

Swede Midge, *Contarinia nasturtii*

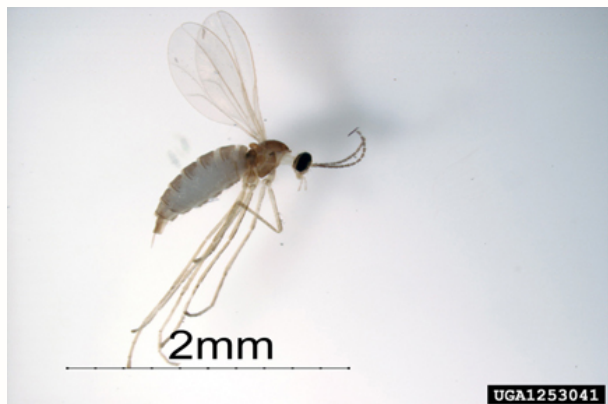
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HORUDHAC

Swede midge (SM), *Contarinia nasturtii*, (Diptera: Cecidomyiidae) waa dulin gala dalagyada khudradaha oo lagu tiriyo bahda miraha hurdiga ah (Brassica's: broccoli, brussels sprouts, cabbage, cauliflower, mustard greens, kale), iyo waliba saliida miraha laga dhaliya ee qaaliga ah ee canola.



Muuqaal 1. Swede midge Gaamuray (Susan Ellis, USDA APHIS PPO, <https://bugwood.org/>)

Intaa waxaa dheer, >20 dhirta iskeeda u baxda ayey gashaa, oo ay ku jiraan gocosada, yamaaruga, gocondhada iyo maadha. Swede midge waxa ay u dhalatay wadamada Yurub, meeshii ugu horeeysay ee qaarada Waqooyiga Mareykanka ka mid ah ee laga helayna waxa ay ahayd Toronto, Canada, sannadkii 2000. Ka dibna waxa ay ku faaftay gobolka New York sannadkii 2004, waxaa laga arkay Minnesota sannadkii 2016.

BAAY'OOLIJIGA

Swede midge gaamuray waxa ay leedahay midab bundi ah oo khafiif ah, qiyaastiina dhererkeeddu waa 2 mm, aadna loogama garan karo kuwa kale hadii aan waynayso lagu eegin. Goboladda Michigan iyo New York kuwa gaamuray waxa soo baxaan horaanta xilliga gu'ga. Ugxantooduna aad ayey u yar yar tahay (<0.5 mm), waxa ayna leedahay midab dhalaal xigeen ah, waxa ayna ukxaan rucub-rucub ah ku dhalaan geedaha curdanka ee wali koraya ee ay gasho caleentooda.

Ukxaantu waa ay wareegsan yihiin kolka ay dhashaan, ka dibna waxa ay isu rogaan midab madow dhalaan xigeen ah kolka ay gaaraan xuub dilaaca, dherarkoodu waa 3-4 mm.



Muuqaal 2. Swede midge Ukxaan oo geed jirdii saaran (Mao Chen, Cornell University, <https://bugwood.org/>).

Ukxaantu waxa ay wax u quutaan rucub-rucub ilaa iyo inta ay xuub dilaacayaan, kolkaa oo ay ka daataan geedka ay ku jiraan si ay ciida u galaan. Michigan, lagu arkay sedex-ilaa- shan fac bisha Maajo ilaa Oktoober.



Closeup of larvae feeding in clusters.

Muuqaal 3. Ukxaan swede midge ah oo sawir ahaan la soo dhaweeyey oo geed jiridii saaran (Mao Chen, Cornell University, Bugwood.org).

KHASAARAHA

Swede midge waxa ay ka tirsan bahda la yiraa Cecidomyiidae, oo ah bah quudata geedaha, quudashadaa ay quutaana ay keento halaysmi ku yimaada xuubka iyo caleenta geedka.

Khasaaraha ay keento ugxaanta swede midge ee quudata geedahau waxa ay u dhaxeyasaa caleenta geedaha oo maroorta iiyo ilaa iyo caleenta boogo yeelata ama dhirta oo madow fuulo. Astaama caynkaa oo kale ah ayaa waxa dhici karta in lagu yaqaan ilo kale sida nafaqo la'aanta dhirta ku dhacda ama khasaaraha ka dhasha sunta xasharaadka lagu dilo; sidaa darteed, waxaa loo baahan yahay in la sugo in dhirta ay gashay ukxaanta si loo cadeeyo in ukxaantaasi ay khasaaraha dhalisay.



Muuqaal 4. Geed Brussel sprout ah oo jiridiisii wax noqotay (MN Dept. of Ag.).



Muuqaal 5. Caleemo kabsare case oo wax noqday (Julie Kikkert, Cornell Cooperative Extension, Bugwood.org).



Muuqaal 6. Geed Cauliflower oo 'madoobaanaya' ka dib kolkii ay ukxaani quudataY. Geedka madax ma yeelan doono cauliflower (MN Dept. of Ag.)

MAAREYNTA

Waxaa laga yaabaa waxa wax ugu muhiimsan oo aad sameyn kartaa in ay yihiin ka hortaga gelida dulinku uu gelayo dhirta ka hor inta aysan bilaabanba. La hadal dadka kuu keena dhirta aad beeranayso si aad u hubiso in dhirta aad ka gadanaysaa aysan dulin wadan, si kolkaa adigoon ka digtoonayn aadan beertaada u keenin cayayaanka la yiraa swede midge. Hadii dhirta ama carro madowda aad u soo gadato in aad ku abuurto beertaadu uu galay cayayaankani kolkaa waxa u baahan tahay waa inaad marka hore lagu buufiyaa sun la og yahay in ay cayayaanka deli karto ka hor inta dhirtaa aan la beerin.

Door bidida uu doorka bido cayayaanka Swede Midge qaar ka mid ah khudradaha

Cilmi-baarayaal ka tirsan Jaamacada Guelph (University of Guelph) (Ontario, Canada), ayaa waxa ay sameeyeen tijaabooyin sannadadii u dhaxeeyey 2001-2003 si ay u ogaadaan sida ay ugu nugul yihiin qaarka ka mid ah khudradaha cayayaanka Swede midge khudradaha la tijaabiyey waxaa ku jiray (broccoli, cabbage, cauliflower and Brussels sprouts). Cilmi-baarayaashu waxa ay soo ogaadeen in broccoli ay tahay khudrada ugu nugul khudradaha. Broccoli la baaray ee noocyada kala ah ayaa, 'Paragon', 'Eureka' iyo 'Packman' uu soo gaaray khasaaraha ugu badan mudaddii sedexda sanno ahayn ee daraasadu socotay, halka 'Triathlon', 'Regal' iyo 'Everest' lagu arkay nuglaanta ugu hoseeysa iyo astaamaha ugu yar mudadda sedexda sanno ahayd. Mudaddaa daraasadu socotay, kabasare casaha, iyana wax u nuglaan ah lagunma arag anskaaxda iyo gocosada cad-cad ama giir-giiran; nooca la yiraa 'Jade Cross' Brussels sprouts iyana waxaa lagu arkay in nuglaantaada swede midge.

LA SOCODKA

In kastoo la heli karo qalabka wax lagu dabo si loola socdo cayayaanka gaamuray ee midge (labka), hadana cayayaankani waa mid aad isu qariya, kuwa gaamuaray waxaa dhici karta in ay dhalaan ukxan, ukxaantaa oo khasaare geysan karta, ka hor inta aan laga ogaan dabitaanka in ay dhirta ku jiraan. Cilmi-baarayaal ka socda Jaamacda Cornell (Cornell) waxa ay ku taliyeen isticmaalka nooca dabida ah ee la yiraa dabida cad ee Jackson (Scentry Biological Inc., Billings, MT), kaasaa ah dabe cad oo dhag-dhag leh oo ay ku jirto walaxda wax soo jiidata ee pheromone.



Muuqaal 7. Dabaha Jackson oo baara swede midge gaamuray (C. Hoeping, Cornell Extension).

Dabayaasha waa in la suraa meel dhulka u dhow waana in la eego asbuuciiba hal mar. Cilmi-baarisyo horey loogu sameeyey NY iyo Canada ayaa xaqiijiyey in 5 tii diqsi/ee la soo dabaaba ay muujin karto ukxaan dhalid iyo khasaare ukxaantaasi dhirta ay quudanayso u gaysato. Hadii diqsiyo lagu arko aalada wax lagu dabayo, waxaa roon in kolkaa la qaado talaabooyin ka hor tag ah si loo yareeyo khasaaraha uu keeni karo cayayaanka swede midge.

La socodka duqsiyada gaamuray waa inay dheeraataa, in beerta laga baaro wax khasaare ah oo ay ukxantu dhalisay. Xooga saar aafaha beerta kana eeg caleenta wax

maroor, boog ama madax madow ah (Muuqaal 4-6).

Xakameynta Tirada

Isku bedelida dalagyada: cayayaanka Swede midge waxaa lagu arkay in uu tarmo ciida sidaa awgeed, isku bedelida dalagyada aad ayey muhiim u tahay. Cilmi-baarayaasha Cornell waxa ay ku taliyeen isku-bedelida dalagyada ugu yaraan sedexdii sannaba mar (Brassica). Sidoo kale, beeraha waa in la geed qaado laguna jaro cawska.

Saxada & gubida dalaga: in kastoo anaan hayn macluumaad gaar ah oo ku saabsan swede midge, dhawaan daraasado lagu sameeyey cayayaanka kale oo iyaga la mid ah, (sida diqsiyada khudrada, spotted wing drosophila), ayaa waxa ay muujiyeen in gurida lagu gurayo khudrada cayayaanku galo baco balaastiko ah (bac cad), iyo qoraxaynta bacaha muddo 4-5 cisho ah, ay ku dhalin karto kuleyl badan keeni kara (sida >120 ilaa 140°F) in uu dilo swede midge. Tani waa suurto gal inay ku haboon tahay beeraha yar yar, gaar ahaan kuwa dhawaan laga helay SM ka. 5-7 cisho ka dib, bacaha waxa ku jira waa in la duugaa lana tir-tiraa.

Xulashooyinka Qooshida: Mar labaad, la'aanta wax cilmi-baaris ah oo gaar ah oo ku saabsan swede midge, hadana cidii rabtaa waa ay tix gelin kartaa in ay eegto faa'iidada fogeynta dhirta si loo xakameeyo swede midge. In kastoo qaabkani laga yaaboo inuusan taabo-gal u ahayn sida bacaynta dhirta, hadana waxay u badan tahay inuu ku haboon yahay beeralayda leh beeraha waaweyn. Qumanaantu waa in dhirta uu galo dulinka SM la geeyo meel lagu aruuriyo oo leh neefin iyo iftiin qorax gaari karta inta u dhaxeeya 120-140°F. Gobolkan Minnesota, hadii degmo ka mid ah (sida Ramsey Co.) ay leedahay meel dowladu maamusho, beertuna ay ku taal isla degmadaa, wixii geedo ah oo la

dooray waxaa loo qaadi karaa goobtaa dowladu maamusho. Hase yeeshee, Degmada Hennepin (Hennepin County, dhirta iyo caleenta la xoorayo inta badan waxaa loo qaadaa degmo kale, oo aan lagu ogayn in dulin galay geedaheeda iyo in kale, goobta dowlada looma isticmaali karo tan. Kolkaa waxaa laga yaabaa in waxa ugu fiican ee la dooran karaa, gaar ahaan marka ay noqoto dulinka dhirta galaa ay tahay in la geeyo meesha caleenta la xoorayo la isugu geeyo si loo yareeyo socodka dulinka.

Sun ku Xakameynta

Swede midge waxaa lagu maareyn karaa ku buufinta sunta dulinka lagu dilo. Dabidu waa aalad taabo gal ah oo lagu ogaan karo kolka dulinku uu ciida ka soo baxayo. Kolka cadaadiska dalagyada uu culus yahay, todobo-ilaa-sagal cisho oo buufis wareegaysa ah ayaa ahayd mid taabo gal ah kolkii laga isticmaalay gobolada kale.

Akhbaarta Jaamacada Michigan (Michigan State University), waxa ay muujinaysaa in habka nidaamsan ee la yiraa (neonicotinoids) uu yahay aalad anfacda xakameynta dulinka. Daraasad ay ku sameysay jaamacada New York In a New York greenhouse study, sumaha (Assail 30SG) iyo (acetamiprid) ugxaanta tijaabo ahaanta loogu dhaliyey geedka la abuurayey ee (cauliflower) iyadoo la isticmaalayo sun buufin sagaalkii cisho mar ah. Goobaha dibada ah in lagu sameeyo tijaabooyinku waa ay dhib badan tahay waayo dulinka swede midge waxa uu inta badan isaga qariyaa sunta lagu dilayo dhinaca hoose ee caleenta geedka ee u dhow baarka hore ee waliba baxaya. Tijaabooyin lagu sameeyey New York (In New York field trials), buufinta iniinaha clothianidin iyo thiamethoxam ee suntan cayayaanka waxaa lagu ogaaday in ay 100 kiiba boqol ay hoos u dhigtay ukxaanta 3-5 gudahood, ciida biyaha ku dhex jirta ee acetamiprid, imidacloprid iyo

thiamethoxam iyadana 100 kiiba boqol tabo gal ayey noqotay ilaa 7 asbuuc ka dib yareynta quudinta ukxaanta.

Sumeyntaa horaanta xiliga ahi waxa ay yareyn kartaa tirada inta goor ee loo baahan yahay in suntan la buufiyo, laakiin Daraasado ay wada sameeyeen Jaamacadaha Guelph and Cornell (the University of Guelph and Cornell University) waxa ay muujiyeen in sun buufinta kaabida ahi ay si gaar ah muhiim ugu yareyn xakameynta ee dulinka swede midge ee xiliga dhexdiisa ama aakhirkiisa. Inta sumaha pyrethroid, carbamate iyo organophosphate degdeg ayey u dilaan dulinka swede midge. sumaha ay ku jiraan lambda-cyhalothrin, permethrin, acetamiprid, chlorpyrifos iyo dimethoate. Bt (*Bacillus thuringiensis subsp. israeliensis*) waxa ay dhaliyeen heer dilida ukxaant ah oo ah boqolkiiba 50 kolkii lagu baaray shaybaar, laakiin ilaa hada goobta dibad ah (OMRI-approved) wali si taabo gal ah looguma xaqiijin taa. Sumahaa kaligood ma ahayn kuwa si taabo ah u yareyn karay tirada dulinka.

Si kolkaa si taabo ah loogu maareeyo cayayaankan, buufin waqti quman la buufiyo iyo kala bedbadalid la kala bed-bedelo noocyada kiimikada ah ee la isticmaalayo iyo waliba geed qaadid iyo caws jarid ayaa lagama maarmaan u ah yareynta tirada cayayaankan dhirta beeraha gala.

WAXYAABAHA KALE OO IYANA LOO TIX GELIYO MAAREEYNTA IYO CILMI-BAARISTA

Cov ntaub ntauv es tau sau tseg txog muaj cov kab no thaum xyoo 2016 thiab 2017 ib puag ncig hauv lub nroog ntxaib, tej zaum yeej muaj tseeb tias cov kab Swede midge no kuj tsis tuag thaum lub caij ntuuj no hauv MN (li cov chaw nram qab teb southern MN), tabsis cov kab no kuj nkag tau los hauv lub lav MN los ntawm cov zaub es xa tuaj ntawm lwm lub lav tuaj. Cuab kom tau yuav yog ib qho kev ntsuam xyuas kom paub txog cov chaw es muaj cov kab SW no hauv lub lav Minnesota. Tshawb fawb kom paub txog qhov es lawv thev no yuav tsum tau tshawb nrhiav kom paub es thiaj li nkag siab tias cov kab no muaj peev xwm tsis tuag taus hauv lub lav no no nov, thiab kom paub txog lawv qhov kev xeeb ua kab los yog qhov life cycle ntawm lub lav no no hauv MN.

Shaxanka 1. Sunta disha cayayaanka ee gaarka loogu calaamadiyey dalagyada Minnesota.

MAGACA BEECA	CURIYEYAASHA KU JIIRA	XADIDAADDA, SOO GO'IDA BEERTA (PHI) & SHAQAALAHA (REI)		NOOCA
		PHI (MAALMOOD)	REI (SAACADOOD)	
ASSAIL	ACETAMIPRID	7	12	NEONICOTINOID
CORAGEN ^{1,2}	CHLORANTRANILIPROLE	3	4	DIAMIDA ANTRANILICA
EXIREL ¹	CYANTRANILIPROLE	1	12	DIAMIDE
MOVENTO	SPIROTETRAMTRAMAT	1	24	TETRAMIC ACIDS
WARRIOR II ^{1,2}	LAMBDA-CYHALOTHRIN	1	24	PYRETHROID

¹ LOOMA CALAAMADIN IN LAGU XAKAMEEYO SWEDE MIDGE

² CAYAYAAN DILE LA XADIDAY ISTICMAALKIISA (RUP)

Tixraacyada kale ee la Xiriira

Kikkert, J., C. Hoepting, A. Shelton, M. Chen, P. Wang, Q. Wu, J.-Z. Zhao. 2017. Swede midge information center for the United States. Cornell University. Retr. from <http://web.entomology.cornell.edu/shelton/swede-midge/index.html>

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X

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Stokes, B. 1953. The host plant range of the Swede midge (*Contarinia nasturtii kieffer*) with special reference to types of plant damage. Tidsskr. Planteavl. 59: 82-90. <https://doi.org/10.1007/BF02106324> references is treated in this style and is always preceded by a maroon rule.

Beeralayda ka shakida in beertooda uu ku dhashay dulinka la yiraa swede midge waa in ay ka qaadaan saamiyo beertooda, ka dibna la soo xiriiraan Barnaamijka Ka Digtoonaanta Dulinka ee MN (MN Pest Alert Program), at: emaylka: arrest.the.pest@state.mn.us