



## Agdia Releases StudFinder™, a Molecular Test for Sex Determination in *Cannabis*

Agdia, a market leader in plant diagnostic products and services, is happy to announce the release of [StudFinder™, a molecular diagnostic test for sex determination in \*Cannabis\*](#).

*Cannabis* is a genus of wind-pollinated annual flowering plants, which has been used for fiber, food, oil and medicinal purposes for millennia. The genus *Cannabis* is indigenous to central and eastern Asia but is now cultivated worldwide. Three species are commonly recognized: *C. sativa*, *C. indica* and *C. ruderalis*. However, there is dispute as to whether all three are actually subspecies of *C. sativa*. All species of *Cannabis* typically produce imperfect flowers and are dioecious. This means flowers have either male reproductive organs produced in panicles or female reproductive organs produced in racemes (buds) on separate plants



Figure 1: Flowers of male cannabis plant

(**Figures 1. and 2.**). Consequently, plants can be referred to as being male or female.



Figure 2: Flowers of female cannabis plant

A significant portion of commercial cannabis production utilizes vegetative or asexual propagation. This methodology cultivates tissue cuttings (clones) taken from female mother plants with recognized phenotypes (**Figure 3**). This is accomplished on a commercial scale and ensures consistency of the female phenotype and desired traits throughout plant inventories. Nevertheless, every plant variety begins as a seed and

carries the potential phenotype of either female or male progenitors; the female to male ratio of traditional cannabis plants is approximately 65:35. Cannabis breeders and small-scale producers rely heavily on seeds as their sources of genetic material. Moreover, mother plants can be infected with systemic pathogens such as [Hop latent viroid](#), forcing commercial producers to dispose of inventories and restore propagative stocks from seeds.



Figure 3: Removal of vegetative cutting (clone) from mother plant for propagation



Ultimately, seeds function as reservoirs of curated plant lineages and can be stored indefinitely when not in cultivation.

The cannabis plant produces more than 100 terpenophenolic compounds known as cannabinoids, including the psychoactive compound tetrahydrocannabinol (THC). Cannabinoids are produced primarily within glandular trichomes, which are minute secretory hairs on flowers and leaves (**Figure 4**). And while both female and male cannabis plants have trichomes, the female plants produce much higher concentrations, percentage of dry weight, of cannabinoids relative to male plants. High percentages of THC in dried cannabis flower products are paramount to burgeoning therapeutic and recreational markets. This makes female plants indispensable for the optimization of THC production and most desirable during the selection of new cultivars, whereas male plants are removed from inventories upon identification.



**Figure 4:** Trichomes on female cannabis flower

Visual identification of male cannabis plants is not typically accurate until six to eight weeks post germination. During this time, valuable labor, resources and canopy space are expended and thereby wasted on male plants destined to be rogued. Therefore, early and accurate identification of male plants is essential to the productivity and profitability of the cannabis production industry.

Agdia's [new cannabis sex identification test, StudFinder™](#), targets the Y chromosome DNA in cannabis and can identify male plants as early as the cotyledon stage or five to seven days post germination. StudFinder™ utilizes isothermal amplification technology and is the newest addition to Agdia's rapid and portable AmplifyRP® XRT product line. AmplifyRP® technology promotes the rapid amplification and detection of nucleic acid targets, DNA or RNA, while maintaining a single operating temperature. Moreover, this technology achieves target sensitivity and specificity comparable to qPCR while having clear advantages over detection platforms constrained to laboratory environments.

StudFinder™ protocol is straightforward and does not require a nucleic acid purification step. Plant tissue samples are incubated in extraction buffer, and crude liquid extracts are tested directly. Thereafter, the qualitative test result is displayed within 20 minutes. When paired with Agdia's AmpliFire® isothermal fluorometer, StudFinder™ is a user-friendly tool that can be implemented in the field or the lab by personnel with limited experience in molecular diagnostics (**Figure 5**). This product's high-level of performance and utilitarian



adaptability change the game for cannabis growers wanting to optimize productivity and profitability.

Agdia states its StudFinder™ assay was validated against a broad panel of cannabis cultivars and achieved a diagnostic sensitivity of greater than 95%. This assay was developed to be used with cotyledon and true leaf tissue matrices. Please visit the [StudFinder™ webpage](#) to access the full product user guide and validation report.



Figure 5: AmpliFire® portable fluorometer

Agdia's StudFinder™ assay is the newest addition to the AmplifyRP® XRT product line, which now includes 27 products. In addition to StudFinder™, Agdia offers AmplifyRP® XRT products for detection of *Beet curly top virus*, *Botrytis cinerea*, *Fusarium oxysporum*, *Lettuce chlorosis virus*, *Hop latent viroid* and *Hop stunt viroid*, for a total of six of the [most widespread and emerging pathogens affecting the cannabis industry](#). For more information on Agdia's complete line of AmplifyRP® XRT assays, please visit Agdia's website [www.agdia.com](http://www.agdia.com).

## About Agdia

A leading provider of diagnostic solutions for agriculture, Agdia, Inc. has been serving plant breeders, propagators, growers, universities, regulatory organizations and private testing laboratories since 1981. The company offers a comprehensive portfolio of validated, easy-to-use diagnostics for identifying plant pathogens, plant hormones, and transgenic traits. Furthermore, Agdia operates an ISO accredited, in-house, testing services laboratory. Agdia's quality management system is ISO 9001:2015 certified, and their Testing Services Laboratory is ISO 17025:2017 accredited. Visit the company's website at [www.agdia.com](http://www.agdia.com), e-mail [info@agdia.com](mailto:info@agdia.com), phone 1-574-264-2615 (toll-free 800-622-4342) or fax 1-574-264-2153.

AmplifyRP® and AmpliFire® are registered trademarks of Agdia, Inc.