MustGrow Biologics Corp. – SPECULATIVE BUY

It's Hot Like Mustard

ACTION: Initiating Coverage with SPECULATIVE BUY Rating and $5.60 TP

We are initiating coverage of MustGrow Biologics Corp. (MGRO-CSE) with a **SPECULATIVE BUY** rating and a 12-month target price of $5.60. MGRO is a late-stage, innovative ag biotech company (crop input) developing mustard seed-derived natural compounds to replace synthetic chemicals. We are impressed by the company's success in forging 2 exclusive partnerships with global giants to evaluate its products in certain crops around the world – one with Sumitomo Corporation and the other with Bayer.

DETAILS: A Late-stage Ag Biotech with Exclusive Partnerships with Global Giants

Focusing on Developing Natural Compounds Derived from Mustard Seed: MGRO identifies, extracts and develops natural compounds from mustard seeds. Chemically synthetic versions of those compounds have been EPA approved. MGRO's natural versions are not only non-hazardous and environmentally safe (due to being found in nature and being biological products), but also effective (as the active ingredients have been well established in the crop protection market).

TerraMG (MGRO's Lead Product) – Currently in the EPA Registration Process: Allyl isothiocyanate (AITC) is an EPA approved compound for preplant soil fumigation. Chemically synthetic AITC is volatile and not eligible for use in organic production. MGRO's TerraMG is a patented mustard plant-derived extract in liquid form of biological AITC (bio-AITC) that is chemically stable until after application, safe and easy for transport, storage and handling, as well as, eligible for use in organic production. TerraMG is developed based on MGRO's 1st generation bio-AITC (in a granular formulation), which has been EPA approved. Compared to the 1st generation, TerraMG has demonstrated better efficiency in field trials.

Banking on Two Transformative Partnerships: The Sumitomo partnership is to evaluate MGRO's technologies in the Americas for preplant soil fumigation (incl. TerraMG), bioherbicide, postharvest and food preservation for potatoes, and bananas. The Bayer partnership is to test MGRO's technologies for similar applications in Europe, Asia Pacific, the Middle East and Africa. Both partnerships can potentially be expanded into major commercial agreements – boding well for future commercialization of MGRO's products.

Lean but Strong Management with Extensive Experience in AgTech and Capital Markets: CEO Corey Giasson has 25 years of experience in the business and ag sector. He was the former Co-founder and CEO of Rallyemont Energy which was sold to Husky Energy. COO Colin Bletsky has 30 years of experience in the ag industry which he gained from serving as senior roles at Novozymes (managing its global BioAg business) and Syngenta. CFO Todd Lahti has closed over 50 M&A, financing and licensing transactions totaling over US$2.4BN to date in the biotech, ag and oil/gas sectors.

Valuation: We view MGRO as a lower risk play due to bio-AITC having been EPA-approved. Our valuation is based on an NPV analysis of: (i) TerraMG as a preplant soil biofumigant for applications currently under the EPA review, and (ii) a potential commercial agreement with Sumitomo, which has been assumed in 2023.

ANALYST INFORMATION

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MARKET DATA

MGRO-CSE	**$3.46**
TARGET :	**$5.60**
PROJ. RETURN:	**62%**
VALUATION:	**NPV Analysis of TerraMG**
Share Data	
Basic Shares O/S (mm)	47.8
Fully Diluted (mm)	54.7
Market Cap (basic) ($mm)	$165
Financial Data	
Enterprise Value ($mm)	$156.6
Cash ($mm)	$9.5
Debt ($mm)	$0.8
Next Reporting Date	**MAR**

THOMSON CHART – ONE YEAR

COMPANY PROFILE

MustGrow Biologics (MGRO-CSE) is a late-stage, innovative ag biotech company focused on developing natural biopesticides, biofumigants and bioherbicides derived from food-grade mustard seed. The company's lead candidate, TerraMG (a 2nd generation bio-AITC product), is currently in the EPA registration process for its use as a biofumigant. MGRO has forged 2 transformative development partnerships with global giant Sumitomo Corporation and Bayer to evaluate MGRO's technologies (incl. TerraMG) in global markets.

UPCOMING EVENTS

- Q4/21 results – Mar. 2022
- Field trial results – 2022
- BD activity – 2022

HEALTHCARE

MUSTGROW BIOLOGICS CORP.

Note: All financial figures in this report are in US dollars, unless stated otherwise. ***Report pricing date: January-25-2022***

COMPANY PROFILE – AN INNOVATIVE, LATE-STAGE AG BIOTECH COMPANY WITH TRANSFORMATIVE PARTNERSHIPS FORGED WITH SUMITOMO CORPORATION & BAYER

MustGrow Biologics (MGRO-CSE) is a late-stage, innovative ag biotech company currently focused on developing natural biopesticides, biofumigants and bioherbicides derived from food-grade mustard seed. The mustard plant produces compounds with pesticidal and herbicidal properties as a self defense mechanism against diseases, pests and weeds – this is a key reason why this plant is considered a good cover crop to manage soil-borne pathogens (a good example is that vineyards in California have mustard plants growing alongside the vines). MGRO identifies and extracts those naturally occurring chemicals from the mustard plant and further formulates them into appropriate forms for commercial use – a more efficient way than simply using the mustard plant as a cover crop. MGRO's methodology enables the company to combine advantages of biologicals (being safe and environment friendly) and synthetic chemicals (being effective at controlling diseases and pests) while avoiding shortcomings of the two classes (biologics have had relatively low efficacy in many cases and synthetic chemicals can be toxic and environment hazardous).

MGRO so far has been focused on two key compounds that are extracted from mustard seed – allyl-isothiocyanate (AITC) as a biopesticide for preplant soil fumigation and postharvest food preservation, as well as, thiocyanate for bioherbicidal weed control. Leveraging positive field trial results, MGRO has forged 2 exclusive evaluation and option agreements with global giants – Sumitomo Corporation (TSE: 8053) and Bayer (FWB:BAYN). The Sumitomo partnership is to evaluate MGRO's technologies for preplant soil fumigation, bioherbicide, postharvest and food preservation for potatoes, and bananas in North, Central and South America. The Bayer partnership is to test MGRO's technologies for preplant soil fumigation, bioherbicide applications, and postharvest food preservation of potatoes in Europe, Asia Pacific, the Middle East and Africa. Both partnerships can potentially be expanded into major commercial agreements, subject to evaluation outcomes. We believe the 2 partnerships are transformative to MGRO as they should have laid solid foundation for the company's future commercialization of its products. Additionally, MGRO has also forged a non-exclusive field trial collaboration with the NexusBioAg subsidiary of Univar Solutions (a leading global specialty chemical distributor) to evaluate the former's AITC product for certain canola and pulse crop diseases in Canada.

Figure 1: Summary of MGRO's Financials and Trading Multiples

FYE Dec 31		2019A	2020A	Q1/21A	Q2/21A	Q3/21A	Q4/21E	2021E	Q1/22E	Q2/22E	Q3/22E	Q4/22E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Revenue	$ million	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$4.1	$14.3	$25.4	$34.8	$37.5	$40.1
F.D.EPS	$/sh	($0.06)	($0.09)	($0.01)	($0.02)	($0.02)	($0.01)	($0.06)	($0.01)	($0.01)	($0.01)	($0.01)	($0.05)	$0.03	$0.24	$0.37	$0.42	$0.46	$0.49
CFPS	$/sh	$0.14	($0.02)	$0.01	($0.01)	($0.00)	$0.13	$0.14	$0.11	($0.02)	($0.01)	($0.01)	$0.06	$0.15	$0.24	$0.37	$0.49	$0.53	$0.57
P/Sales	multiple	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	40.5x	11.5x	6.5x	4.8x	4.4x	4.1x
P/EPS	multiple	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	135.2x	14.6x	9.3x	8.1x	7.5x	7.0x
P/CFPS	multiple	24.9x	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	23.1x	14.7x	9.3x	7.1x	6.6x	6.1x

Source: Company Filings & RCC Estimates

Figure 2: MGRO's Technology vs. Biologicals vs. Synthetic Chemicals in Ag Applications

Source: MGRO's Corporate Deck

Figure 3: MGRO's Corporate Structure

Source: MGRO's 2020 Annual Information Form (AIF)

PRODUCT PIPELINE OVERVIEW

MGRO is currently focused on developing two key compounds (and associated chemicals) identified and extracted from mustard seed – AITC and thiocyanate. The 3 core applications of the 2 compounds include:

- AITC as a preplant soil biofumigant to treat soil-borne diseases and pests for multiple crops including fruit, vegetables, canola and pulse crops;
- Thiocyanate as a bioherbicide to treat unwanted plant growth for organic production and home and garden markets, as well as, conventional ag markets in jurisdictions where glyphosate is out of favor or has been banned; and
- AITC as a postharvest food biopesticide for storage and food preservation markets (fruit & vegetables, bulk grain, shipping containers and food borne pathogens).

Figure 4: MGRO's Product Pipeline

Source: MGRO's Corporate Deck

Figure 5: Application Areas, Regional Rights and Status of MGRO's Products

MGRO Product	Areas of Application	Regional Rights			Status
		Americas	Europe	ROW	
Biofumigant	Fruits & Veg	Sumitomo (exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	US-EPA registration in process
	Turf & Ornamental	Sumitomo (non-exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	US-EPA registration in process
	Tobacco	Sumitomo (exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	US-EPA registration in process
	Potatoes	Sumitomo (exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	US-EPA registration in process
	Banana	Sumitomo (exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	In field trials
	Canola	Sumitomo (ex-Canada exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	In field trials
	Pulse crops	Sumitomo (ex-Canada exclusive)	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	In development
Bioherbicide	All	Sumitomo	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	In development
Postharvest preservation	Potatoes	Sumitomo	Bayer (exclusive)	Bayer (exclusive in certain regions), MGRO	In development
	Others	MGRO	MGRO	MGRO	In development

Source: MGRO and RCC

TerraMG (MGRO'S 2ND GENERATION BIO-AITC PRODUCT) – PREPLANT SOIL BIOFUMIGATION – EPA REGISTRATION PROCESS

Product Description – Superior to Chemically Synthetic AITC

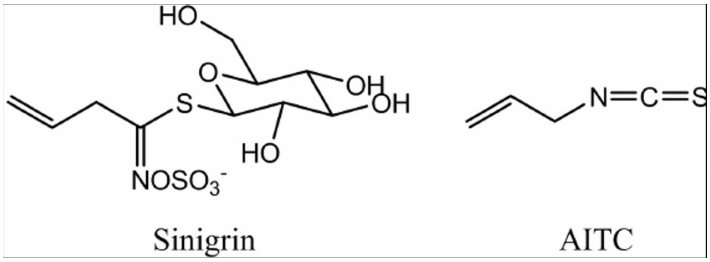
AITC is an established efficacious pesticide as it moves as a gas in soil pore spaces. The compound is so hydrophobic (i.e. not water soluble) that it does not extensively partition to the soil solid phase. AITC interacts non-specifically and irreversibly with proteins and amino acids to form stable products with sulfhydryl groups, disulfide bonds, and amines. The formation of these covalent bonds alters the structure of the proteins or amino acids such that proper cell function is disrupted, including enzymatic reactions or other metabolic processes. Once it reaches a target pest, AITC readily moves through cell membranes to reach proteins and amino acids that are further deactivated.

Chemically synthetic AITC is a well established (EPA approved) fumigant. However, it has multiple inherent shortcomings:

- Instant release of AITC restricts its wide applications and can result in damage if applied to existing crops;
- AITC is regulated as Class 6 inhalation poison, requiring special transport, storage and handling requirements and added costs;
- Class 6 inhalation poison and high toxicity result in restrictive application procedures and cumbersome protocols; and
- For safety and environmental reasons, chemically synthetic AITC is not eligible for use in organic production.

MGRO's TerraMG is the company's 2nd generation biological AITC (bio-AITC) product. It is a patented liquid formulation derived from food-grade mustard seed. The product is made up of a two-part formula: sinigrin (a.k.a. glucosinolate) and myrosinase. Both parts are in powder. Upon mixing sinigrin and myrosinase together with water, a hydrolysis reaction occurs in which myrosinase cleave off the glucose group from sinigrin, and the remaining molecule quickly converts to AITC. The environmental safety profile of TerraMG is better than that of chemically synthetic AITC in that the two components of TerraMG are separated and not active until combined with water in the field – this not only makes storage, shipping and product use safe and not hazardous, but also extends the shelf life of TerraMG to over 3 years (and still counting). Such a long shelf life is usually unheard of for a naturally biological product.

Figure 6: Chemical Structures of Sinigrin and AITC



Source: MGRO's Corporate Website

Figure 7: Comparison between TerraMG (a bio-AITC product) vs. Chemically Synthetic AITC

Source: MGRO & RCC

TerraMG Should Have Relatively Low Regulatory Risk – Leveraging Approval of the 1st Generation Bio-AITC Product

It should be pointed out that MGRO previously developed and commercialized a 1st generation bio-AITC product (called MustGro Invest), which is a granular formulation of ground mustard seed (de-oiled mustard meal). The active ingredient of MustGro Invest contains the natural components of mustard seed, including myrosinase and sinigrin less the oil. The 1st generation product is a pellet that does not exhibit any pesticidal activity. Immediately after water is applied to the pellet, AITC is formed. MustGro Invest has been approved by the EPA in the U.S. and the PMRA in Canada as a biopesticide for agricultural and turf and ornamental use – we expect MGRO to leverage this previous regulatory approval of bio-AITC to streamline the registration process of TerraMG. Therefore, we believe TerraMG has a relatively low regulatory risk. Additionally, compared to MustGro Invest, TerraMG is less bulky and more efficient due to it being an extract in a liquid formulation, resulting in a potentially more economic application rate. Field trials suggest that 5 to 40 gallons (equivalent to 1 to 5 lbs) of AITC in liquid formulation (TerraMG) are normally required for one acre farm land vs. up to 800 to 2,000 lbs AITC in solid formulation (MustGro Invest).

Figure 8: Three Different Natural/Biological Forms of AITC – TerraMG (Liquid Formulation) Represents the Most Efficient One

Source: MGRO

Figure 9: Comparison between Different Forms of AITC (Synthetic vs. Bio vs. Cover Crop)

Source: MGRO

Broad Application Areas

Soil fumigants are broad-spectrum biocides. They are usually used "preplant", meaning they are applied several days or weeks before crops are planted to suppress or control diseases and pests. This technique affords a newly seeded crop the best conditions to attain proper emergence and establishment, which would potentially result in maximum yield and returns for farmers. Preplant soil fumigation is normally used for the following crops in the U.S.:

- Tree nut and vine (nuts, pome, stone fruit, grape);
- Plastic culture crops (fruiting vegetable, cucurbits, strawberries);
- Broad acre field vegetables (potatoes, sweet potatoes, carrots, onion);
- Other field vegetables (brassica, leafy);
- Field crops (tobacco, peanuts, sugar beets, green beans); and
- Nursery crops (greenhouse, field grown, container).

Approximately 80% of the acres fumigated are in vegetables and strawberries. MGRO's MustGro Invest (1st generation bio-AITC) has been approved by the EPA to be used as a biopesticide on different crops for a variety of pests/diseases. Besides, MGRO is testing bio-AITC (with the 2nd generation product TerraMG) as a biopesticide on bananas, canola and pulse crops as these crops have no solutions for soil borne diseases.

Figure 10: Approved Crops and Targeted Pests/Diseases for Bio-AITC (MustGro Invest) – Initial Markets for TerraMG

Source: MGRO's Corporate Website

Bananas – Fusarium wilt TR4. Fusarium wilt TR4 is the world's most destructive banana disease, affecting particularly Cavendish bananas, which comprise half of global banana production. Currently, there are no effective treatments for TR4 which may remain viable in soil for decades. In February 2021, MGRO confirmed 100% control (kill) of Fusarium wilt TR4 by TerraMG in laboratory experiments. On Nov. 10th, 2021, MGRO announced positive results of an initial field trial conducted in Colombia, which showed that:

- TerraMG could reduce incidence and severity of Fusarium wilt TR4 symptoms in banana plants after 21 days after application.
- TerraMG could reduce the concentration of colony-forming units (CFUs) per gram of soil 21 days after application. A CFU is a microbiology unit used to estimate the number of viable (the ability to multiply) bacteria or fungal cells in a sample. The concentration of CFUs in soil is strongly associated with disease severity.
- TerraMG did not cause any damage or phytotoxic effects on banana plants even at higher application rates, potentially allowing the product to be explored as a direct treatment to banana plants.

Further field trials with TerraMG in fusarium with TR4 would be conducted to determine the product's dose rates, application frequency and application methods.

Canola – Clubroot: Clubroot (no effective treatment) is a soil-borne disease caused by fungi, which leads to swellings or galls form on the roots of canola plants, ultimately causing premature death of the plant. It has been estimated that clubroot results in C$500M in annual canola crop losses in Canada. In August 2020, MGRO reported control of clubroot by TerraMG in a greenhouse study – 96.1% disease control at a 0.5 gal/acre application rate and 98.5% disease control at a 10 gal/acre application rate. Field trials with TerraMG are currently being conducted in Canada.

Pulse Crops – *Aphanomyces*: *Aphanomyces* (no effective treatment) is a water mold pathogen responsible for root-rot diseases, infecting a variety of peas, lentils and other legumes collectively referred to as pulse crops. It has been estimated that approx. $20M in annual pulse crop losses in Canada and $100M globally are caused by *Aphanomyces*. TerraMG previously achieved 100% control of *Aphanomyces* within 24 hours in greenhouse studies.

IONIC THIOCYANATE – PREPLANT BIOHERBICIDE – EARLY DEVELOPMENT

Herbicides (a.k.a. weedkillers) are substances used to control unwanted plants. In early 2021, MGRO isolated and concentrated a molecule from mustard seed that can be further developed as a bioherbicide – thiocyanate, which is responsible for the systemic activity behind the mustard plant's natural herbicidal (weed-killer) properties. In terms of its mode of action, thiocyanate can form a stable complex with iron, which removes iron's ability to serve as a required plant nutrient. Thiocyanate is taken up by plant roots and transported throughout the entire plant. As such, thiocyanate behaves as a systemic herbicide. The systemic activity is particularly important given that the leading chemical herbicide (glyphosate) is not soil active and only acts on the above ground portions of the weed it contacts. Investors should note glyphosate and other glyphosate-based herbicides have been proposed to be banned in several countries. We believe mustard seed-derived thiocyanate represents a natural organic solution and has potential to replace chemical herbicides in regions where they are banned, as well as, to be used in combination with chemical herbicides to reduce their application rates.

Figure 11: Potential Application Areas of Mustard seed-derived Thiocyanate

Source: MGRO's Corporate Website

In a proof-of-concept study on small weeds and weed seeds, MGRO observed 100% kill of weeds by mustard seed-derived thiocyanate. After using multiple application methods, herbicidal control was achieved after only 72 hours – killing the trial plants from the root up. MGRO is currently in the process of running larger lab and greenhouse studies to reconfirm the efficacy, application rates and length of control of the bio-compound.

BIO-AITC – POSTHARVEST FOOD PRESERVATION – EARLY DEVELOPMENT

There has been a growing body of evidence showing that the compound of AITC can be used not only for crop protection in the field, but also for postharvest preservation for grains and other produce in storage. Based on initial results of third-part studies, MGRO is developing mustard seed-derived AITC for application in postharvest food preservation in 4 potential target areas:

- Stored potatoes – sprout inhibitor and disease control;
- Stored grains – control of mycotoxins;
- Shipping containers – disease and pest control; and
- Food borne pathogens – *E.coli*, salmonella, listeria.

According to MGRO, the first application has a huge need as to replace synthetic chemicals that are being banned. Post-harvest sprout suppression is a key element of potato storage. According to Cirrus Partners, the current global sprout suppression market was estimated at US$100M (US$64M in Europe). In Europe, chlorpropham (CIPC), which is a leading agrochemical product for sprout suppression, was banned on Oct. 8th, 2020. With this ban, European growers are forced to refrigerate produce, causing an estimated extra US$150M expenditure annually. The additional capital expenditure and refrigeration energy consumption make this temporary approach unsustainable, plus potatoes can still sprout in the refrigerator. Additionally, there have been no effective treatment alternatives available – creating a large unmet need, particularly for potato storage sites.

MGRO has obtained an exclusive rights to a composition-of-matter and method-of-use patent (patent #: 10,588,321) from the University of Idaho with respect to using the mustard plant's active ingredient, AITC, to control vegetable and potato sprouting without the use of synthetic chemicals. MGRO is now testing its own version of AITC as a potato sprout inhibitor. In addition, with its expertise in mustard seed-derived AITC, the company is further developing a biological solution to address disease-affected potatoes and other vegetables in storage.

TWO TRANSFORMATIVE DEALS BODING WELL FOR FUTURE COMMERCIALIZATION

The Sumitomo Partnership – for the Americas

On August 4th, 2021, MGRO entered into an exclusive evaluation and option agreement with global giant Sumitomo Corporation (TSE:8053) to evaluate the former's technologies for preplant soil fumigation, bioherbicide, postharvest and food preservation for potatoes, and bananas in North, Central, and South America. Under the agreement, Sumitomo would fund and assume the role and responsibilities for conducting all toxicology, safety, efficacy, and regulatory work necessary for commercializing MGRO's products. In addition, Sumitomo has the non-exclusive ability to test the technologies for Canadian canola and pulse crops, global turf and ornamentals, floriculture, and all postharvest and food preservation applications not covered by the exclusive part of the deal. MGRO reserves all other development and commercial rights to engage with third parties with respect to its technologies in application areas not covered by the exclusive part of the Sumitomo partnership. How the Sumitomo partnership would be executed was illustrated in the example of using TerraMG as a preplant soil fumigant for banana plants in Columbia. Following reporting positive results of an MGRO-conducted initial field trial, the company on Nov. 10th, 2021, also announced Sumitomo would take over the project to continue to conduct further field trials and regulatory work necessary for commercialization of TerraMG in Columbia.

The Bayer Partnership – for Europe, Asia Pacific, the Middle East and Africa

On January 21st, 2022, MGRO signed an exclusive agreement with Bayer to evaluate the former's technologies for preplant soil fumigation, bioherbicide applications, and postharvest food preservation of potatoes in Europe, Asia Pacific, the Middle East and Africa. Under the agreement, Bayer would fund and drive all laboratory, field development, regulatory work and market development necessary for commercialization. Bayer has been granted an option to acquire exclusive rights to MGRO's technologies in those regions.

Laying Foundation for Future Commercialization in Global Markets

Investors should note that the current partnerships with Sumitomo and Bayer are technically R&D/development collaborations and do not include commercial agreements. No upfront fees were paid by Sumitomo or Bayer with the transactions. Depending on evaluation outcomes, Sumitomo and Bayer may potentially expand the partnerships into full sales and marketing agreements, which should be highly beneficial for commercialization of MGRO's products due to Sumitomo and Bayer's strong distribution platforms and extensive sales infrastructure in respective regions. We have assumed a full commercial agreement between MGRO and Sumitomo for TerraMG would be forged in 2023 (see our MGRO's financial estimates below). We are not assuming any commercial agreement with Bayer at this time in that no products are currently in the regulatory application process in the regions covered the Bayer deal.

Non-Exclusive Deal

Besides the exclusive Sumitomo and Bayer partnerships, MGRO on Apr. 29th, 2021, entered into a field trial collaboration with NexusBioAg, a division of Univar Solutions Inc., under which NexusBioAg would conduct field trials with MGRO's TerraMG for treatment of Clubroot and Aphanomyces diseases in Canola and Pulse Crops, respectively. Univar Solutions is a leading global specialty chemical and ingredient distributor with US$8.2BN in 2020 annual sales.

FINANCIALS & FORECASTS

U.S. Sales Estimates of TerraMG

MGRO's 3rd party ag research company estimated there were a total of approx. 10M acres for conventional farming land (fruit & vegetables, tree nut & vine, potatoes, turf & ornamentals, etc.) in the U.S. in 2018, among which 9.6% were fumigated with synthetic chemicals. To be conservative, we assume the total size of the acres that need to be fumigated would stay at a relatively stable level going forward. A buffer zone is an area located between fumigated farming land and an adjacent land area that is not maintained under pest management – the purpose of setting up a big enough buffer zone is to prevent harmful chemically synthetic pesticides from diffusing to adjacent land areas. It has been estimated that the size of buffer zones is approx. 5% to 20% of total fumigated acres. Since TerraMG is a natural and organic biological product, we expect it can be applied to buffer zones. Therefore, we estimate there are a total of around 1.1M acres (100,000 of which are buffer zones) that needs to be fumigated every year for conventional farming in the U.S. We expect TerraMG can also be used for organic production. According to MGRO, there were 241,600 organic acres for which TerraMG was eligible in the U.S. in 2018. We assume the number would continue increasing down the road in conjunction with the growing demand of organic produce. See Figure 13 for our acres estimates for the U.S. market. MGRO has suggested per acre prices for fumigation can range from US$460 to US$600. We assume TerraMG would start commercialization from 2023 and have a per acre price of US$500. See Figure 14 for our U.S. sales estimates of TerraMG.

Figure 12: Snapshot of the U.S. Fumigation Market by Size of Land (2018)

Source: MGRO's Corporate Deck

Figure 13: RCC's Estimates of TAM in the U.S. & TerraMG's Market Penetration (Note: Total Conventional Acres Include Buffer Zones)

U.S. Acres Estimates	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Total Conventional Acres Fumigated	1,060,840	1,060,840	1,060,840	1,060,840	1,060,840	1,060,840	1,060,840
Total Organic Acres Fumigated	289,920	333,408	366,749	385,086	396,639	400,605	400,605
TAM (Acres)	**1,350,760**	**1,394,248**	**1,427,589**	**1,445,926**	**1,457,479**	**1,461,445**	**1,461,445**
% of Growth	*4%*	*3%*	*2%*	*1%*	*1%*	*0%*	*0%*
Conventional Acres Fumigated by TerraMG	0	5,304	21,217	42,434	63,650	74,259	84,867
% of penetration into conventional acres	*0.0%*	*0.5%*	*2.0%*	*4.0%*	*6.0%*	*7.0%*	*8.0%*
Organic Acres Fumigated by TerraMG	0	10,002	36,675	61,614	79,328	80,121	80,121
% of penetration into organic acres	*0%*	*3%*	*10%*	*16%*	*20%*	*20%*	*20%*
Total Acres Fumigated by TerraMG	**0**	**15,306**	**57,892**	**104,047**	**142,978**	**154,380**	**164,988**
% of penetration into TAM	*0%*	*1%*	*4%*	*7%*	*10%*	*11%*	*11%*

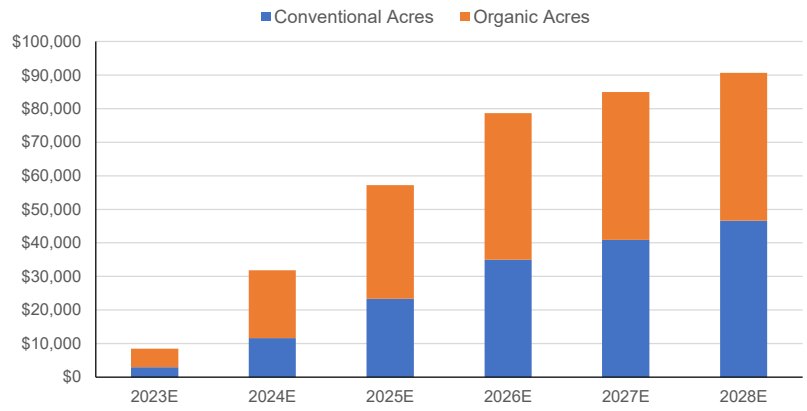
Source: MGRO and RCC Estimates

Figure 14: U.S. Sales Estimates of TerraMG

TerraMG U.S. Sales Estimates	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Conventional Acres (US$, '000)	$0	$2,917	$11,669	$23,338	$35,008	$40,842	$46,677
Organic Acres (US$, '000)	$0	$5,501	$20,171	$33,888	$43,630	$44,067	$44,067
Total U.S. Sales (US$, '000)	**$0**	**$8,419**	**$31,840**	**$57,226**	**$78,638**	**$84,909**	**$90,744**
% of Growth	*NM*	*NM*	*278%*	*80%*	*37%*	*8%*	*7%*

Source: RCC Estimates

Figure 15: U.S. Sales Chart of TerraMG



Source: RCC Estimates

Assumptions of MGRO's Financials (C$)

We expect MGRO's development partnership with Sumitomo to be expanded to include a commercial/distribution agreement after TerraMG is officially approved by the EPA. We assume MGRO would receive an upfront payment of C$6M in 2023 and be eligible for 50% of TerraMG's gross profits (assuming a 70% gross margin). We have amortized the upfront across a period of 15 years. Investors should note that to be conservative, in our model we are only assuming U.S. sales of TerraMG as a preplant soil biofumigant for applications currently under the EPA review at this time. We are not assuming any revenues from the sale of TerraMG in ex-U.S. jurisdictions. We are not modeling sales of MGRO's bioherbicide or postharvest food preservation products either. See Figures 16 & 17 below for our *pro forma* estimates of MGRO's operating expenses and earnings.

Figure 16: MGRO' *Pro Forma* Income Statement

Income Statement (C$, '000) FYE on Dec. 31	2019A	2020A	Q1/21A	Q2/21A	Q3/21A	Q4/21E	2021E	Q1/22E	Q2/22E	Q3/22E	Q4/22E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Total net revenues	**$0**	**$0**	**$0**	**$0**	**$13**	**$0**	**$13**	**$0**	**$0**	**$0**	**$0**	**$0**	**$4,083**	**$14,330**	**$25,436**	**$34,804**	**$37,548**	**$40,100**
COGS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Gross profit	$0	$0	$0	$0	$13	$0	$13	$0	$0	$0	$0	$0	$4,083	$14,330	$25,436	$34,804	$37,548	$40,100
Operating expenses																		
R&D	$83	$149	$97	$125	$57	$140	$419	$100	$130	$120	$150	$500	$600	$630	$660	$690	$720	$750
SG&A	$1,389	$3,220	$503	$522	$638	$530	$2,193	$500	$520	$510	$530	$2,060	$2,200	$2,300	$2,350	$2,400	$2,450	$2,500
Others	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Opex	$1,472	$3,369	$600	$646	$695	$670	$2,612	$600	$650	$630	$680	$2,560	$2,800	$2,930	$3,010	$3,090	$3,170	$3,250
EBIT	($1,472)	($3,369)	($600)	($646)	($683)	($670)	($2,599)	($600)	($650)	($630)	($680)	($2,560)	$1,283	$11,400	$22,426	$31,714	$34,378	$36,850
Finance income (cost)	($46)	($46)	($12)	($14)	($14)	($15)	($54)	($15)	($15)	($15)	($15)	($60)	($60)	($60)	($60)	($60)	($60)	($60)
Others	$0	$105	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
EBT	($1,518)	($3,310)	($612)	($660)	($696)	($685)	($2,653)	($615)	($665)	($645)	($695)	($2,620)	$1,223	$11,340	$22,366	$31,654	$34,318	$36,790
Income tax (recovery)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,602	$8,388	$9,094	$9,749
Net income (loss)	**($1,518)**	**($3,310)**	**($612)**	**($660)**	**($696)**	**($685)**	**($2,653)**	**($615)**	**($665)**	**($645)**	**($695)**	**($2,620)**	**$1,223**	**$11,340**	**$17,764**	**$23,266**	**$25,223**	**$27,041**
EPS - Basic	**($0.06)**	**($0.09)**	**($0.01)**	**($0.02)**	**($0.02)**	**($0.01)**	**($0.06)**	**($0.01)**	**($0.01)**	**($0.01)**	**($0.01)**	**($0.05)**	**$0.03**	**$0.24**	**$0.37**	**$0.49**	**$0.53**	**$0.57**
EPS - Fully diluted	**($0.06)**	**($0.09)**	**($0.01)**	**($0.02)**	**($0.02)**	**($0.01)**	**($0.06)**	**($0.01)**	**($0.01)**	**($0.01)**	**($0.01)**	**($0.05)**	**$0.03**	**$0.24**	**$0.37**	**$0.42**	**$0.46**	**$0.49**
Common shares O/S ('000)																		
Basic	25,293	37,311	42,054	42,777	42,792	46,214	43,459	47,784	47,784	47,784	47,784	47,784	47,784	47,784	47,784	47,784	47,784	47,784
Fully diluted					50,576	54,666	52,621	54,750	54,750	54,750	54,750	54,750	54,750	54,750	54,750	54,750	54,750	54,750

YoY Analysis	2019A	2020A	Q1/21A	Q2/21A	Q3/21A	Q4/21E	2021E	Q1/22E	Q2/22E	Q3/22E	Q4/22E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Total net revenues	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	251%	78%	37%	8%	7%
R&D	513%	80%	NMF	NMF	NMF	NMF	181%	NMF	NMF	NMF	NMF	19%	20%	5%	5%	5%	4%	4%
SG&A	-25%	132%	NMF	NMF	NMF	NMF	-32%	NMF	NMF	NMF	NMF	-6%	7%	5%	2%	2%	2%	2%
Net income	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	NMF	8%	7%

Source: Company Filings & RCC Estimates

Figure 17: MGRO' *Pro Forma* Cash Flow Statement & Select Balance Sheet Items

Cash Flow Statement (C$, '000) FYE on Dec. 31	2019A	2020A	Q1/21A	Q2/21A	Q3/21A	Q4/21E	2021E	Q1/22E	Q2/22E	Q3/22E	Q4/22E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Operating activities																		
Net income (loss)	($1,518)	($3,310)	($612)	($660)	($696)	($685)	($2,653)	($615)	($665)	($645)	($695)	($2,620)	$1,223	$11,340	$17,764	$23,266	$25,223	$27,041
Finance cost	$46	$46	$12	$14	$14	$15	$54	$15	$15	$15	$15	$60	$60	$60	$60	$60	$60	$60
Share-based compensation	$125	$777	$60	$42	$112	$100	$314	$100	$100	$100	$100	$400	$420	$441	$463	$486	$511	$536
Deferred licensing revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,600	($400)	($400)	($400)	($400)	($400)
Others	$0	($105)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Changes in non-cash WC	($5)	$14	($35)	$1	$77	($10)	$32	($15)	($15)	($15)	($15)	($60)	($150)	($158)	($165)	($174)	($182)	($191)
CF from operating activities	($1,353)	($2,579)	($575)	($604)	($494)	($580)	($2,253)	($515)	($565)	($545)	($595)	($2,220)	$7,153	$11,284	$17,722	$23,238	$25,212	$27,045
Investing activities																		
PP&E	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Others	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CF from investing activities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Financing activities																		
Equity issurance	$4,805	$0	$0	$0	$0	$7,100	$7,100	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Proceeds of debt issurance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
(Repayment) of debt	$0	$0	$0	$0	$0	$0	$0	($377)	($359)	$0	$0	($736)	$0	$0	$0	$0	$0	$0
Issurance cost	$0	$0	$0	$0	$0	($329)	($329)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Exercise of options and warrants	$69	$1,827	$1,036	$17	$374	$0	$1,427	$6,000	$0	$0	$0	$6,000	$0	$0	$0	$0	$0	$0
Others	$0	$36	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CF from financing activities	$4,874	$1,863	$1,036	$17	$374	$6,771	$8,198	$5,623	($359)	$0	$0	$5,264	$0	$0	$0	$0	$0	$0
Net cash flow	**$3,521**	**($716)**	**$461**	**($587)**	**($119)**	**$6,191**	**$5,946**	**$5,108**	**($924)**	**($545)**	**($595)**	**$3,044**	**$7,153**	**$11,284**	**$17,722**	**$23,238**	**$25,212**	**$27,045**
Cash flow per share	$0.14	($0.02)	$0.01	($0.01)	($0.00)	$0.13	$0.14	$0.11	($0.02)	($0.01)	($0.01)	$0.06	$0.15	$0.24	$0.37	$0.49	$0.53	$0.57

Select Balance Sheet Items	2019A	2020A	Q1/21A	Q2/21A	Q3/21A	Q4/21E	2021E	Q1/22E	Q2/22E	Q3/22E	Q4/22E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Cash and cash equivalents (C$, '000)	$4,029	$3,313	$3,774	$3,187	$3,067	$9,258	$9,258	$14,366	$13,443	$12,898	$12,303	$12,303	$19,456	$30,740	$48,462	$71,700	$96,912	$123,957
Total debt (C$, '000)	$962	$697	$709	$722	$736	$736	$736	$359	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total equity (C$, '000)	$3,031	$2,325	$2,809	$2,208	$1,998	$8,413	$8,413	$13,798	$13,133	$12,488	$11,793	$11,793	$13,017	$24,357	$42,121	$65,387	$90,610	$117,651
Debt/Equity (D/E) ratio	0.3	0.3	0.3	0.3	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Book value per share (C$)	$0.12	$0.06	$0.07	$0.05	$0.05	$0.18	$0.19	$0.29	$0.27	$0.26	$0.25	$0.25	$0.27	$0.51	$0.88	$1.37	$1.90	$2.46
ROE	-50%	-142%	NMF	NMF	NMF	NMF	-32%	NMF	NMF	NMF	NMF	-22%	9%	47%	42%	36%	28%	23%

Source: Company Filings & RCC Estimates

VALUATION

Our 12-month target price of $5.60 is based on an NPV analysis of: (i) TerraMG as a preplant soil biofumigant for applications currently under the EPA review, including fruits & vegetables, turf & ornamentals, tobacco and potatoes; and (ii) a potential commercial agreement with Sumitomo, which has been assumed in 2023. Key assumptions of the NPV analysis include:

- Inflows – a $6M upfront payment from Sumitomo in 2023, U.S. sales of TerraMG as a biopesticide for preplant soil fumigation from 2023 to 2028, as well as, a terminal value that has been calculated based on TerraMG sales in 2028, an assumed discount rate of 15% and an assumed growth rate of 5%;
- Outflows – R&D expense in 2022 and zero costs from 2023 and beyond due to an assumed commercial agreement with Sumitomo; and
- A discount rate of 15% - since the 1st generation product (MustGro Invest) has been EPA approved, we believe the 2nd generation (TerraMG) should have a relatively low development risk.

Investors should note that our current valuation of MGRO does not take a few factors into consideration, including a potential expansion of the Bayer partnership into a major commercial agreement, TerraMG's potential sales as a preplant soil biofumigant for applications that are still in development (see Figure 4), TerraMG's potential sales in ex-U.S. regions, potential sales of MGRO's bioherbicide, as well as, potential sales of bio-AITC in development for postharvest food preservation. We believe those factors represent significant upside potential for MGRO's valuation down the road.

Figure 18: An NPV Analysis of TerraMG as a Preplant Soil Biofumigant for Applications Currently under the EPA Review

	2022	2023	2024	2025	2026	2027	2028	TV
Inflow	$0	$9,683	$13,930	$25,036	$34,404	$37,148	$39,700	
Outflow	$500	$0	$0	$0	$0	$0	$0	
Net flow	($500)	$9,683	$13,930	$25,036	$34,404	$37,148	$39,700	$416,853
Factor	0	1	2	3	4	5	6	6
Discount rate	15%	15%	15%	15%	15%	15%	15%	15%
PV	($500)	$8,420	$10,533	$16,462	$19,671	$18,469	$17,164	$180,217
NPV	$270,435							

Source: RCC Estimates

Figure 19: Ag Biotech Comps

Company	Ticker	Market Cap (US$M)	Cash (US$M)	Tech Value (US$M)	Rev (US$M)
Novozymes A/S	CPSE:NZYM B	$19,075.0	$134.5	$18,940.5	$2,269.1
Genus	LSE:GNS	$3,173.7	$63.5	$3,110.2	$793.2
Kws Saat Se	XTRA:KWS	$2,493.5	$289.1	$2,204.4	$1,561.1
Vilmorin & Cie SA	ENXTPA:RIN	$1,292.1	$332.6	$959.5	$1,750.8
Green Plains	NASDAQ:GPRE	$1,710.2	$589.8	$1,120.4	$2,503.6
Kaveri Seed Company	BSE:532899	$426.0	$53.1	$373.0	$129.4
MustGrow	CNSX:MGRO	$138.0	$2.4	$135.6	$0.0
Maronne Bio Innovations	NASDAQ:MBII	$116.3	$15.0	$101.3	$41.2
S&W Seed	NasdaqCM:SANW	$91.0	$1.9	$89.1	$85.7
Calyxt	NasdaqGM:CLXT	$69.3	$13.9	$55.4	$38.0
AgroFresh	NASDAQ:AGFS	$105.7	$43.3	$62.4	$162.0
Evogene	TASE:EVGN	$51.0	$61.6	($10.6)	$1.0
ArborGen	NZSE:ARB	$80.3	$3.9	$76.4	$54.4
Origin Agritech	NasdaqCM:SEED	$29.4	$4.2	$25.2	$3.1
Plant Health Care	AIM:PHC	$37.6	$11.1	$26.5	$7.0
Arcadia Biosciences	NasdaqCM:RKDA	$19.1	$35.5	($16.4)	$11.7
Yield10 Bioscience	NasdaqCM:YTEN	$17.0	$18.5	($1.5)	$0.7
Bee Vectoring Technologies	CNSX:BEE	$25.4	$2.7	$22.7	$0.3

Source: RCC & Capital IQ (As of Jan. 24th, 2022)

WHAT ARE BIOPESTICIDES?

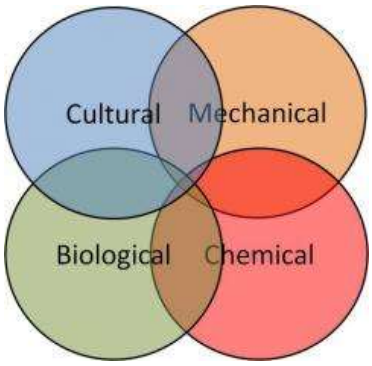
Biopesticides are naturally occurring substances that have pesticidal applications. They are normally derived from natural materials, such as animals, plants, bacteria, and certain minerals. Biopesticides are in demand for their value in integrated pest management (IPM) programs to enhance yields and quality along with their low impact on environment. Their use is rapidly growing worldwide in production of organic crops and high-value specialty crops, such as fruit, nut, vegetable, vine, ornamentals and turf. Compared to chemically synthetic pesticides, biopesticides offer additional benefits, add flexibility and reduce labor costs in that they:

- have complex and novel modes of action for resistance management, leading to an extension of the product life of conventional chemical pesticides;
- can reduce pre-harvest intervals to manage residues for exported produce; and
- can shorten field re-entry times for workers.

The EPA currently recognizes three major classes of biopesticides: microbial pesticides, biochemical pesticides and plant-incorporated-protectants (PIPs). Microbial pesticides consist of microorganisms (e.g. bacteria, fungi, viruses or protozoa) as the active ingredient used to control pests. The microorganism may occur naturally, be dead or alive, or be genetically engineered. Biochemical pesticides are naturally occurring substances (such as plant extracts, fatty acids or pheromones) that control pests using a nontoxic mode of action to pests. Conventional chemical pesticides are generally synthetic materials that directly kill or inactivate pests mainly by attacking their nervous system. By contrast, biochemical pesticides act by suffocating insects, causing starvation, disrupting pests' mating, or attracting insects to traps. PIPs are pesticidal substances that plants produce from genetic material that has been added to the plant's genome.

In terms of regulation of any pesticides in the U.S., before a pesticide can be marketed and sold, the EPA would evaluate it to assure that its use would not pose unreasonable risks of harm to human health and environment. This regulation involves an extensive review of health and safety data. The EPA normally requires more than 140 different studies on a chemical's toxicology, crop residues and environmental effects. The agency also sets tolerances (maximum pesticide residue levels) for the amount of the pesticide that can legally remain in or on foods. Typically, the FDA often requires less data to register (i.e. approve) biopesticides than chemical pesticides and exempts biopesticides from tolerance studies since they pose fewer risks and are biodegradable. Accordingly, new biopesticides are normally registered in less than 3 years, which is how long it takes the EPA to register chemically synthetic pesticides on average. The time for biopesticide approval is approx. 12 months for non-food crops (such as ornamentals and turf) and approx. 18 months for food crops.

Figure 20: Integrated Pest Management – A Combination of Cultural, Mechanical, Biological and Chemical Tools to Prevent, Manage and Control Pests



Source: https://www.princeedwardisland.ca/

Figure 21: Biologicals Are in Increasing Demand in Agriculture

Source: Marrone Bio's Investor Presentation

Figure 22: Growth Drivers of the Biologicals Market in Agriculture

Source: Marrone Bio's Investor Presentation

FUMIGATION MARKET OVERVIEW

The size of the global ag fumigants market has been estimated at US$2.2BN in 2021 growing to US$2.7BN by 2026, at a CAGR of 4.2% driven by innovative crop protection techniques and post-harvest practices (*source: MarketsandMarkets*). Soil fumigants fall under restricted use category of pesticides and this directly implies that all products can only be used by authorized applicators across the globe. The global pest management and ag biotech markets are competitive and are dominated by multinational chemical and life sciences giants. Other smaller players include biological pesticide and biofumigant manufacturers.

Figure 23: MGRO's Projected Size of Global and U.S. Fumigation Markets

Source: MGRO's Corporate Website

Figure 24: Select Key Companies in the Pest Management and Biofumigant Markets

	Pest Management Market	Biopesticide Market	Biofumigant Market
Alexander Harley Seeds (owned by Senova)			●
American Vanguard (NYSE:AVD)	●		
BASF (XTRA:BAS)	●	●	●
Bayer CropScience (BSE:506285)	●		
Certis USA [owned by Mitsui & Co (TSE:8031)]		●	
Corteva Agriscience (NYSE:CTVA)	●	●	
Eastman Chemical (NYSE:EMN)	●		
FMC Corporation (NYSE:FMC)	●		
Isagro USA (owned by Gowan Group)			●
Marrone Bio Innovations (NASDAQ:MBII)		●	●
Mighty Mustard (Private)			●
Novozymes (CPSE:NZYM B)		●	
NuFarm Ltd (ASX:NUF)	●		
P. H. Petersen (Private)			●
Sumitomo Corporation (TSE:8053)	●	●	
Syngenta (Private)	●		
Tozer Seeds (Private)			●
UPL (NSE:UPL)	●		●
Valent Biosciences [owned by Sumitomo Chemical (TSE:4005)]		●	

Source: RCC

Commonly used chemically synthetic fumigants include: phosphine (the fastest growing fumigant), chloropicrin, metam sodium (contributing 45% of U.S. fumigant sales according to MGRO's 3rd party ag researchers), 1,3-dicloropropene, dimethyl disulfide, methyl bromide and metam potassium. Historical and forecasted sales distribution of those compounds is illustrated in figures below.

Figure 25: Distribution of the Global Fumigation Market by Product in 2017

Source: Grand View Research

Figure 26: Distribution of the U.S. Fumigation Market by Product from 2014 to 2025

Source: Grand View Research

Biofumigants normally include two classes – cover crops and seed meal (mustard, cauliflower, broccoli, etc.). Besides MGRO's TerraMG, there are two other bio-AITC products – Isagro USA's Dominus and MGRO's MustGro Invest. Both products have been EPA registered as a pre-plant soil fumigant for high value crops such as fruit and vegetables. Dominus is a synthetic, liquid form of 96.3% AITC but classified by the EPA as a biofumigant due to it being a close mimic of naturally occurring AITC. It is the first biofumigant approved by the EPA created for use in conventional and organic production. MustGro Invest is MGRO's 1st generation bio-AITC product in a granular formulation. The active ingredient of this product is 98.5% AITC oriental mustard seed meal (de-hulled and de-oiled). AITC is only formed after water is added to MustGro Invest – similar to how TerraMG is used. Compared to MustGro Invest, TerraMG has a higher application rate, which have been proven in field trials. See Figure 8 for the 3 different formals of bio-AITC.

Figure 27: Competitive Landscape of Biofumigants

Company	Product	Active Ingredient	Status
MustGrow	MustGro Invest	AITC (biological)	Marketed
MustGrow	TerraMG	AITC (biological)	EPA Registration Process
Gowan Group (Isagro USA)	Dominus	AITC (chemically synthetic, classified as biofumigant)	Marketed
Marrone Bio Innovations	Ennoble	Muscodor albus strain SA 13 (endophytic fungus)	EPA Approved
Alexander Harley Seeds (Senova)	Bento Oil Radish	Cover crop (oilseed radish)	Marketed
P.H. Petersen	viterra	Cover crop (cruciferous plants)	Marketed
Might Mustard	Mustard plant varieties	Cover crop (mustard plants)	Marketed
Tozer Seeds	Caliente Mustard Rojo	Cover crop (mustard plants)	Marketed

Source: RCC

MGRO'S INTELLECTUAL PROPERTY

MGRO's IP portfolio consists of 59 issued or allowed patents, 11 pending applications, trade secrets and know-how. Those issued patents and patent applications cover extraction, formulations and use of mustard seed-derived natural compounds. The figure below summarizes claims in patents and patent applications along with their commercial application areas and expected life.

Figure 28: Summary of MGRO's Issued Patents and Patent Applications

Source: MGRO's AIF

MGRO LEADERSHIP – A LEAN TEAM WITH EXTENSIVE EXPERIENCE IN AGTECH & CAPITAL MARKETS

CEO Corey Giasson has 25 years of experience in the ag and business sector. He was the former Co-founder and CEO of Rallyemont Energy which was sold to Husky Energy. COO Colin Bletsky has 30 years of experience in the ag industry, which he gained from serving as senior roles at Novozymes (responsible for its global BioAg business) and Syngenta. CFO Todd Lahti has closed over 50 M&A, financing and licensing transactions totalling over US$2.4BN to date in the biotech, ag and oil/gas sectors. Chairman Brad Munro is the President and CEO of Bittercreek Capital which has been involved in transactions with over 30 companies and has invested $150M. Insiders own approx. 18% of MGRO.

Management Team

- **Corey Giasson – CEO/President/Director:** Mr. Giasson is an entrepreneur with over 25 years of experience in the ag, potash, oil and gas, mining, and real estate industries. In 2009, he co-founded a Saskatchewan based heavy oil company, Rallyemont Energy, where he served as the President and CEO. Rallyemont was later sold to Husky Energy in December 2013. Prior to Rallyemont, Mr. Giasson was the Vice President, Business Development and Investor Relations of Anglo Potash, which was sold to BHP Billiton in 2008. Mr. Giasson has an MBA and B.Sc. in Agriculture Economics, both from the University of Saskatchewan.
- **Colin Bletsky – COO/Director:** Mr. Bletsky has over 30 years of experience in the ag business. Prior to MGRO, he was the Vice President of Novozymes (a global leading company in biological solutions) (NZYM B-CPSE) where he was responsible for managing the company's global BioAg business. Mr. Bletsky gained his ag experience through his time in the retail and seed industry with several companies, including Pioneer, in the late 90s. He then spent approx. 10 years at Syngenta with increasing responsibilities in sales and marketing, nationally and internationally, in the crop protection industry. Mr. Bletsky holds a Bachelor of Science in Agriculture from the University of Saskatchewan.
- **Todd Lahti – CFO:** Mr. Lahti has extensive experience in evaluating and managing start-up companies in the biotech, ag, and oil and gas sectors, working directly on financing transactions, M&As, corporate strategy, BD, technology transfer and operations set up. Prior to MGRO, he was the Treasurer of PartnerRe Ltd. (one of the largest reinsurance companies in the world) (PRE-J-NYSE) where he participated in large international M&As and financing initiatives. To date, Mr. Lahti has closed over 50 M&As, financing and licensing transactions totalling over US$2.4BN.

Board of Directors

- **Brad Munro – Chairman:** Mr. Munro is well experienced in corporate finance and investment in the oil and gas and other industries. He is the President and CEO of Bittercreek Capital Corporation (a private investment and advisory firm) through which he was a contractor to GrowthWorks Capital WV Ltd. in the role of Vice President, Investments from May 2006 to August 2009. To date, Mr. Munro has been involved in transactions with over 30 companies and has invested $150M. He holds a Bachelor of Commerce degree from the University of Saskatchewan
- **Brian Quigley – Director:** Mr. Quigley brings over 20 years of experience in brand building, marketing, operations, leadership and general management. He spent 16 years at Altria Group (MO-NYSE), with 7 years as the President & CEO for U.S. Smokeless Tobacco and Nu-Mark (Altria's innovation company). Prior to Altria, Mr. Quigley held branding and leadership roles with several companies, including Pinnacle Foods Corporation and International Home Foods. He has launched dozens of new products, created consumer focused innovation strategies and built businesses and cultures that delivered results. Mr. Quigley co-founded Green Sky Strategy – a consulting company in the cannabis industry.
- **David Borecky – Director:** Mr. Borecky is currently the interim CFO at Impossible Foods Inc. He was previously the Controller of Stripe Inc. (a fintech infrastructure solution vendor). From 2014 to 2016, Mr. Borecky held senior positions at Square Inc. (a mobile payments and point of sale solution provider) (SQ-NYSE). Prior to Square, he held executive roles in treasury and finance at OpenText Corp. (OTEX-TSX/NASDAQ), a global leader in enterprise information management and Canada's largest public software company. Mr. Borecky holds an honors degree in business from Wilfrid Laurier University and a Master's degree from Schulich School of Business at York University.
- **Matt Kowalski – Director:** Mr. Kowalski is well experienced in the fruit and vegetable and biologics industries. He was the President of Natural Industries (a family founded business focused on biological pest control) from 2002-2012. Under his

leadership, the company was awarded five EPA registrations (three biofungicides, a bionematicide and a bioinsecticide). In November 2012, Mr. Kowalski led the strategic sale of Natural Industries to Novozymes BioAg. He later joined Novozymes and became part of the global BD team taking his place as the biocontrol manager for Novozymes.

- **Tom Flow – Director:** Mr. Flow is a widely-recognised leader in the cannabis industry. He is the Founder and interim COO of The Flowr Corporation (FLWR-TSXV). Prior to Flowr, Mr. Flow was the Co-founder and COO of MedReleaf, which was sold to Aurora Cannabis (ACB-TSX) for $3.2BN.

RISKS

MGRO and our estimates for the company are subject to a number of risks, including but not limited to:

- **Field Trial, Development Risk:** MGRO and its collaborators are conducting multiple field trials with TerraMG (MGRO's lead candidate) on various crops. Successful completion of those field trials is critical to not only regulatory applications in global markets but also future marketing efforts. Failure and/or negative outcomes (e.g. inconsistent results and unanticipated adverse side effects on crops or on non-target organisms) may delay regulatory approval of TerraMG and make the company unable to commercialize the product.

- **Weather Risk:** MGRO's ongoing and future field trials are subject to weather-related events, such as drought or floods, severe heat or frost, hail, tornadoes and hurricanes, and pest infestation. Occurrence of those natural events may significantly delay the process of MGRO's field trials, which could in turn impact the company's operations and future commercialization of its products.

- **Regulatory Risk:** Biofumigants, biopesticides and bioherbicides are highly regulated products around the world. Our current financial estimates of MGRO assume regulatory approval of TerraMG in the U.S. Delays or failing to obtain regulatory approval would have a material and negative impact on our financial estimates. Investors should note TerraMG is MGRO's 2nd generation bio-AITC product. The 1st generation (MustGro Invest) has been approved by the EPA in the U.S. – therefore, we believe TerraMG should have a relatively low regulatory risk. We are currently assuming the product would be EPA approved in the U.S. in 2023.

- **Environment Safety Risk:** It can not completely rule out the possibility that MGRO's natural compounds could potentially have some effects on beneficial microorganisms in the soil and/or on the surrounding environment in the long-term run. Potential environment safety issues identified during field trials and/or commercialization with MGRO's products could negatively impact the company's operations and financials.

- **The Sumitomo and Bayer Partnerships:** MGRO has forged major exclusive development partnerships with Sumitomo and Bayer to evaluate MGRO's preplant soil fumigation (incl. TerraMG), bioherbicide, postharvest and food preservation for certain fields and applications around the world. The 2 partnerships currently do not include commercialization agreements that stipulates how TerraMG would be marketed and sold after it receives regulatory approvals. Our current financial estimates of TerraMG and MGRO are based on assumptions that the Sumitomo partnership would be expanded to include a commercial/distribution agreement once TerraMG is approved by the EPA in the U.S. Failure to do so and/or an agreement under unfavorable terms would highly impact our estimates of MGRO.

- **Business Development Risk:** MGRO intends to rely on potential collaborations with other ag companies (strategic partners) to develop and commercialize its products for markets not covered by the Sumitomo partnership. There is no guarantee that MGRO would be able to forge such collaborations under favorable terms in the future.

- **Business Seasonality:** The ag business is normally subject to seasonality. MGRO is a development-stage ag biotech company. Its business is currently not cyclical as field trials, greenhouse studies and in-lab tests can be conducted year-round. Field testing is one area that would be cyclical in nature due to limitations of weather cycles. However, activities in both Northern and Southern hemispheres should allow flexibility in trials.

- **Patent Protection and Infringement:** The ag biotech industry is heavily reliant on patented products which bring about certain risks. The extent to which discoveries and related products and processes can be effectively protected by patents and be enforceable is uncertain and subject to interpretation of the courts. Patents of MGRO' products may be subject to claims of invalidity or claims of infringement by other manufacturers, which could materially affect the company's business.

- **Litigation Risk:** As an ag biotech development entity, MGRO may become, in the ordinary course of business, a party to litigation, for a myriad of potential reasons.

- **Competitive Risk:** MGRO competes with other organizations that develop and produce biofumigants, bioherbicides and/or postharvest food preservatives. Those entities include ag companies (incl. ag biotech), universities, research institutions, and governmental agencies. Additionally, the pest management and fumigation markets are dominated by global ag giants. Incumbent and new competitors in the market where MGRO intends to sell TerraMG (once it is approved) may adversely affect the company's revenues and earnings.

- **Supply Chain Risk:** MGRO extracts active ingredients of TerraMG from mustard seed. The company does not grow the mustard plant itself; instead, the company sources the plant from growers in Alberta and other countries. Insufficiency of supplies may affect production of MGRO's products and the company's ability to conduct studies.

- **Financing Risk and Equity Dilution Risk:** Management estimates MGRO currently should have a cash runway of approx. 4 years based on its existing development plan. Depending on its financials and potential development activity expansions, the company may be required, from time to time, to raise additional funds. The inability to raise capital on a timely basis, or under appropriate terms, could have a material adverse impact on the operations of the company. Potential financings via equity and/or debt would likely cause equity dilution to existing shareholders.

- **History of Operating Losses:** MGRO is a development-stage ag biotech company and it has not established profitability. Unless the company is able to generate sufficient revenues, it would continue to incur losses from operations going forward.

- **Fx Risk:** MGRO reports financials in the CAD while its candidates would potentially be sold in jurisdictions with foreign currencies (U.S. dollars, Euro, etc.). Fluctuations in foreign exchange rates could materially impact operating margins and the results of operations.

- **Share Price Volatility:** MGRO can experience large share price moves, particularly if field trials fail, products fail, regulatory issues occur and/or litigation happens, etc.

- **Ownership Concentration:** If certain shareholders act together, they may be able to exert a significant degree of influence over MGRO's management and affairs and over matters requiring shareholder approval, including the election of directors and approval of significant corporate transactions. The concentration of ownership may facilitate or delay or prevent a change in control of MGRO and might affect the market price of shares.

RELEVANT DISCLOSURES APPLICABLE TO COMPANIES UNDER COVERAGE

1. Relevant disclosures required under IIROC Rule 3400 applicable to companies under coverage discussed in this research report are available on our web site at www.researchcapital.ca

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I, Yue Ma, certify the views expressed in this report were formed by my review of relevant company data and industry investigation, and accurately reflect my opinion about the investment merits of the securities mentioned in the report. I also certify that my compensation is not related to specific recommendations or views expressed in this report.

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