

Schedule 13

Department of Agriculture

Funding Request for The FY 2019-20 Budget Cycle

Request Title

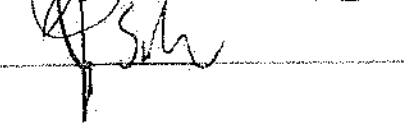
R-01 Biological Pest Control

Dept. Approval By:



Supplemental FY 2018-19

OSPB Approval By:



Budget Amendment FY 2019-20

X

Change Request FY 2019-20

Summary Information	Fund	FY 2018-19		FY 2019-20		FY 2020-21
		Initial Appropriation	Supplemental Request	Base Request	Change Request	Continuation
	Total	\$7,404,143	\$0	\$8,096,232	\$77,429	\$77,856
	FTE	16.2	0.0	16.2	0.9	1.0
Total of All Line Items Impacted by Change Request	GF	\$2,033,482	\$0	\$2,155,677	\$77,429	\$77,856
	CF	\$3,844,357	\$0	\$4,414,251	\$0	\$0
	RF	\$700,000	\$0	\$700,000	\$0	\$0
	FF	\$826,304	\$0	\$826,304	\$0	\$0

Line Item Information	Fund	FY 2018-19		FY 2019-20		FY 2020-21
		Initial Appropriation	Supplemental Request	Base Request	Change Request	Continuation
	Total	\$2,712,701	\$0	\$2,815,585	\$7,927	\$7,927
01. Commissioner's Office and Administrative Services,	FTE	0.0	0.0	0.0	0.0	0.0
(A) Commissioner's Office and Administrative Services,	GF	\$705,079	\$0	\$765,213	\$7,927	\$7,927
(1) Commissioner's Office and Administrative Services - Health, Life, and Dental	CF	\$2,007,622	\$0	\$2,050,372	\$0	\$0
	RF	\$0	\$0	\$0	\$0	\$0
	FF	\$0	\$0	\$0	\$0	\$0

Line Item Information	Fund	FY 2018-19		FY 2019-20		FY 2020-21
		Initial Appropriation	Supplemental Request	Base Request	Change Request	Continuation
	Total	\$27,435	\$0	\$28,522	\$88	\$96
01. Commissioner's Office and Administrative Services.	FTE	0.0	0.0	0.0	0.0	0.0
(A) Commissioner's Office and Administrative Services.	GF	\$8,989	\$0	\$7,596	\$88	\$96
(1) Commissioner's Office and Administrative Services - Short-term Disability	CF	\$18,446	\$0	\$20,926	\$0	\$0
	RF	\$0	\$0	\$0	\$0	\$0
	FF	\$0	\$0	\$0	\$0	\$0
	Total	\$853,609	\$0	\$1,084,406	\$2,310	\$2,520
01. Commissioner's Office and Administrative Services.	FTE	0.0	0.0	0.0	0.0	0.0
(A) Commissioner's Office and Administrative Services.	GF	\$279,121	\$0	\$282,767	\$2,310	\$2,520
(1) Commissioner's Office and Administrative Services - Amortization Equalization Disbursement	CF	\$574,488	\$0	\$801,639	\$0	\$0
	RF	\$0	\$0	\$0	\$0	\$0
	FF	\$0	\$0	\$0	\$0	\$0
	Total	\$853,609	\$0	\$1,084,406	\$2,310	\$2,520
01. Commissioner's Office and Administrative Services.	FTE	0.0	0.0	0.0	0.0	0.0
(A) Commissioner's Office and Administrative Services.	GF	\$279,121	\$0	\$282,767	\$2,310	\$2,520
(1) Commissioner's Office and Administrative Services - Supplemental Amortization Equalization Disbursement	CF	\$574,488	\$0	\$801,639	\$0	\$0
	RF	\$0	\$0	\$0	\$0	\$0
	FF	\$0	\$0	\$0	\$0	\$0
	Total	\$2,956,789	\$0	\$3,083,313	\$64,794	\$64,793
02. Agriculture Services, (A)	FTE	16.2	0.0	16.2	0.9	1.0
Agriculture Services, (1)	GF	\$761,172	\$0	\$817,334	\$64,794	\$64,793
Agriculture Services - Conservation Services Division	CF	\$669,313	\$0	\$739,675	\$0	\$0
	RF	\$700,000	\$0	\$700,000	\$0	\$0
	FF	\$826,304	\$0	\$826,304	\$0	\$0

Auxiliary Data

Requires Legislation? NO

Type of Request? Department of Agriculture Prioritized Request

Interagency Approval or Related Schedule 13s:

No Other Agency Impact



Cost and FTE

- Colorado Department of Agriculture (CDA) is requesting an ongoing appropriation of 1.0 FTE and \$77,429 General Fund, to implement biological control agent for Canada Thistle, and to have staff capacity for developing additional control agents.

Current Program

- The CDA has long recognized the importance of controlling invasive species, and since 1945 has successfully used a biological agent to control an invasive and potentially devastating peach pest, the Oriental fruit moth, in western Colorado.
- In 2013, the CDA initiated work with the USDA Agricultural Research Service on a highly specific fungus that is capable of killing Canada Thistle by infecting the root system.
- Following successful field trials, this program has shown great promise, and CDA currently has well over 400 requests for Canada Thistle biological control from farmers, ranchers, and weed managers throughout Colorado.

Problem or Opportunity

- CDA was able to secure federal funds for the research and development phase for the Canada Thistle fungus control agent, but the USDA will not fund the implementation of the program.
- CDA is unable to fill requests for the fungus control agent based on the expiration of federal funding and staff.

Consequences of Problem

- If the request is not approved, the Department would lose the ability to implement the Canada Thistle fungus as a biocontrol agent throughout Colorado.
- The elimination of the program would have an impact for farmers, ranchers, and weed managers by reducing the ability to control Canada Thistle without the use of pesticides and other chemicals.

Proposed Solution

- Approval of this proposal will help CDA meet the weed and pest control needs of Colorado's citizens. The first projects assigned to this position will be Canada Thistle and hoary cress control, both on the Western Governor Association's top five invasive species list.
- The request is directly related to CDA's Strategic Policy Initiative 2, *Improve the Customer Service Experience for Department Stakeholders*, in the Department's Performance Plan. Additionally, this relates to the Vision 2018 Goal: Enhance stewardship through increased conservation.



COLORADO
Department of Agriculture

John W. Hickenlooper
Governor

Don Brown
Commissioner

FY 2019-20 Funding Request | November 1, 2018

Department Priority: R-01
Request Detail: Biological Pest Control

Summary of Incremental Funding Change for FY 2019-20	Total Funds	General Fund
<i>Biological Pest Control</i>	\$77,429	\$77,429

Problem or Opportunity:

Introduced invasive species cause enormous economic losses which have been estimated at \$120 billion annually in the US¹. The Colorado Department of Agriculture (CDA) has long recognized the importance of controlling invasive species and since 1945 has successfully used a biological agent to control an invasive and potentially devastating peach pest, the Oriental fruit moth, in western Colorado. That was the first success and now the CDA uses biological control against a growing list of pest and weed species in a program that operates out of Palisade (the Palisade Insectary) and serves all of Colorado.

The availability of new biological control agents for use against weeds such as Canada Thistle, Russian knapweed, and hoary cress, as well as insect pests such as the Emerald ash borer and Japanese beetle, presents us with an ideal opportunity to provide low cost invasive species controls to farmers, ranchers, weed managers, and the general public. Increasing staff size would enable the CDA to take advantage of opportunities presented by the availability of new biocontrol agents, further development of existing agents, as well as the existing unique infrastructure Colorado has for biological control implementation.

While CDA continues to apply for grant opportunities, a loss of federal funding for the Canada Thistle program has created a gap in available resources. Currently, the Palisade Insectary has a request list of over 400 individuals requesting Canada Thistle Rust biological control agent. Since the program is currently unfunded, there are no resources available to fill these requests.

Proposed Solution:

To backfill the loss of capacity related to the expiration of federal funding for the Canada Thistle program and to have staff capacity for additional control agents, CDA is requesting an ongoing appropriation of 1.0 FTE and \$77,429 General Fund. The appropriation would benefit agricultural producers, resource managers, and the general public by enabling the CDA to fill existing requests for biocontrol agents and take on new biological control programs when beneficial to the state. Prompt response to stakeholder requests relates to Strategic Policy Initiative 2, *Improve the Customer Service Experience for Department Stakeholders*, in the

Department's Performance Plan. Additionally, this relates to the Governor's 2018 Goal: Enhance stewardship through increased conservation. Stewardship of Colorado's natural resources requires conservation measures to address invasive species. Biological control is an essential component of these measures.

In 2013, the Colorado Department of Agriculture initiated work with the USDA Agricultural Research Service on a highly specific fungus that is capable of killing Canada Thistle (CT) by infecting the root system. Because the CDA had a track record of success in biocontrol and a unique facility in place, the USDA ARS entered into a cooperative agreement with the CDA which provided approximately \$400,000 in support over four years, ending in September of 2017 (Biological Control of Canada Thistle Using a Rust Fungus and Releasing APHIS-Approved Pathogens for Control of Russian Knapweed and Russian Thistle, USDA ARS Co-op agreement 58-1920-3-004, 2013-2017). No other state received money for the program. By the end of the agreement, Canada Thistle rust fungus had been established at sites throughout the state. The impact on thistle was quantified at monitoring sites also spread across the state (Fig 1). At established sites the monitoring program revealed a decrease in CT densities and at some locations a dramatic turnaround occurred in which most Canada Thistle had disappeared from previously dense patches (Figure 2).

Figure 1. Canada thistle rust monitoring and distribution sites

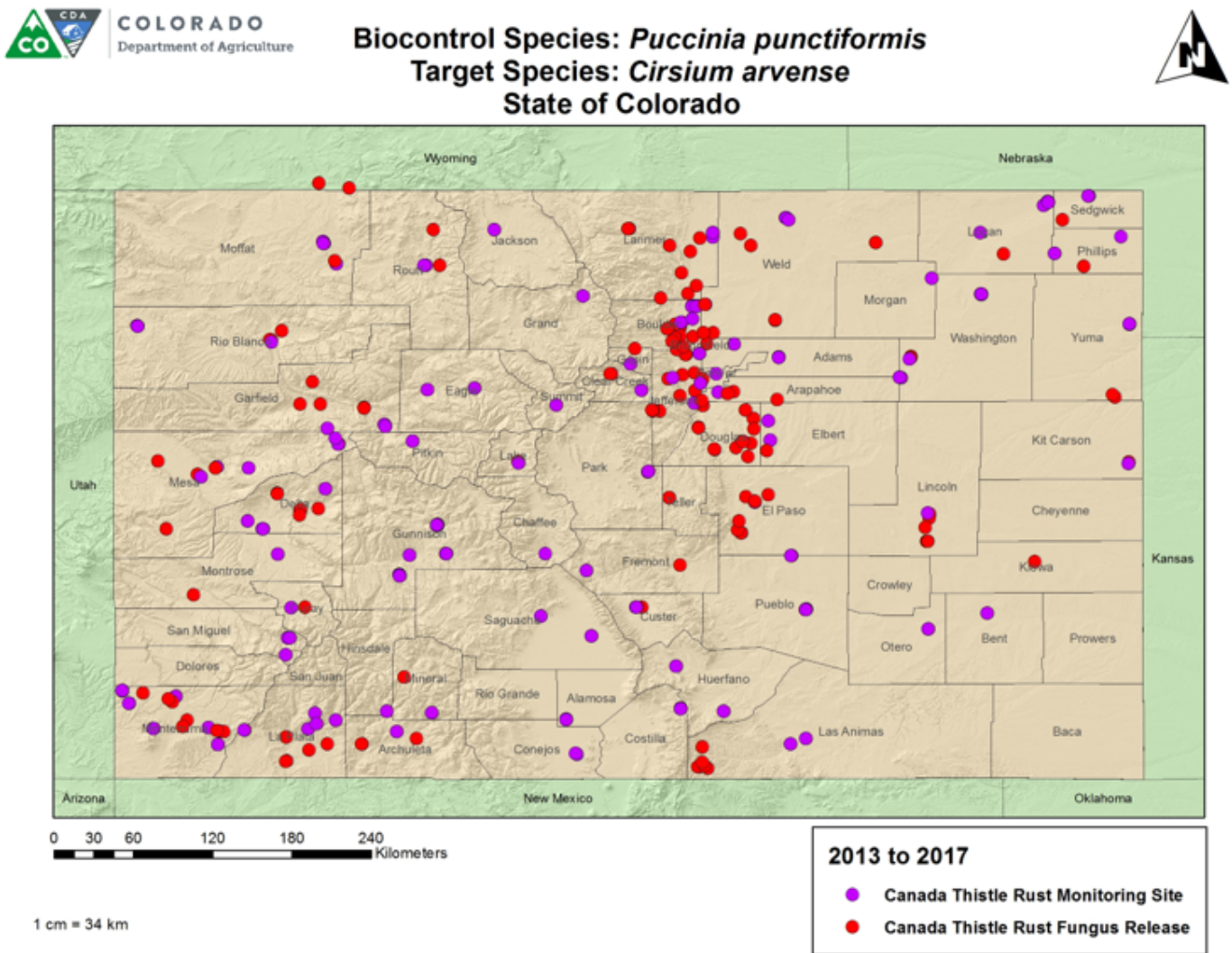


Figure 2. Canada thistle infected with rust completely disappears from a monitoring site.



During the majority of time in which the program was operating from funding provided by the USDA cooperative agreement, we were able to fill two positions at the level of Biological Control Specialist (Life/Social Sciences Researcher/Scientist III) using federal funds. When the project ended, CDA did not have sufficient personnel to task with continuation of the project and can no longer fulfill requests for this agent. The requested FTE would be assigned primarily to this project.

The need for consistent biological control capacity and the potential delivery of new and existing biological control options is supported through the Western Governors Association statement (Attachment A) describing the severity of the challenges imposed by invasive species including the Governors' list of the 25 most damaging or potentially damaging terrestrial species. CDA is either implementing biological control or planning to implement biological control for the top five of these terrestrial invaders. The third worst invasive species is Canada Thistle and CDA is at the forefront of developing an innovative and effective control for this widespread and difficult weed. CDA is using a highly host specific root parasitic fungus to control Canada Thistle. Following successful field trials, this program has shown great promise, and CDA currently has over 400 requests for Canada Thistle biological control from farmers, ranchers, and weed managers throughout Colorado. CDA leveraged federal funding to develop the program but now needs state funding to fully implement Canada Thistle control. Additional information related to CT is included in Attachment B.

An additional FTE stationed in Palisade would help meet Colorado's demand for biological control. The FTE would immediately be assigned to the Canada Thistle project. If biological control agent become available the position may work on the Hoary Cress, and Emerald Ash Borer projects which would help CDA meet the challenges imposed by three of the top five invasive species in the west. Hoary cress (aka white top), is a widespread weed which has been on the increase in Colorado. CDA is currently locating test sites and has learned to grow hoary cress under greenhouse conditions in anticipation of receiving the newly permitted

agent, a mite, for hoary cress control. The fifth worst invader is Emerald ash borer (EAB). CDA has worked with the USDA to release biological control agents on the Front Range to battle a recent invasion of EAB in Colorado. The biological control agents are now established and will play a key role in decreasing the rate and severity of spread of this devastating pest.

Another factor that amplifies the need for an additional FTE is the ever increasing number of new invasive species introduced to Colorado. In the past few years Colorado has seen the introduction of the Emerald ash borer, the Japanese beetle, spotted wing drosophila, brown marmorated stink bug, and grape phylloxera. This trend is very likely to continue or worsen. Many of these newly introduced species, such as the EAB, Japanese beetle and brown marmorated stink bug, have biological control options available which can be immediately utilized if CDA maintains a strong biological pest control program. As one of three similar facilities in the country the Insectary is uniquely equipped to develop and implement new biocontrol programs.

Studies analyzing benefit to cost ratios for biological control have consistently arrived at figures showing a very favorable economic return on biological control investments. In Australia all biological programs were estimated to have yielded a combined benefit to cost ratio of 23:1, while the control of the invasive weed tansy ragwort in Oregon yielded a 13:1 benefit to cost ratio and whitefly control in California yielded a better than 300:1 economic return on the investment². In addition, biological control often provides the only options that organic growers can utilize. Colorado's organic industry would greatly benefit from biological pest control options and many of the producers on the waiting list for Canada thistle control are organically certified.

Anticipated Outcomes:

Approval of this proposal will help CDA meet the weed and pest control needs of Colorado's citizens. The first projects assigned to this position will be Canada Thistle and hoary cress control, both on the Western Governor's top five invasive species list. With the Canada Thistle project, this position will enable CDA to fulfill a request list of over 400 end users, most of them agricultural producers. Aside from the urgent immediate needs fulfilled by this position, the longer term outlook for new and existing invasive species controls will be enhanced by increasing staff at the Palisade facility. Increased stakeholder satisfaction and participation in biological pest control are anticipated outcomes. These will be measured through the elimination of outstanding Canada Thistle Rust requests and generally through stakeholder surveys.

The request is directly related to CDA's Strategic Policy Initiative 2, *Improve the Customer Service Experience for Department Stakeholders*, in the Department's Performance Plan. Additionally, this relates to the Vision 2018 Goal: Enhance stewardship through increased conservation. Canada Thistle is one of the most troublesome noxious weeds in the U.S. It can infest diverse land types, ranging from roadsides, ditch banks, riparian zones, meadows, pastures, and irrigated cropland, to the most productive dryland cropland. Biological control for this and other invasive species contributes to continued progress towards the Governor's Healthy Colorado goals to restore, maintain, or enhance wetlands and grasslands.

Assumptions and Calculations:

The Department requests this position at the level of Life/Social Sciences Researcher/Scientist III, which is the level of our other Biological Control Technicians. This position will include some travel during field season to areas across the state since the Palisade Insectary maintains projects state wide. This position will

also travel to meetings across the state following field season, to report finding and explain biological control options to counties, Conservation Districts and other stakeholder groups. CDA assumes the position will travel an average of 200 miles a day for 30 days a year within Colorado (6,000 miles at \$0.49 per mile) and require a hotel and per diem for most of the trips (\$100 hotel and \$51 per diem).

Expenditure Detail		FY 2019-20		FY 2020-21	
Personal Services:					
Classification Title	Monthly	FTE		FTE	
LIF/SOC SCI RSRCH/SCI III	\$4,200	0.9	\$46,197	1.0	\$50,400
PERA			\$4,804		\$5,242
AED			\$2,310		\$2,520
SAED			\$2,310		\$2,520
Medicare			\$670		\$731
STD			\$88		\$96
Health-Life-Dental			\$7,927		\$7,927
Subtotal Position 1, 0.9 FTE		0.9	\$64,306	1.0	\$69,436
Subtotal Personal Services		0.9	\$64,306	1.0	\$69,436
Operating Expenses:					
		FTE		FTE	
Regular FTE Operating Expenses	\$500	1.0	\$500	1.0	\$500
Telephone Expenses	\$450	1.0	\$450	1.0	\$450
PC, One-Time	\$1,230	1.0	\$1,230	-	
Office Furniture, One-Time	\$3,473	1.0	\$3,473	-	
Mileage (total miles 6,000)	\$0.49		\$2,940		\$2,940
Per Diem (\$51 for 30 days)	\$51		\$1,530		\$1,530
Hotel (\$100 for 30 days)	\$100		\$3,000		\$3,000
Subtotal Operating Expenses			\$13,123		\$8,420
TOTAL REQUEST		0.9	\$77,429	1.0	\$77,856
<i>General Fund:</i>			\$77,429		\$77,856

Citations

1. Pimentel, D, Zuniga, R., and D. Morrison (2005) Update on the environmental and economic costs associated with alien-invasive species in the United States. Ecological Economics 52: 273-288
2. Invasive Species Advisory Committee (2016) Addressing the needs of classical biological control programs (available at https://www.doi.gov/sites/doi.gov/files/uploads/isac_biocontrols_2016_white_paper_rev.pdf)