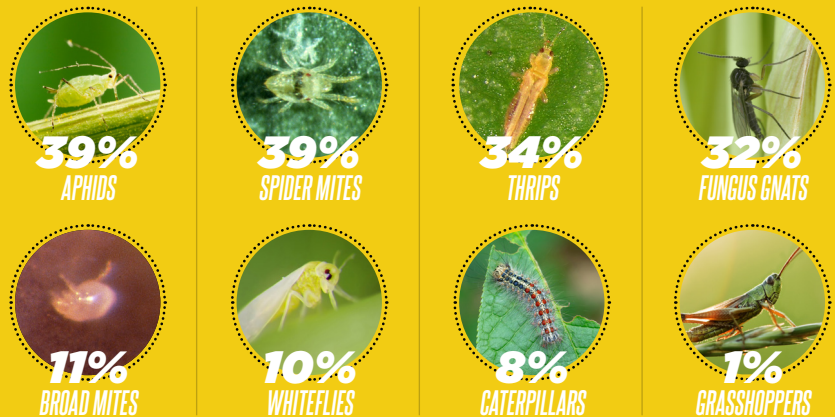
Jolene Hansen is a freelance writer specializing in the horticulture, cannabis and specialty ag industries.

THE MOST CHALLENGING PESTS

Growers who've been in the cannabis cultivation industry for a while have come to know that the pests that come up most often across the industry—from outdoor and greenhouse operations to indoor grows—can be the most difficult to control. Results of this 2022 "State of the Pest Control Market Report" research reinforced that notion.

Among growers who've experienced pest issues in their grow in the past 12 months, "aphids" (39%) and "spider mites" (39%) were tied for the most often cited pest. But following close behind were "thrips" (34%) and "fungus gnats" (32%), both noted as creating problems for about one-third of all research participants. Only 12% of participants in this study noted that their growing operations had not experienced any pest issues in the past year.

IN THE PAST 12 MONTHS, WHICH PESTS, IF ANY, HAVE CREATED ISSUES FOR YOUR GROWING OPERATION?



other: 8% | indicated at least one: 85% | not sure: 4% | none: 12%
Total exceeds 100% because participants could select all that apply.

When narrowed down to the single most challenging pest to control, study results followed the same track. One in four cannabis growers who experienced pest issues in the past 12 months tagged "aphids" (26%) as the single most challenging offender. "Spider mites" (18%), "fungus gnats" (14%), and "thrips" (12%) filled out the top spots once again. "Russet mites" were noted as both a leading pest and the single most challenging pest to control by several study participants in "other" responses.

IN THE PAST 12 MONTHS, WHICH SINGLE TYPE OF PEST HAS BEEN THE MOST CHALLENGING TO CONTROL IN YOUR GROWING OPERATIONS?

APHIDS	26%	BROAD MITES	5%	OTHER	3%
SPIDER MITES	18%	CATERPILLARS	2%	NOT SURE	4%
FUNGUS GNATS	14%	WHITEFLIES	2%	NONE	12%
THRIPS	12%	GRASSHOPPERS	0%		

Base: Participants who indicated they have had pest issues in their growing operations in the past 12 months: 97

TRENDS: PEST PRESSURES AND FINANCIAL IMPACT

Half of all research participants saw “no change” (50%) in the pest pressures faced in their growing operations in the past 12 months. But whether that means they were—and still are—wrestling with pest challenges or have things under control is unknown. About one-fourth of cultivation companies saw a decrease (26%) in pest problems in their grows the past year. But nearly one in five growers reported an increase (19%) in pest problems during that period.

Aphids on a plant



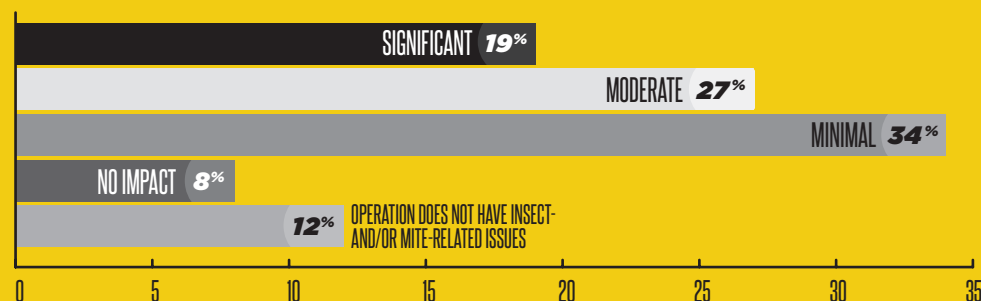
HAS YOUR OPERATION SEEN AN INCREASE OR DECREASE IN PEST PROBLEMS DURING THE PAST 12 MONTHS?



Pest-related issues in cannabis cultivation operations had financial implications for a substantial number of research participants. Nearly half (46%) of study participants experienced “moderate” (27%) to “significant” (19%) financial impact due to insect- or mite-related issues at their growing operations.

Only one in five study participants reported that pest problems did not have a financial impact on their grow, either because “operation does not have insect- or mite-related issues” (12%) or existing pest issues don’t impact the operation financially (8%).

HOW MUCH OF A FINANCIAL IMPACT DO INSECT- AND/OR MITE-RELATED ISSUES HAVE ON YOUR OPERATION?



26%
Percentage of participants noting aphids as the most challenging pest to control.

PEST CAUSES AND SUCCESSFUL CONTROL ACTIONS



Pests can come into a growing operation via multiple avenues, over which growers have varying degrees of control. Not surprisingly, participants in this 2022 “State of the Pest Control Market Report” pointed to a mix of external and internal causes for their grow’s pest issues.

Of those participants who reported having pest issues in the past 12 months, one-third pointed to “contaminated plant material from offsite” as a cause. More than one-fourth (28%) of those with pest issues in the past year named “contaminated soil/growing media and/or pots

transported from offsite” as the culprit.

But causes closer to home were also common. Research participants blamed “entrance from right outside the facility or grow area” (26%) and “employees bringing pests in on their clothes, boots, and/or outerwear” (22%) as a cause responsible for the past year’s pest issues. “Environmental control/conditions that attract pests” and “lack of or incomplete Integrated Pest Management practices” were both named as causes for pest problems by 19% of study participants.

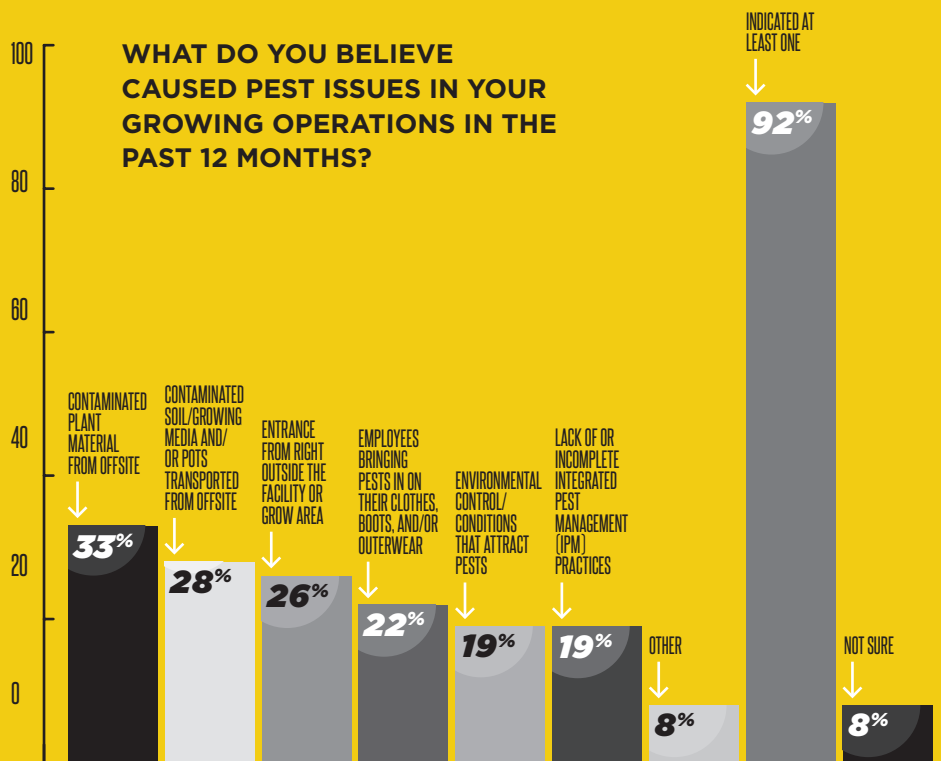


For growing operations that have successfully eliminated or reduced pests, study responses reflected multi-faceted approaches. “Beneficial insects/biological controls” topped the list of successful pest control actions, mentioned by 63% of research participants. More than half of all study participants mentioned one or more of the following actions as a component of their pest control success: “integrated pest management (IPM)” (56%), “cleaning/sanitation of facility, mobile equipment, and surrounding areas” (55%), and “scouting regularly” (51%).

IF YOUR OPERATION HAS ELIMINATED OR REDUCED PESTS FROM ITS GROW, TO WHAT DO YOU ATTRIBUTE YOUR SUCCESS?

BENEFICIAL INSECTS/BIOLOGICAL CONTROLS	63%
INTEGRATED PEST MANAGEMENT (IPM)	56%
CLEANING/SANITATION OF FACILITY, MOBILE EQUIPMENT, AND SURROUNDING AREAS	55%
SCOUTING REGULARLY	51%
PREVENTIVE USE OF PESTICIDES/INSECTICIDES/MITICIDES	39%
CHANGING CLOTHES AND/OR WEARING PROTECTIVE CLOTHING, AND/OR REQUIRING WORKERS TO DO SO	35%
CURATIVE USE OF PESTICIDES/INSECTICIDES/MITICIDES	30%
QUARANTINING PLANT MATERIAL	26%
AIR FILTRATION AND/OR OTHER ENVIRONMENTAL CHANGES (E.G., LOWERING OR RAISING TEMPERATURE AND/OR HUMIDITY)	25%
NETTING/SCREENING	9%
REGULAR OR INTERMITTENT CLOSING OF VENTS, ROOFS, WINDOWS, AND/OR OTHER POTENTIAL PEST ACCESS ROUTES	9%
OTHER	4%
INDICATED AT LEAST ONE	95%
HAVE NOT ELIMINATED/REDUCED PEST ISSUES	3%
HAVE NOT HAD PEST ISSUES IN MY GROW	3%

Total exceeds 100% because participants could select all that apply

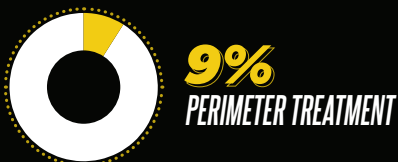


Total exceeds 100% because participants could select all that apply; Base: Participants who indicated they have had pest issues in their growing operations in the past 12 months: 97

PRODUCTS AND PREFERENCES FOR PEST CONTROL

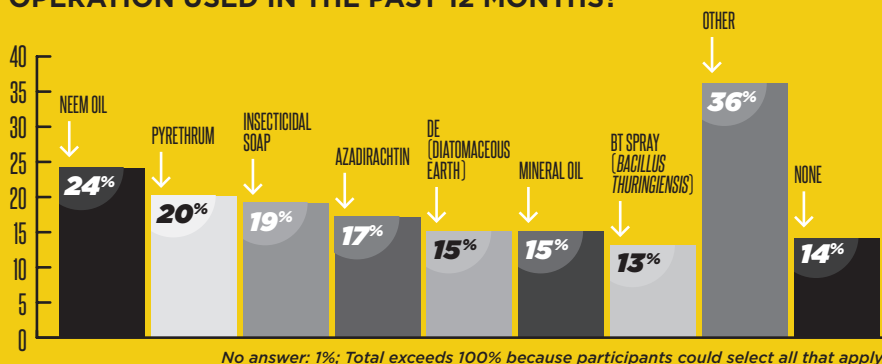
With the wide variety of growing practices in commercial cannabis cultivation, not to mention state-level requirements, variety in growers' approaches to treating pests such as insects and mites is natural. But this 2022 "State of the Pest Control Market Report" research showed some clear trends. Nearly half of research participants treat pest problems with "product sprayed directly in the grow" (46%), while 9% reported using "perimeter treatment" only. But more than one-fourth of the study participants reported using "both" (28%).

WHEN TREATING FOR INSECTS OR MITES, DOES YOUR OPERATION CURRENTLY USE A PERIMETER TREATMENT OR A PRODUCT THAT IS SPRAYED DIRECTLY IN THE GROW?



"Neem oil" topped the list as the most-often cited insect or mite control product used by research participants in their commercial grows in the past year, named by nearly one-fourth (24%) of growers in this study. "Pyrethrum" (20%) and "insecticidal soap" (19%) were the next most common choices, followed by the neem seed derivative "azadirachtin," used by 17% of study participants to control insect or mites in the past 12 months. The top 7 most cited products are included below. More than a third (36%) of participants selected "other," with several reporting using beneficial and predatory insects, though this study question focused on nonbiological controls.

WHAT INSECT OR MITE CONTROL PRODUCTS HAS YOUR OPERATION USED IN THE PAST 12 MONTHS?



When asked about preferred product class for insect and mite treatments, nearly one in five study participants reported they prefer "traditional synthetic - EPA regulated" (19%) products to fight insect or mite issues. "Insecticidal soaps" were noted as the preferred product class by 16% of research participants, with an additional 15% of growers naming minimal risk pesticides such as "essential oils - FIFRA 25(b) exempt" as their preferred product class.

WHICH PRODUCT CLASS DOES YOUR OPERATION PREFER WHEN TREATING MITE OR INSECT PESTS IN YOUR GROW?



Many research participants who selected "other" noted their use and preference for beneficial insects, predatory mites and other biologicals to control cannabis cultivation pests. This aligns with the fact that 63% of participants attribute biological controls/beneficial insects to their pest management success.



SOURCING AND ADOPTING NEW PRODUCTS →

When asked about sourcing information on new products, the responses from cannabis cultivator participants are a clear reflection of the industry's move toward mainstream acceptance.

Sixty-one percent of research participants turn to "word of mouth/recommendation from another grower" when sourcing new product information. But that was followed closely by "peer-reviewed articles" (58%) and "university/extension service" (38%)—two information sources that, for all practical purposes, didn't exist for commercial cannabis growers just a few years ago.

Thirty-four percent of research participants turn to "trade publications" as a source of information when considering new products for their growing operations.

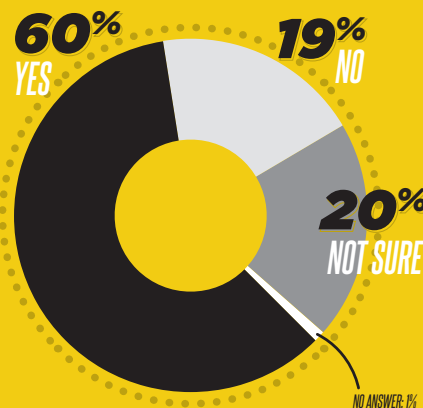
WHEN CONSIDERING A NEW PRODUCT FOR YOUR OPERATION, WHICH SOURCES DO YOU TURN TO FOR INFORMATION?

WORD OF MOUTH/RECOMMENDATION FROM ANOTHER GROWER	61%
PEER-REVIEWED ARTICLES	58%
UNIVERSITY/EXTENSION SERVICE	38%
TRADE PUBLICATIONS	34%
SOCIAL MEDIA PLATFORMS (FACEBOOK, TWITTER, INSTAGRAM, ETC.)	15%
ADS IN MAGAZINE/PRINT	10%
OTHER	21%
NOT SURE	4%

Total exceeds 100% because participants could select all that apply.

Knowing that pesticide manufacturers have cannabis cultivators in mind proved to be a major influence for growers choosing mite or insect control products. Nearly two-thirds (60%) of study participants said they would be more likely to choose control products labeled "specifically for use on cannabis and/or hemp" over products without such labeling.

WOULD YOUR OPERATION BE MORE LIKELY TO CHOOSE MITE OR INSECT CONTROL PRODUCT(S) LABELED "SPECIFICALLY FOR USE ON CANNABIS AND/OR HEMP" OVER OTHER PRODUCTS?



In considering which three factors are most important for product adoption and use in growing operations, compliance and cost made strong shows. More than half of grower participants noted "presence on state level approval lists" (55%) as among their top three most important factors. Nearly half named "cost" (49%) as a top-three factor in their product adoption or use.

Opinions of industry insiders and the EPA both carried weight for study participants when adopting pest control products for use in their growing operations. Nearly one-third of growers included "info on EPA-approved product label" and "testimonials/recommendations from other operations" among their top three most important factors for product adoption or use, with 32% and 30% respectively.

WHICH THREE FACTORS ARE MOST IMPORTANT FOR PRODUCT ADOPTION/ USE ON YOUR OPERATION?



Total exceeds 100% because participants could select all that apply.

TESTIMONIALS/RECOMMENDATIONS FROM OTHER OPERATIONS	30%
INFO ON SDS (SAFETY DATA SHEET)	24%
INFORMATION/RESOURCES PROVIDED BY PRODUCT MANUFACTURER	20%
AVAILABILITY OF SAMPLE/TRIAL MATERIAL	18%
PRODUCT DISCUSSION WITH MANUFACTURER REPRESENTATIVE	7%
OTHER	22%

ABOUT THE RESEARCH AND PARTICIPANTS

Cannabis Business Times worked with third-party research firm Readex Research to conduct the study and compile the data for this 2022 "State of the Pest Control Market Report," CBT's first industry research on pest control. **Cannabis Business Times** sent the study questionnaire to all available, active, qualified subscribers to the **Cannabis Business Times** magazine and/or e-newsletter in April 2022.

Unless otherwise noted, these 2022 study results are based on the 110 research participants who indicated they currently own or work for a licensed cultivation operation in the United States, one of its territories or Canada that cultivates and offers cannabis for sale.

The margin of error for percentages based on the 110 research participants in this 2022 "State of the Pest Control Market Report" is approximately 9.3 percentage points at the 95% confidence level.



GO NATURAL. GONE NATURALLY.

STRONG INSECT CONTROL WITH A SOFT IMPACT.

ESSENTRIA® PRODUCTS FEATURES AND BENEFITS

- FIFRA 25(b) exempt botanical insecticides
- Formulated with naturally derived essential plant oils
- Control bed bugs, flies, fleas, cockroaches, occasional invaders, spiders, ticks, wasps, and 30 other listed pests
- Apply to sensitive sites (schools, day cares, health care and government facilities)
- Multiple versatile formulations
- Safe when used as directed

A LEGACY OF CONTROL.



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