



# VERMISTERRA PRODUCT TRIAL

FENNELL FARMS

ORGANIC SUBSTRATE BLUEBERRY PRODUCTION



# INTRODUCTION TO ORGANIC SUBSTRATE SYSTEMS

AN ORGANIC SUBSTRATE SYSTEM IS ENTIRELY DIFFERENT TO A CONVENTIONAL SUBSTRATE SYSTEM SIMPLY DUE TO THE FACT THAT ANY FERTILIZER WE PROVIDE MUST GO THROUGH A PROCESS IN ORDER FOR PLANTS TO UPTAKE THE NUTRIENTS. SO WHAT WE TRY TO DO IS CREATE AN ENVIRONMENT WHERE MICROBES, FUNGI, AND A GREAT MANY OTHER LIVING ORGANISMS CAN THRIVE AND “PROCESS” THE FERTILIZER AND ORGANIC MATTER. THIS IN TURN CREATES THE OPTIMUM CONDITIONS FOR A PLANT TO GROW IN.



# BACKGROUND

WE TRANSPLANTED 12 VARIETIES INTO 10 LITER POTS ON NOVEMBER 30, 2015. THE GOAL IS TO SEEK OUT VARIETIES THAT WILL DO BEST IN THE MICROCLIMATE HERE IN AROMAS, CA. 3 OF THE 12 VARIETIES WERE PLUGS AND HAVE BEEN THE MOST ADAPTABLE TO THE TRANSITION. 2 OF THE 12 VARIETIES ARE NORTHERN Highbush, WHICH REQUIRES A LITTLE MORE CHILL. AND ALL THE LITER POT TRANSPLANTS BEGAN AT A SHEAR HEIGHT OF 18"-30". IF WE CAN FIND A WAY TO CUT DOWN ON OUR FERTILIZER USAGE AND PROVIDE A HEALTHY ENVIRONMENT WHERE LIFE CAN THRIVE IN A CONTAINER WE ARE WILLING TO TRY JUST ABOUT ANYTHING TO ACHIEVE THAT OBJECTIVE. WE ARE WHOLE HEARTEDLY DEDICATED TO ORGANIC PHILOSOPHIES AND BELIEVE THAT BEING ORGANIC DOES NOT NECESSARILY MEAN YOU HAVE TO GROW IN THE GROUND.





PRIOR TO THE APPLICATION OF THE WORM CASTING TEA





## PRIOR TO APPLICATION OF THE WORM CASTING TEA

NOTE THE YELLOW TIPS THAT ARE A SIGN OF HIGH NITRATE ( $\text{NO}_3$ ), THE BLUEBERRY PLANT DEPENDS ON AMMONIUM NITRATE ( $\text{NH}_4$ ) AS THE MAIN NITROGEN SOURCE. ORGANIC FERTILIZER DOES NOT COME WITH A BALANCED NITROGEN SOURCE ONLY WATER SOLUBLE SO AFTER A PERIOD OF TIME THE NITROGEN SOURCES BEGIN TO GET BROKEN DOWN BY MICROBIAL AND FUNGAL LIFE WITHIN THE MEDIA. BUT THESE LIVING ORGANISMS DO NOT KNOW TO STOP AFTER THEY PRODUCE  $\text{NH}_4$  AND CONTINUE ON THE NITROGEN CYCLE.



# PLUG TRANSPLANTS

CAMELLIA

THIS IS PRIOR TO THE FIRST APPLICATION  
OF THE WORM CASTING TEA.



HEALTHY ROOT GROWTH IS VISIBLE BUT  
MYCORRHIZAE ARE NOT PREDOMINANT.





# LITER POT TRANSPLANTS

## SAN JOAQUIN

THIS IS PRIOR TO THE FIRST APPLICATION  
OF THE WORM CASTING TEA.



HEALTHY ROOT GROWTH IS VISIBLE AND  
LITTLE MYCORRHIZAE BLOOMS CAN BE SEEN.



# LITER POT TRANSPLANTS

## SNOWCHASER

THIS IS PRIOR TO THE FIRST APPLICATION  
OF THE WORM CASTING TEA.



HEALTHY ROOT GROWTH IS VISIBLE AS  
WELL AS NOTABLE MYCORRHIZAE BLOOMS.





# LITER POT TRANSPLANTS

## SPRINGHIGH



PRIOR TO THE FIRST APPLICATION  
OF THE WORM CASTING TEA

THIS VARIETY HAS HAD THE HARDEST TIME  
ADAPTING TO THIS SYSTEM.



YOU CAN SEE THE DAMAGE FROM APHIDS  
AS WELL AS FERTILITY PROBLEMS.



ALTHOUGH THE ROOTS ARE HEALTHY AND THERE IS A  
NOTABLE AMOUNT MYCORRHIZAE, THIS VARIETY IS  
HIGHLY SENSITIVE TO SALT DAMAGE AND PH  
IMBALANCES.





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## AFTER THE LAST APPLICATION

THREE MONTHS AFTER THE FIRST APPLICATION AND ONLY DAYS AFTER THE LAST WE HAVE NOTICED A DIFFERENCE IN THE SUBSTRATE CHEMISTRY AND THE DIVERSITY IN LIFE HAS BLOOMED IMMENSELY IN THE SUBSTRATE. THE PLANTS HAVE MADE A NOTICEABLE DIFFERENCE AS WELL, INCLUDING THEIR ABILITY TO TOLERATE STRESSES AND CONTINUING THE PRODUCTION OF NEW GROWTH LONG AFTER MOVING OUT OF THEIR VEGETATIVE STATE AND INTO THEIR PRODUCTIVE STAGE.



# PLUG TRANSPLANTS

CAMELLIA

AFTER THE LAST APPLICATION TAKE NOTE THAT ROOTS NOW REACH THE BOTTOM OF THE CONTAINER AND THE SUBSTRATE NO LONGER FALLS APART.



NEW BRANCHES HAVE EMERGED FROM THE CROWN AND OLDER BRANCHES HAVE GROWN SIGNIFICANTLY.





# LITER POT TRANSPLANTS

## SAN JOAQUIN

AFTER THE LAST APPLICATION ROOT MASS HAS DEVELOPED AND MATURED.



THERE IS A MUCH FULLER CANOPY AND NEW SHOOTS HAVE EMERGED FROM THE CROWN.





# LITER POT TRANSPLANTS

SNOWCHASER

THIS IS AFTER THE LAST APPLICATION OF WORM TEA,  
NOTE THE QUALITY AND QUANTITY OF GROWTH.



ROOTS HAVE CREATED MATS AND  
ARE NOW BEING REPLACED WITH  
DEEPER ROOTS WHICH COMPLETELY  
REACH THE BASE OF THE CONTAINER.



# LITER POT TRANSPLANTS

## SPRINGHIGH



### AFTER THE LAST APPLICATION OF TEA.

ROOT MASS HAS BEGUN TO REACH THE BOTTOM  
OF THE CONTAINER AND THE DENSITY HAS  
INCREASED IN THE ROOT MASS.



NOTE HOW TENDER AND PROLIFIC THESE  
NEW ROOTS ARE.



THERE IS A MUCH FULLER HEAD AND NEW BRANCH  
DEVELOPMENT. THE LEAVES HAVE REALLY COLORED  
WELL. THIS IS ONE OF THE MORE SENSITIVE VARIETIES  
AND HAS BECOME MUCH MORE STRESS TOLERABLE.



## CLOSING STATEMENT

THIS PRODUCT WORKS WELL IN THAT IT HELPS THE ORGANIC MATTER FLOCCULATE WELL AND RETAIN THE PORE SPACES, WHICH IN TURN HAS INCREASED THE WATER HOLDING CAPACITY REDUCING THE NUMBER OF IRRIGATION PERIODS. IT ALSO HAS CREATED THE IDEAL ENVIRONMENT BIOLOGICAL, IN THAT IT IS INOCULATING THE RHIZOSPHERE WITH LOTS OF BENEFICIAL MICROBES WHICH IN TURN BALANCE OUT THE SUBSTRATE ALLOWING LARGER ORGANISMS LIKE WORMS TO THRIVE IN.









