



THE EFFICACY OF FISH SH!T AT REMEDY LAS VEGAS

As Tested in Three Strains

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Introduction

At Remedy Las Vegas we strive to cultivate world-class Cannabis for our customers and patients, and as such we are constantly searching for ways to improve our cultivation process. When the opportunity arose to utilize Fish Sh!t we were hesitant, and would only incorporate it fully if the product was proven to perform safely. We ran a test sample with three of our top strains, and were very impressed with the results that we were able to achieve by the incorporation of Fish Sh!t. The results were so impressive that we are now using Fish Sh!t on every cannabis plant we grow.

Procedures

Materials Used

In order to test the efficacy of Fish Sh!t we had to take measures to isolate Fish Sh!t as the only variable. Fish Sh!t conditioner was applied to roughly a quarter of the plants being

grown in 1 grow room together. This allowed us to eliminate any environmental variables that could be experienced between different rooms. We wanted to see the effectiveness of Fish Sh!t across the Marijuana haplogroups that we grow, so three strains were utilized for the test. To test the efficacy of Fish Sh!t on Indica-dominant varieties we used OG 18, for sativa-dominant varieties we used Deadhead OG, and for a balanced hybrid test we used Bio-Diesel. All plants were grown in 5 gallon felt pots with a mixture 70% coco coir and 30% perlite, and were fertigated via drip irrigation.

Methods

For the experiment all varieties used were clones from matching mothers, and were all cloned, repotted, vegetatively grown, pruned and flowered concurrently. All plants tested were kept as a group for the entirety of the harvest cycle, including the 60 day flower period. Plants were vegetatively grown on an 18/6 photoperiod, and were flowered on a 12/12 photoperiod. CO₂ fertilization was utilized, and kept between 800ppm to 1000ppm during vegetative growth and 1100 ppm during flowering. Testing of all samples were conducted in accordance with any applicable Nevada state law, and by RSR Laboratories, Las Vegas, Nevada.

Results

Analytical results

At Remedy Las Vegas we strive to produce the highest quality and safest Cannabis on the market for our customers, but we are even more focused on providing the highest quality and safest medicine on the market for our patients. We know that every day patients suffering from debilitating immunocompromising diseases use our product to alleviate their symptoms, and we won't use any product that we don't feel is safe for our patients. Before incorporating Fish Sh!t into our fertigation regime, we tested it for the presence of heavy metals (Fig. 1), as we have had issues with sub-par fertilizers in the past. Fish Sh!t did not show any detectable levels of heavy metals in the sample tested.

Figure 1: Heavy Metal Analysis for Fish Sh!t.

Heavy Metals (ICP-MS)

Analyte	LOQ	Limit	Mass	Status
	PPB	PPB	PPB	
Arsenic	125	2000	<LOQ	Pass
Cadmium	125	820	<LOQ	Pass
Lead	125	1200	<LOQ	Pass
Mercury	25	400	ND	Pass

Yield Results:

Yield weights were recorded in pounds for each data set, and that data was used to calculate the %A grade and total usable product per plant (Table 1, 2 and 3).

Table 1: Deadhead OG Final Weight

Deadhead OG

	Fish Sh!t	Regular Feed
# Plants	12	38
A grade (lbs)	5.146	13.688
B grade (lbs)	0.984	4.791
Trim (lbs)	1.14	3.63
Total Usable (lbs)	7.27	22.109
% A grade	70.78%	61.91%
A grade Per Plant (lbs)	0.42	0.36
Total Usable Per Plant (lbs)	0.61	0.58
	% Increase A/plant	% Increase Total Usable/plant
Fish Sh!t:	16.67%	5.17%

Table 2: Bio-Diesel Final Weight

Bio-Diesel

	Fish Sh!t	Regular Feed
# Plants	13	42
A grade (lbs)	3.10	6.96
B grade (lbs)	4.23	10.16
Trim (lbs)	0.77	2.50

Total Usable (lbs)	8.10	19.62
% A grade	38.25%	35.47%
A grade Per Plant (lbs)	0.24	0.17
Total Usable Per Plant (lbs)	0.62	0.47
	% Increase A/plant	% Increase Total Usable/plant
Fish Sh!t:	43.90%	33.44%

Table 3: OG 18 Final Weight

OG 18

	Fish Sh!t	Regular Feed
# Plants	15	51
A grade (lbs)	2.67	6.79
B grade (lbs)	3.17	8.08
Trim (lbs)	0.82	2.16
Total Usable (lbs)	6.65	17.04
% A grade	40.13%	39.88%
A grade Per Plant (lbs)	0.18	0.13
Total Usable Per Plant (lbs)	0.44	0.33
	% Increase A/plant	% Increase Total Usable/plant
Fish Sh!t:	33.62%	32.78%

Discussion

Yield Results

The implementation of Fish Sh!t into our fertigation regime produced increased yields across all strains tested. The most impressive yields were seen in Bio-Diesel (Hybrid) and OG 18 (Indica Dominant Hybrid). In these strains the percentage increase of A per plant was well over 30% for the OG 18, and nearly 44% for the Bio-Diesel. The percentage increase of A per plant for the Deadhead OG (Sativa dominant hybrid) was lower than the other strains in the test, at roughly 16%. When converted to metric weights, Deadhead OG saw increased yields of over 27.21 grams of A grade product per plant, Bio-Diesel saw

increased yields of over 31.75 grams per plant of A grade product, and OG 18 saw increased yields of over 22.68 grams per plant.

Total usable product per plant also saw a significant percentage increase with only the addition of Fish Sh!t. Percentage increases of total usable product per plant was increased by roughly 33% for the OG-18 and Bio-Diesel, and by 5% for the Deadhead OG. While the yield increases were very significant, the Deadhead OG was the strain with the lowest yield increases. We feel strongly that this was due to the already robust performance of the strain relative to the others in the test group.

Return on Investment

Nevada statute NRS 453D requires the Department of Taxation to set fair market values for all Cannabis products brought to market in the state. According to NRS 453D at the time of writing (April 2020) fair market value for wholesale dried cannabis flower was \$2,298.00 per pound. Given the fair market value, we have seen increased net profit for just A grade product of \$137.85 per plant with Deadhead OG, \$160.85 per plant with Bio-Diesel and \$114.90 per plant with the OG 18. Our average grow room will have roughly 150 plants per cycle, generally with an even split between strains. When calculating the net return for an entire room grown with Fish Sh!t, we are able to estimate increases of \$20,680 per room in just A grade weight for the 3 strains used in our study.

Similar to most Cannabis cultivators, we at Remedy make the most profit from the sale of A grade cured flower. We harvest 46 cycles per year, which would put yearly net profit for simply using Fish Sh!t at roughly \$950,000 in wholesale A grade weight. We used Fish Sh!t at a rate of 6mL/gal for the test from the vegetative stage through flower. The entire growth cycle lasts 14 weeks, from transplant of seedlings to harvest. At that rate we used roughly 16.8L of Fish Sh!t in order to achieve the results shown. Given the cost of Fish Sh!t at \$383.00 per 20L bottle we estimate that we used roughly \$321.72 worth of product for the entire grow cycle. Given those costs, we estimate that the rough ROI for using Fish Sh!t would be well over 6,420% using the formula $\text{Net profit} / \text{Total investment} * 100$.

Conclusions

Based on the results that we achieved we are confident in recommending Fish Sh!t to growers of high quality cannabis and other crops. We were so impressed that Fish Sh!t is now utilized in our facility on all plants that we grow, and we continue to profit from its use. After nearly six months of use and over 25 harvests we are confident that Fish Sh!t will continue to provide the results necessary for years to come.

Acknowledgements

All plants were grown in accordance with Nevada state law at Remedy Las Vegas by our talented and dedicated staff under the supervision of Hassan Khalatbari, Remedy Cultivation Director. Test was funded by Remedy Las Vegas, with Fish Head Farms donating the Fish Sh!t used in testing. Data was collected and organized by Trisha Scott, and paper was written by Kevin Shudes.

Appendix

Results - Analytical Results

Figure 1: Full Heavy Metals Test of Fish Shit



Certificate of Analysis

Powered by Confident Cannabis
1 of 1

Silver Sage Wellness

Sample: 1910RSR0700.6352

Strain: Fish Shit

Las Vegas, NV 89118
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(760) 636-9551
Lic. #19153202036386051786

Sample Received: 10/03/2019; Report Created: 10/09/2019;

Fish Shit

Other, Other
Harvest Process Lot: METRC Batch: METRC Sample:



Cannabinoids (HPLC)

NT	NT	NT
Total Cannabinoids	Total THC	Total CBD
Analyte	LOQ	Mass

Moisture: NT Foreign Matter: Not Tested

Terpenes (GCMS)

Analyte	LOQ	Mass	Mass
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Microbials (3M Petrifilm/PCR)

Analyte	LOQ	Limit	Units	Status
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Mycotoxins (LC-MS/MS)

Analyte	LOQ	Limit	Mass	Status
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Heavy Metals (ICP-MS)

Analyte	LOQ	Limit	Mass	Status
	PPB	PPB	PPB	
Arsenic	125	2000	<LOQ	Pass
Cadmium	125	820	<LOQ	Pass
Lead	125	1200	<LOQ	Pass
Mercury	25	300	ND	Pass

Pesticides (LC-MS/MS-APGC-MS/MS)

Analyte	LOQ	Limit	Mass	Status	Analyte	LOQ	Limit	Mass	Status
	PPM	PPM	PPM			PPM	PPM	PPM	
Abamectin	0.025	0.200	NR	NT	Imidacloprid	0.010	0.500	NR	NT
Acetamiprid	0.025	0.200	NR	NT	Myclobutanil	0.010	0.400	NR	NT
Bifenthrin	0.010	0.400	NR	NT	Packbutarazol	0.010	0.400	NR	NT
Bifenthrin	0.010	0.100	NR	NT	Piperonyl Butoxide	0.010	3.000	NR	NT
Cyfluthrin	0.025	2.000	NR	NT	Pyrethrins	0.031	2.000	NR	NT
Cypermethrin	0.010	1.000	NR	NT	Quinzozone	0.020	0.800	NR	NT
Daminozide	0.010	0.800	NR	NT	Spinetoram	0.016	1.000	NR	NT
Dimethomorph	0.010	2.000	NR	NT	Spinosad	0.012	1.000	NR	NT
Etoxazole	0.010	0.400	NR	NT	Spirotetramat	0.025	1.000	NR	NT
Fenhexamid	0.010	1.000	NR	NT	Thiamethoxam	0.010	0.400	NR	NT
Floicamid	0.010	1.000	NR	NT	Trifloxystralin	0.010	1.000	NR	NT
Fludioxonil	0.010	0.500	NR	NT					

Total Potential THC = (THCa * 0.877) + Δ9-THC + Δ8-THC, Total Potential CBD = (CBDA * 0.877) + CBD; LOQ = Limit of Quantitation, NR = Not Reported, ND = Not Detected; Cannabinoids for flower and trim reported as received. LOQ for each mycotoxin is Aflatoxin G2, 4.9 ppb; Aflatoxin G1, 8 ppb; Aflatoxin B2, 3.3 ppb and Aflatoxin B1, 2.3 ppb

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