Progress Report of IR-4 Oil Seed Crops Research

Satoru Miyazaki, Michigan State University

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North Dakota boasts that it is the sunflower capital of the U.S., because of the number one position in production and acres or 43% of the U.S. total according to the USDA statistics (2016) as reported by the national headquarters of the National Sunflower Association located in Mandan, ND. https://www.sunflowernsa.com. South Dakota closely follows ND or 40% of the US total. The other NCR states KS, MN and NE are also very important for sunflower production. In fact NCR accounts for 92% of the entire U.S. production of sunflower. For the next important oil seed crop, canola, North Dakota accounts for 87% of the U.S. production according to the USDA statistics (2015). Flax and safflower are also noteworthy specialty crops for these states. IR-4 has been providing these oil seed crop growers with the pest control tools vital for their production success. To date, the products labeled for oil seed crops are 9 (2 for canola, 2 for flax, 2 for safflower and 3 for sunflower). More new labels for these crops are coming. The following researchers cooperated with the IR-4 projects by conducting the field trials (GLP and/or E/CS). Brian Jenks, NDSU and Sharon Clay, SDSU, Curt Lee, ND consultant, D. Markle, NDSU, Richard Zollinger, NDSU, Niel Riveland, NDSU, Mark Ciernia, NDSU, Jess Spotanski, NE consultant and Bob Wilson, University of Nebraska.

IR-4 Project Labeled Products for Oil Seed Crops

Canola

Pesticide	Reasons for Need	Product	Use Pattern**
2007			
FLONICAMID (IRAC 9C)	CABBAGE APHID GREEN PEACH, APHID TURNIP, APHID	Beleaf 50SG insecticide (FMC)	0.067 LB AI/A; 7-DAY INTERVAL; 0-DAY PHI; MAX BELEAF 50SG 0.2625/A/SEASON
2009*			
DIQUAT (HRAC D/WSSA 22)	DESICCATION	Reglone desiccant (Syngenta)	1 ½- 2 pt PRODUCT/A; MAKE 1 FOLIAR APPLIC BY GROUND (15 GPA) OR AIR (MINIMUM 5 GPA); ADD A NONIONIC SURFACTANT CONTAINING 75% OR GREATER ACTIVE AGENT AT 0.06-0.5% V/V; 10-DAY PHI

* year project initiated
**Use pattern for reference only; please consult label for additional information

Flax

Pesticide	Reasons for Need	Product	Use Pattern**
1997*			
GLYPHOSATE (HRAC G/WSSA 9)	HARVEST AID	Roundup Power MAX herbicide (MONSANT)	POSTEMERGENCE DIRECTED; 44 fl oz/A. One appl. 7 DAY PHI
2002			
SULFENTRAZONE (HRAC E/WSSA 14)	BROADLEAF WEEDS	Spartan 4F herbicide (FMC)	0.07-0.375 LB AI/A, DEPENDING ON % ORGANIC MATTER AND SOIL TEXTURE; APPLY PRIOR TO PLANTING TO ANYTIME AFTER PLANTING BUT BEFORE SEEDLING EMERGENCE; DO NOT APPLY MORE THAN 0.375 LB AI/A PER APPLIC OR PER 12-MONTH PERIOD; DO NOT APPLY DIRECTLY ON THE CROP AFTER CROP EMERGENCE, OR IF SEEDLING SPROUTS ARE CLOSE TO THE SOIL SURFACE.

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Safflower

Pesticide	Reasons for Need	Product	Use Pattern**
1992			
THIFENSULFURON-METHYL (HRAC B/WSSA 2)	ANNUAL BROADLEAF WEEDS	Harmony SG herbicide (DUPONT)	APPLY 0.45-0.6 OZ HARMONY 5G/A; SEQUENTIAL TREATMENTS MAY BE MADE, BUT DO NOT EXCEED 0.6 OZ/A PER CROP SEASON; INCLUDE ADJUVANT IN THE TANK; 81-DAY PHI
2003*			
ZETA-CYPERMETHRIN (IRAC 3A)	CUTWORMS	Mustang insecticide (FMC)	0.05 LB.AI/A; 3 APPLIC; 14 DAY PHI

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Sunflower

Pesticide	Reasons for Need	Product	Use Pattern**
2002*			
FENAMIDONE (FRAC 11)	SOIL BORNE DOWNY MILDEW	Fenamidone fungiticide (BAYER)	Slurry 5.8 fl oz/cwt
2010			
METCONAZOLE (FRAC 28)	FOLIAR DISEASES (INCLUDING RUST) & STEM DISEASES THAT BEGIN ON FOLIAR TISSUE	Quash fungicide (VALENT)	0.125 LB AI/A; FOLIAR APPLIC; 20 GPA SPRAY VOLUME; Max 2 appl/yr; PHI 21 days
2011			
CYANTRANILIPROLE (IRAC 28)	CUTWORMS	Fortenza insecticide (SYNGENTA)	64 G AI/HA; SEED TREATMENT; ONE APPLIC

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IR-4 Studies Submitted / To be Submitted for Oil Seed Crops

Flax

Pesticide	Reasons for Need	Product	Use Pattern**
2004*			
BETA-CYFLUTHRIN (IRAC 3A)	GRASSHOPPERS	Baythroid XL insecticide (BAYER)	1-2.25 OZ/A; MAX APPLIC 2 AT MIN OF 3 WEEK INTERVALS / FINAL REPORT SIGNED; READY FOR SUBMISSION

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Sunflower

Pesticide	Reasons for Need	Product	Use Pattern**
2013*			
PYROXASULFONE (HRAC K3/WSSA 15)	ANNUAL GRASSES, BROADLEAF WEEDS	PYROXASULFONE 85 WG herbicide (KICHEM)	APPLY PYROXASULFONE 85 WG ALONE, IN TANK MIX, OR AS A PREEMERGENCE APPLIC FOLLOWED BY A LABELED POSTEMERGENCE APPLIC; APPLY BY GROUND (MINIMUM 5 GPA) OR AIR (MINIMUM 3 GPA) 0.05-0.266 LB AI/A IN A SINGLE OR SEQUENTIAL APPLIC; MAX 0.266 LB AI/A/YEAR; APPLY NO LATER THAN 60 DAYS BEFORE HARVEST; SEE LABEL FOR MORE DETAILS ON APPLIC TIMINGS, RATES, TANK MIXING, ETC.:02/16 /TOLERANCE ESTABLISHED 04/17
SULFOXAFLOR (DOWAGR (IRAC 4C)	LYGUS - PER SAFFLOWER REQUEST; HQ CHANGED CROP TO SUNFLOWER TO SUPPORT TOLERANCE THAT CAN COVER SAFFLOWER AND OTHER CROP SUBGROUP 20B CROPS	Transform WG insecticide (DOWAGR)	1.5-2.75 OZ/A; 2 FOLIAR APPLIC; 7-10 DAY RE-TREATMENT INTERVAL; 7-DAY PHI / FINAL REPORT UNDER REVIEW WITH QA/MFG

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Active IR-4 Oil Seed Crops Projects

Sunflower

Pesticide	Reasons for Need	Product	Use Pattern**
2014*			
FLONICAMID (IRAC 16)	LYGUS BUG, PER SAFFLOWER REQUEST ; HQ CHANGED CROP TO SUNFLOWER TO SUPPORT TOLERANCE THAT COVERS ALL CROP SUBGROUP 20B OILSEED CROPS, REPRESENTED BY SUNFLOWER	Carbine 50WG insecticide (FMC)	MAKE 3 FOLIAR APPLIC OF 0.267 LB AI/A AT A 7-DAY INTERVAL, 0-DAY PHI; BEGIN APPLIC BEFORE POPULATIONS OF LYGUS BEGIN TO BUILD AND RETREAT TO MAINTAIN PEST BELOW DAMAGING LEVEL /COMPLETE WITH ON-GOING TRIALS
2015			
NOVALURON (IRAC 15)	LYGUS BUGS; SUNFLOWER REPLACES SAFFLOWER TO SEEK CROP SUBGROUP 20B TOLERANCE, INSTEAD OF JUST SAFFLOWER:09/14	RIMON 0.83 EC OR 10 EC insecticide (ADAMA)	MAKE FOLIAR APPLIC OF 9-12 FL OZ/A OF DIAMOND OR MAYHEM INSECTICIDE (0.06-0.08 LB AI/A) AS NEEDED, 7-14 DAY INTERVAL, 30-DAY PHI; BEGIN APPLIC WHEN LYGUS APPEAR AND INITIATE OVIPOSITION; INSURE GOOD SPRAY COVERAGE; MUST BE MIXED WITH A REGISTERED ADULTICIDE FOR ADULT LYGUS CONTROL /COMPLETE WITH ON-GOING TRIALS
2016			
FLUPYRADIFURONE (IRAC 4D)	WHITEFLIES, APHIDS, PLANT BUGS, OTHER PIERCING/SUCKING PESTS	Sivanto 200 SL insecticide (BAYER)	MAKE MULTIPLE FOLIAR APPLIC OF 0.09-0.18 LB AI/A, 10-DAY INTERVAL, 14-DAY PHI; APPLY IN MINIMUM 2 GPA BY AIR, 10 GPA BY GROUND; MAX IS 0.365 LB AI/A/SEASON/COMPLETE WITH ON-GOING TRIALS
INDOXACARB (IRAC 22A)	LYGUS; GREEN STINK BUGS, CABBAGE LOOPERS, ARMYWORMS SPP.	Steward EC insecticide (DUPONT)	AERIAL & GROUND APPLIC AT ROSETTE THROUGH PEAK BLOOM STAGE, IN A MINIMUM 5 GPA VOLUME, USING 0.0898-0.11035 LB AI/A (9.2-11.3 FL OZ PRODUCT); MAXIMUM 0.4395 LB AI/A/SEASON (45 FL OZ); 14-DAY PHI/COMPLETE WITH ON-GOING TRIALS

2017 Oil Seed Crops Projects

Safflower

2017			
BIFENTHRIN (IRAC 3A)	LYGUS BUGS, LYGUS HESPERUS, BEET LEAF HOPPER, GREEN STINK BUG	Brigade 2EC insecticide (FMC)	0.06-0.10 LB AI/A; 5 FOLIAR APPLIC BY AIR OR GROUND; 7-10 DAY RE-TREATMENT INTERVAL; 14-DAY PHI; PER 08/2016 REQUEST: MAKE 3 FOLIAR APPLIC OF 0.1 LB AI/A, 5-DAY INTERVAL, MINIMUM 2 GPA BY AIR, 5 GPA BY GROUND, 14-DAY PHI - FOLLOW USE PATTERN EXACTLY AS WRITTEN FOR COTTON

Sunflower

2017			
DIQUAT (SYNGEN (HRAC D/WSSA 22)	CROP AND WEED DESICCATION PRE-HARVEST	Reglone herbicide (SYNGENTA)	MAKE 2 PRE-HARVEST DESICCATION APPLIC OF 0.375-0.50 LB AI/A, IN 5 GPA BY AIR, 15-20 GPA BY GROUND; APPLY WHEN SUNFLOWER SEEDS REACH PHYSIOLOGICAL MATURITY (AT 35% SEED MOISTURE OR LOWER); 7-DAY PHI