“LIVING PLANTS” AS SOLAR COLLECTORS

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(OLD GUY)

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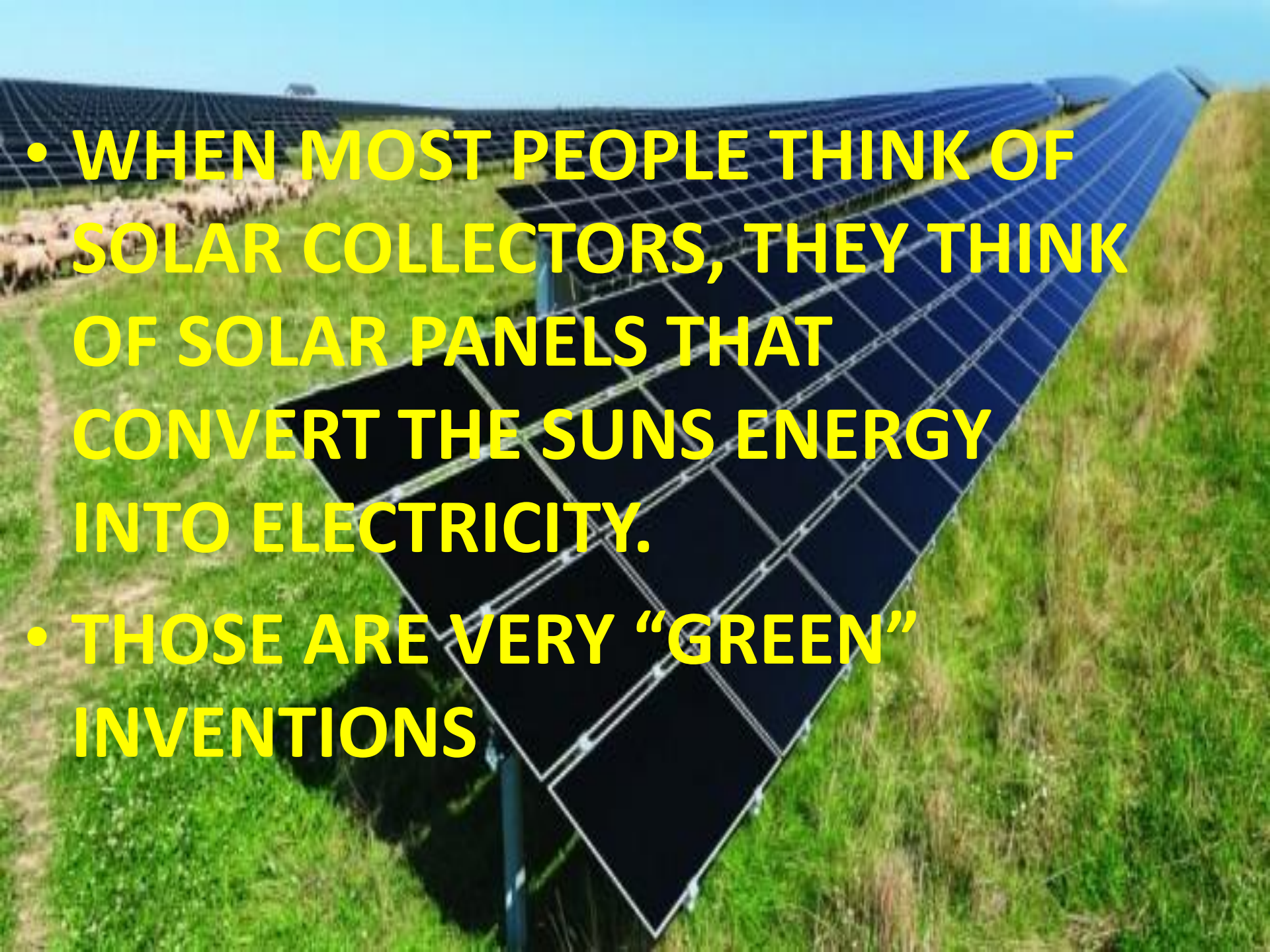
(YOUNG GUY)


WE DEAL IN SOLAR ENERGY
AS WELL AS WATER MANAGEMENT
OUR SOLAR COLLECTORS ARE
LIVING PLANTS
THE WATER IS RAINFALL,
WHICH WE ALSO MANAGE WITH
LIVING PLANTS
THE LIVING PLANTS
IMPROVE SOIL HEALTH
SOIL PRODUCTIVITY
AND REDUCE EROSION



- WHEN MOST PEOPLE THINK OF SOLAR COLLECTORS, THEY THINK OF SOLAR PANELS THAT CONVERT THE SUNS ENERGY INTO ELECTRICITY.
- THOSE ARE VERY “GREEN” INVENTIONS


HOWEVER
THE ORIGINAL SOLAR COLLECTOR
IS THE LEAF OF A GROWING PLANT

- 2015 marked our 20th year of continuous no-tillage.
- I had 2 main reasons for adopting no-till in 1995.

1. To conserve moisture.

2. To reduce erosion. I was tired of seeing our soil wash and blow away.

- IN 1995 WE HAD THREE MAIN CROPS
- WHEAT, MILO, AND A FEW SOYBEANS

- IN 2015 WE PRODUCED 8 CASH CROPS:

WHEAT, TRITICALE, BARLEY, OATS, MILO, CORN, SUNFLOWER, BUCKWHEAT


TO MENTION NUMEROUS OTHER COVER CROP S

- **THESE ARE ALL TOOLS TO HELP US HARNESS THIS FREE SOLAR ENERGY**

TOOLS: Crops

- Cash Crops
  - are used to generated cash for us to stay in business. They are also FOOD, so treat them as such.
- Cover Crops
  - A diverse bridge crop grown between the harvest of one cash crop and the planting of another.

COMPANION CROPS

COMPANION CROP

DOUBLE CROP SUNFLOWER WITH PEAS, BUCKWHEAT, ECT.

WE WOULD RATHER HARVEST SUNLIGHT THAN WASTE IT HEATING THE SOIL

HOW WE BEGAN PLANTING DC SUNFLOWER W/INNER CROP

WHITE 6531, 31/15”ROWS
STOCK EXCEPT FOR KEETON SEED FIRMERS & THOMPSON CLOSING WHEELS
NO RESIDUE MANAGERS OR COULTERS

WORKS GREAT PLANTING INTO COVER CROPS

A PLANTER IS A GREAT WAY TO CONTROL PLANTING RATES, DEPTH, ECT.

DOUBLE CROP SUNFLOWER WITH COW PEAS AND NON GMO GROUP 7 SOYBEAN BETWEEN 30 INCH SF ROWS

SAME MIX IN 15 INCH ROWS.

SUNFLOWER, COW PEA, AND NON GMO GROUP 7 SOYBEAN PLANTED TOGETHER IN 15 INCH ROWS WITH WHITE PLANTER.

A DRILL ALLOWS FOR MUCH MORE DIVERSE MIXES.

DIVERSITY DRIVES BIOLOGY

BIOLOGY DRIVES THE SOIL

A DRILL MAKES IT MUCH EASIER TO PLANT SOMETHING LIKE THIS

SEED SEPARATION WAS A CONCERN AT FIRST
BUT NOT SO MUCH ANY MORE

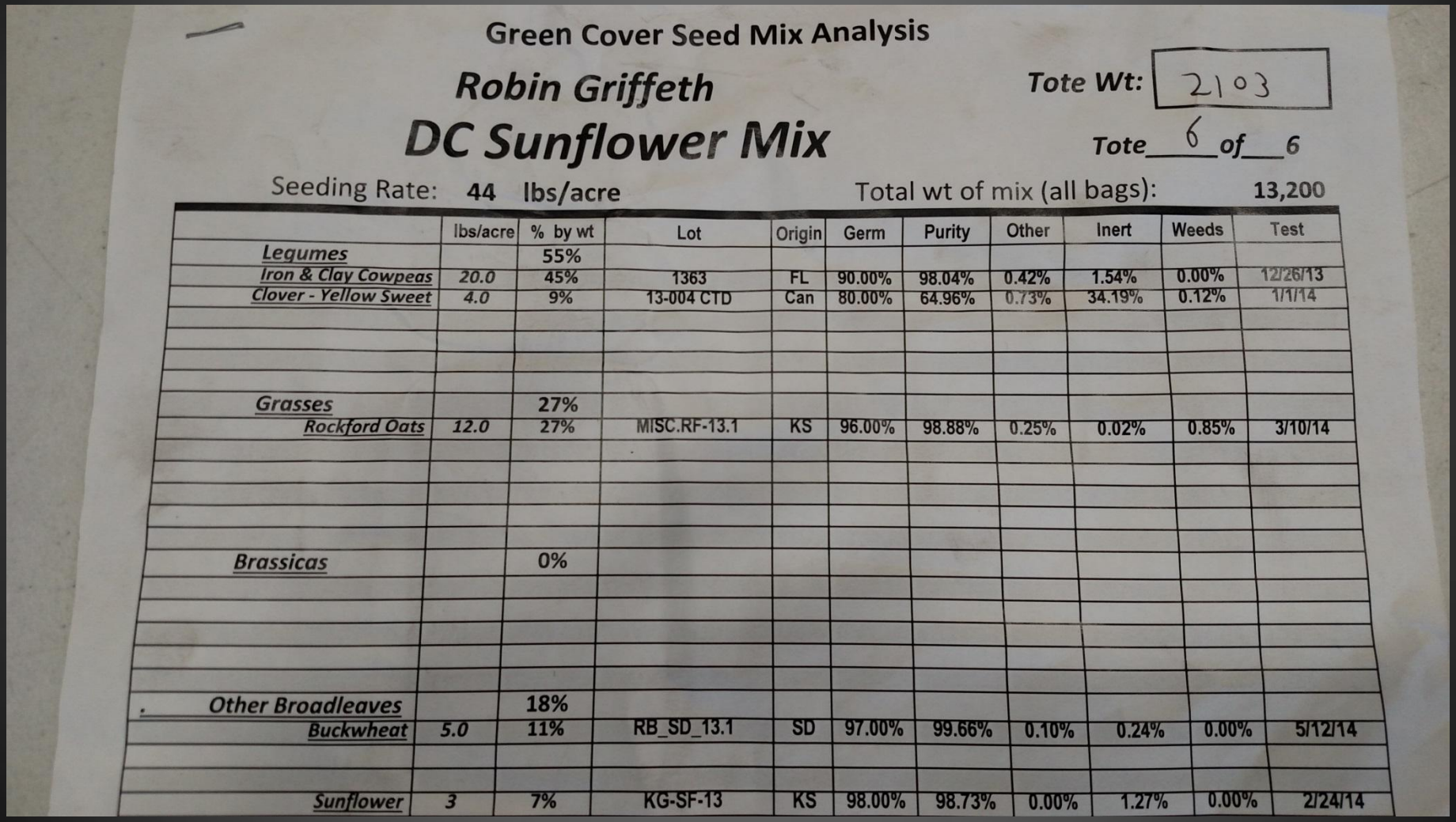
WE DO SOME HOMEWORK IN DESIGNING A MIX.
WE STUDY SARE BOOKS, INTERNET SITES, EVEN GARDENING SITES.

Vegetables

Vegetables							
Common name	Scientific name	Helps	Helped by	Attracts	Repels/Distracts	Avoid	Comments
Alliums		nightshades			carrot fly [1]		
Asparagus	*Asparagus officinalis*	Tomatoes [2]	Aster Family flowers, Dill, Coriander, Tomatoes, Parsley, Basil, Comfrey, Marigolds	coupled with Basil seems to encourage lady bugs	Onion, Garlic, Potatoes		
Brassicas							
Beans	*Phaseolus*	Corn (see Three Sisters), Spinach, lettuce, rosemary, summer savory, dill, carrots, brassicas, beets, radish, strawberry and cucumbers	Eggplant, Summer savoury		California beetles	Tomatoes, chili peppers, alliums (onions, garlic, etc.), brassicas (cabbage, broccoli, etc.)	Hosts nitrogen-fixing bacteria, a good fertiliser for *some* plants, too much for others

	2013 COMPANION CROP	#'s / ACRE	SEEDS / POUND	SEEDS / ACRE	TOTAL SEEDS / ACRE
WARM	**SUNFLOWER**	3	8,000	24000	
	COWPEA	15	4,100	61,500	
	BUCKWHEAT	5	18,000	90,000	
	TOTAL **W.S. CROPS**	**23**			**175,500**
COOL	**COOL SEASON CROPS**				
	OATS (HOLDS MIX TOGETHER)	10	2,500	25,000	
	COMMON VETCH	2	8,000	16,000	
	RAPE	1	175,000	175,000	
	WINTER PEAS	5	4,000	20,000	
	CRIMSON CLOVER	1	107,200	107,200	
	ALFALFA	1	147,000	147,000	
	YELLOW MUSTARD	1	100,000	100,000	
	TOTAL **C.S. CROPS**	**21**			**590,400**
	TOTAL OF ALL 10 CROPS	**44**			**765,900**

This is the seed tag that Green Cover sends with you when you pick up your mix.



Green Cover Seed Mix Analysis

Robin Griffeth

DC Sunflower Mix

Tote Wt: 2103

Tote 6 **of** 6

Seeding Rate: **44** lbs/acre

Total wt of mix (all bags): **13,200**

	lbs/acre	% by wt	Lot	Origin	Germ	Purity	Other	Inert	Weeds	Test
Legumes		55%								
Iron & Clay Cowpeas	20.0	45%	1363	FL	90.00%	98.04%	0.42%	1.54%	0.00%	12/26/13
Clover - Yellow Sweet	4.0	9%	13-004 CTD	Can	80.00%	64.96%	0.73%	34.19%	0.12%	1/1/14
Grasses		27%								
Rockford Oats	12.0	27%	MISC.RF-13.1	KS	96.00%	98.88%	0.25%	0.02%	0.85%	3/10/14
Brassicas		0%								
Other Broadleaves		18%								
Buckwheat	5.0	11%	RB_SD_13.1	SD	97.00%	99.66%	0.10%	0.24%	0.00%	5/12/14
Sunflower	3	7%	KG-SF-13	KS	98.00%	98.73%	0.00%	1.27%	0.00%	2/24/14

WE LIKE BUCKWHEAT, COWPEAS, RAPE SEED, AND CLOVERS JUST TO NAME A FEW

WE LIKE COW PEAS WITH SUNFLOWER

COW PEAS SEEM TO JUMP OUT OF THE GROUND AND HELP EVERYTHING ELSE GET UP AND GOING, AS WELL AS OTHER BENEFITS.

THEY NODULATE AND PRODUCE SOME NITROGEN

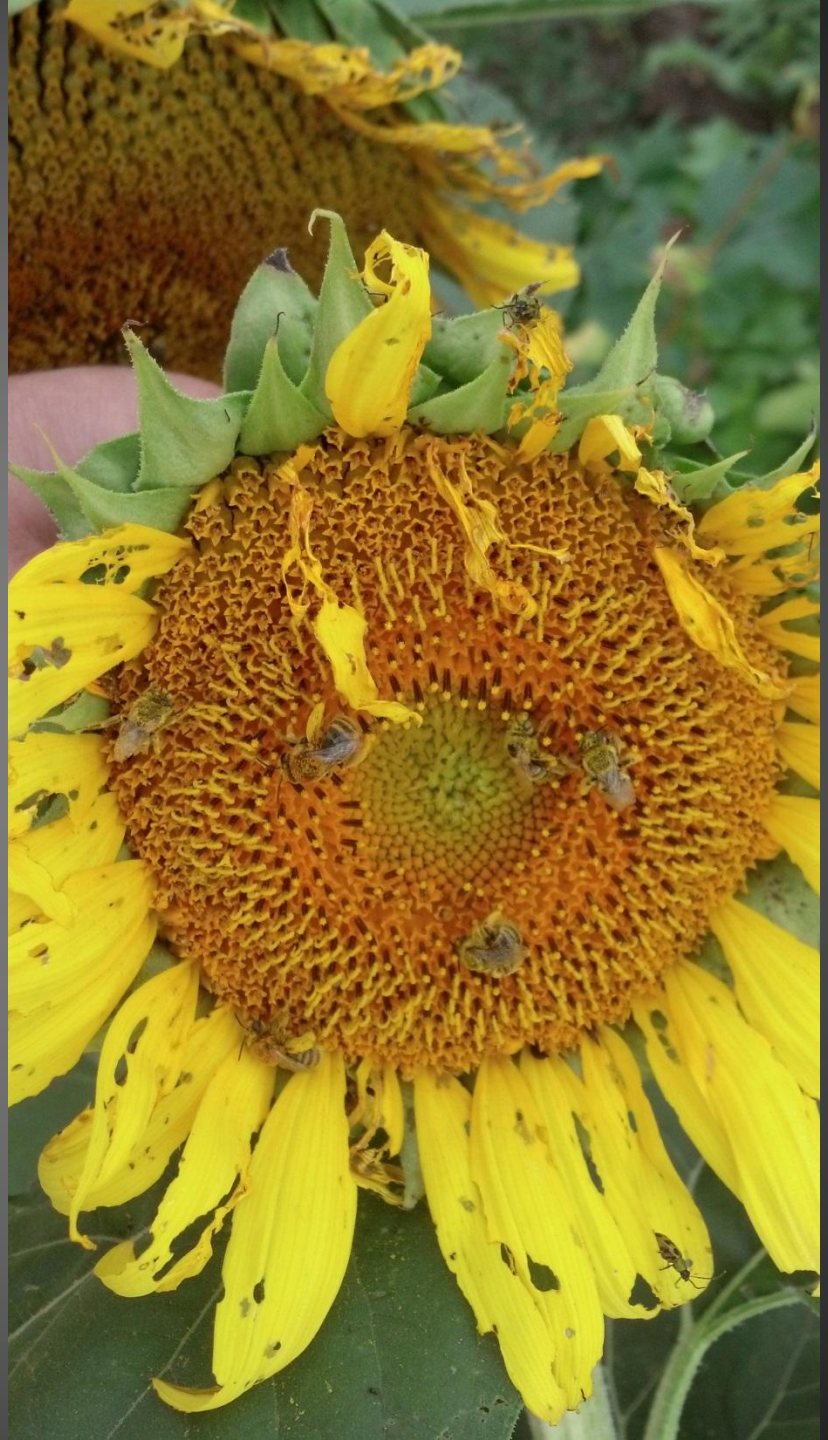
WE LIKE BUCKWHEAT

BUCKWHEAT ATTRACTS MANY BENEFICIAL INSECTS, CREATES ACIDS THAT HELPS MAKE PHOSPHATE MORE AVAILABLE……AND IS A GREAT SOIL CONDITIONER.

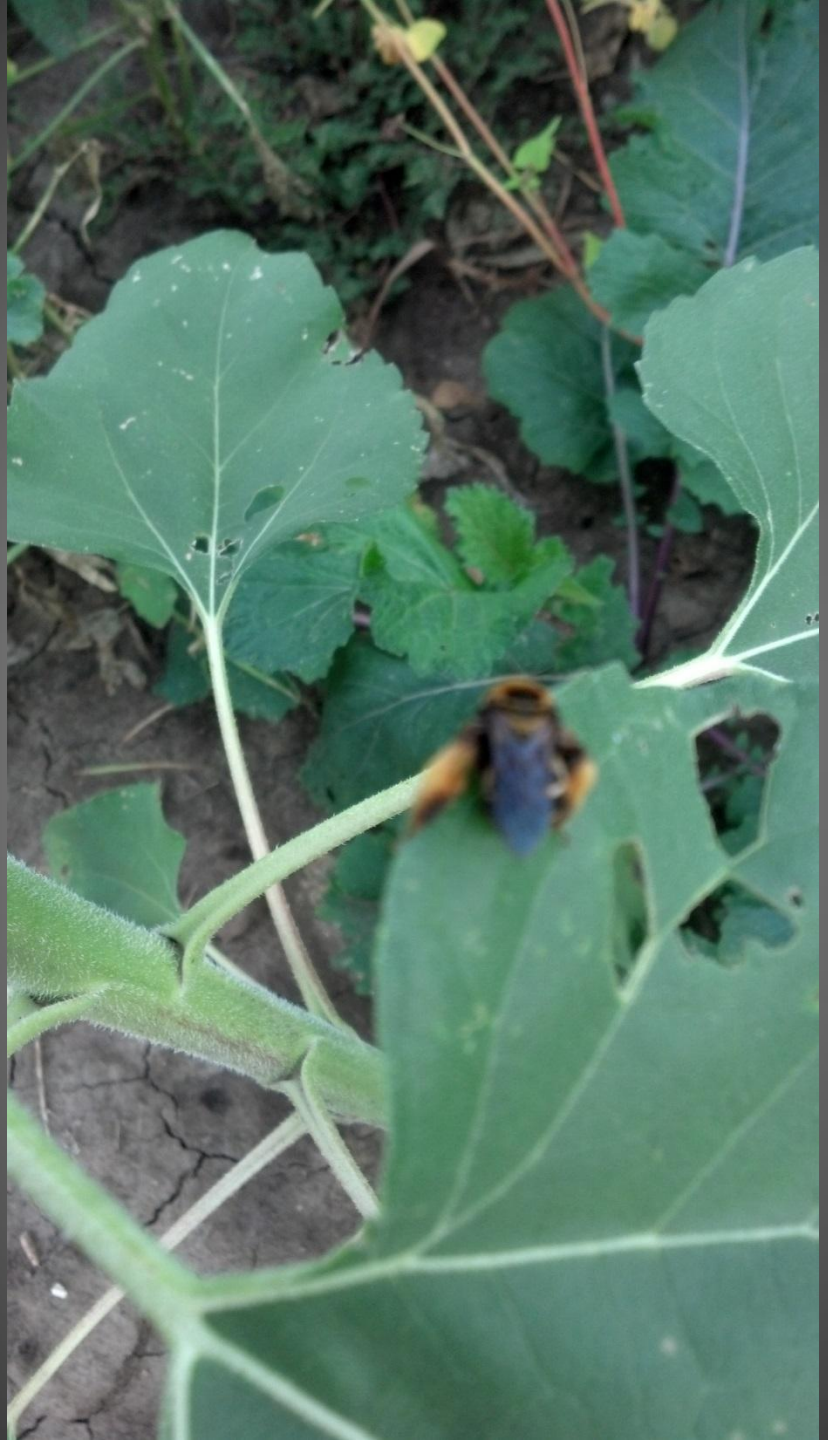
2012 BUCKWHEAT CROP IN FULL BLOOM

SWARMING WITH BEES, PREDITORIAL WASPS, AND LADY BEETLES.

POLLINATING INSECTS AS WELL AS PREDITORIAL INSECTS ARE A MUST IN OUR SUNFLOWER PRODUCTION



WE NOT ONLY HAVE PLANT DIVERSITY……WE ALSO HAVE INSECT DIVERSITY



EVERY PLANT NEEDS TO HAVE A PURPOSE !!!!!

NO PLANT SHOULD BE ANTAGONISTIC TO THE PRESENT OR NEXT CASH CROP

~~RADISH AND TURNIP~~

NO PICKET FENCE STANDS WITH A DRILL

WE ARE WILLING TO GIVE UP SOME CONTROL TO GAIN DIVERSITY

CROP DIVERSITY DRIVES SOIL BIOLOGY DIVERSITY

SOIL BIOLOGY DIVERSITY DRIVES THE SYSTEM

DIVERSITY

COLLECTING SOLAR ENERGY

DIVERSITY

DIVERSITY

DIVERSITY

PHOTOSYNTHESIS

DIVERSITY

RADISH

KEEPS YOUR NEIGHBORS GUESSING

WHAT THE HECK DID HE PLANT NOW???

FOR AWHILE, **YOU** MAY WONDER WHAT HECK YOU DID

BUT WE CAN GUARANTEE THAT YOU WON'T BE ABLE TO STAY OUT OF THESE FIELDS

SOON YOU WILL SEE THINGS START TO DEVELOP

PHOTOSYNTHESIS

DIVERSITY

DIVERSITY

KNOWN AS THE “FOREST EFFECT”

THERE ARE TALL PLANTS, SHORT PLANTS AND EVERYTHING IN BETWEEN

SUNLIGHT THAT MAY MISS A TALL PLANT

SHINES ON A SHORTER PLANT

SUN HEMP

DIVERSITY

DIVERSITY

MORE DIVERSITY

MORE DIVERSITY

NO SUNLIGHT WASTED HERE.

PHOTOSYNTHESIS AT IT’S BEST

MORE DIVERSITY

THEN IT STARTS TO RESEMBLE A SUNFLOWER FIELD

BUT YOU CAN STILL SEE A LOT OF DIVERSITY

DIVERSITY

WE STILL HAVE SOME ISSUES IN OUR “PARKING LOTS”

THEN IT STARTS TO GET UGLY……BUT THERE IS STILL GREEN IN THERE

HOW WE HARVEST SUNFLOWER


CASE
7120
CASE

SWEET CLOVER HAS BEEN HIDING, AND IS NOW COMING INTO PLAY

2013 HARVEST TIME…..SALINE SEEP.
THIS IS WHY I PLANTED THE RAPE SEED.

KOCHIA & RAPE SEED GROWS, FLOWERS DON'T. RAPE STILL DOING WELL AT HARVEST. IT ALSO LET US DRIVE ON GREEN MATTER. NO FIRES!!

SAME SPOT IN 2014 MILO.

1st TIME I'VE SEEN MILO GROW IN THAT SPOT

NO GRAIN FILL, BUT AT LEAST WE HAD GROWING ROOTS

EVERY PLANT HAS A PURPOSE !!!!!

DIVERSITY, BUT TAKE INTO CONSIDERATION YOUR MANAGEMENT

REMEMBER THIS SLIDE??
SAME MIX IN 15 INCH ROWS.

SUNFLOWER, COW PEA, AND NON GMO GROUP 7 SOYBEAN PLANTED TOGETHER IN 15 INCH ROWS WITH WHITE PLANTER.

DO YOU THINK COMPANION PLANTING COULD BE IN YOUR FUTURE ???

WE BELIEVE THAT THERE FUTURE IS IN COMPANION CROPPING

QUESTIONS?

WE STARTED WITH SUNFLOWER AND PEA

WE ARE STILL WITH SUNFLOWER AND PEA.

HOWEVER WE ARE EXPANDING OUR THINKING

OATS AND PEAS

OAT / PEA MIX WOULD BE A FANTASTIC GRAZING CROP

THIS BEGAN AS A COVER CROP

HOWEVER, DO TO WEATHER

THEY TURNED INTO TWO CASH CROPS INSTEAD OF ONE.
HARVESTED TOGETHER AS GRAIN, THEN SEPARATED

DC Corn and Canola

RR Canola intercropped into Corn

DC Corn and Canola again…

THE WHEAT WAS POOR ON THIS FIELD, SO NO ADDED NITROGEN FOR THE CORN/CANOLA

COMBINE CUTTING CORN AT RANDALL

HIGH CARBON COVERS ARE FABULOUS

AN ENORMOUS AMOUNT OF DIVERSITY CAN BE ADDED HERE

CHECKING PLANT AND INSECT SPECIES

WOW !!!! LOOKS LIKE ANOTHER PATCH OF SEDAN

UPON FURTHER INSPECTION THERE IS DIVERSITY

DIVERSITY AS WELL AS FOREST EFFECT

DIVERSITY

DIVERSITY

DIVERSITY

THEN MOTHER NATURE GRAZED IT

MY !!!! OH !!!! MY !!!!

- THE FIELDS IN THE NEXT TWO SLIDES DO NOT BELONG TO US. WE BEG FORGIVENESS FROM THE OWNERS, BUT WE FEEL THAT THE PHOTOS NEED TO BE SEEN.

A NEIGHBOR'S FIELD EARLY JUNE 2014

EAST SIDE OF HIGH WAY

HISTORY: HAD A GRAZING COVER CROP IN 2013, NOW GROWING CORN LOOKS GOOD. JUST HAD 4.5 INCH RAIN.


ANOTHER NEIGHBOR'S FIELD
WEST SIDE OF HIGH WAY
HISTORY: INTENSE TILLAGE !!!!
NO COVERS !!!!
SAME 4.5 INCH RAIN !!!!
JUST PLANTED TO MILO

KARL 92


KARL 92

SCOUT 66


SCOUT 66


TURKEY RED


TURKEY RED