**Non-chemical weed control methods:**

***Note: early identification each growing season of all invasive species prior to seed head formation is key to the success of controls regardless of type (chemical, biocontrols, or mechanical.)***

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| If you see this… | It is: | Do this | At this time | Notes |
|  | Bull thistle rosette   * Deeply lobed, spiny leaves * No flowers or seed heads present at this stage (see below for how to treat flowering plants.) | * Cut completely through root 3”-4” below soil level. * Turn over and leave in place (or bag if preferred.) * Bagging is not necessary. * Once cleared, seed area of infestation with native plants.\* * Feed seeded areas with clean (weed seed free) compost. | Spring  Late Fall | * Leaving plants to die in place may discourage   future growth.   * Weevils have been extensively tested by CO Dept of Agriculture. |
| ../../Desktop/thistles/musk%20thistle%20rosette.png | Musk thistle rosette   * Leaves somewhat lobed, wavy white outlined margins * Prominent, light green mid –vein * No flowers or seed heads present at this stage (see below for how to treat flowering plants.) | * Biological control is achieved through introduction of species-specific weevils * Weevils can be requested through Crowley Open Space Committee. |  | * Weevils by subscription through the CO Dept of Agriculture at: https://ag.colorado.gov/conservation/biocontrol. * This is a biennial thistle that reproduces through seed only. Does not produce seed heads in year one, so early identification can assist in full eradication. |
|  | Bull thistle flower   * Vase-shaped flower head * Purple flower * Golf ball sized flower head * Deeply lobed, spiny leaves * Biennial (last 2 years) | * Cut & bag all open or partially open flower heads. Dispose of them. * Cut root 3”-4” below soil level. * Turn over de-headed plant & leave in place (or bag if preferred.) * Seed area of infestation with native plants.\* * Feed seeded areas with clean (weed seed free) compost. | Summer/Fall  Late Fall | * It’s important to bag/dispose of even partially opened flower heads as they may contain viable seeds. * Depleting seeds already in soil may take several seasons. * Leaving de-headed plants to die in place may discourage future growth. |
| ../../Desktop/thistles/musk%20thistle%20flower2.jpeg | Musk thistle flower   * Flattened flower head * Purple-ish flower * Golf ball sized flower head * 1 flower head per stem * Biennial (last 2 years) | * Biological control is achieved through introduction of species-specific weevils * Weevils can be requested through Crowley Open Space Committee. |  |  |
|  | **NOTE :** | * The above thistles are invasive & are treated in the same way. * Canada thistle (on other side) has a different treatment regime. * Other thistles found on Crowley Ranch are native and can be left alone. * Contact the Crowley Open Space Committee for more info. * For more pics & help identifying thistles go to <https://tinyurl.com/4j7p9tsv> |  | Suggested tools:   * Radius Garden Root Slayer Shovel * Pruning Shears   \* Use only seed mixes guaranteed not to contain invasive seed. NRSC/SJCD in Pagosa is a reliable, publicly available source. |
| If you see this… | It is: | Do this | At this time | Notes |
| ../../Desktop/thistles/canad%20thistle%202.jpeg | Canada thistle plant   * Pink or purple flowers (rarely white.) * Flowers the size of tip of thumb * Multiple flowers per stem * Highly invasive, tenacious perennial. | * Do **NOT** pull plant or cut below soil. * Clip plant just above ground level multiple times throughout growing season to suppress seed propagation and starve roots. * Do **NOT** disturb roots when clipping plant above ground. * Cover affected area with dark plastic tarp (called solarization) for 4-12 weeks * Solarization is the most effective method for 100% eradication. * Seed area of infestation with native plants.\* * Feed seeded areas with clean (weed seed free) compost. | Summer  Fall | * ***Propagates mostly via roots. Pulling plant or cutting below soil leaves roots and results in accelerated spread***. * Solarization: place dark plastic tarp over plant bed for 4-12 weeks. 4 weeks when underlying plants are new infestation, 12 weeks when infestation is 2 or more years old. * Rust fungus tested for 10 years only attacks Canada thistle per CDA studies spanning 3 decades. * Control of Canada thistle may take several years. |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.34.03%20AM.png | Canada thistle flower | * Can also be contained (not eradicated) by rust fungus available from Open Space Committee. * If you intend to use rust fungus, please contact the Crowley Open Space Committee for best practices information. | ??? | * Rust fungus biocontrol can be requested by subscription through the CO Dept of Agriculture at: https://ag.colorado.gov/conservation/biocontrol. |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.27.18%20AM.png | Oxeye Daisy   * Yellow center surrounded by white petals, slight notch at tip * Flower 1.5”-2” | * Do **NOT** pull plant or cut below soil. * Clip plant & flower/ seedhead above ground to suppress seed propagation and starve roots. * Cover affected area with dark plastic tarp (called solarization) for 4-12 weeks * Solarization is the most effective method for 100% eradication. * Seed area of infestation with native plants.\* * Feed seeded areas with clean (weed seed free) compost. |  | * Distinguished from Shasta daisy by leaf shape:   ../screenshots/Screen%20Shot%202022-02-05%20at%2011.23.36%20AM.png |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.30.59%20AM.png | Disturbed earth | * Seed with native grasses / wildflowers.\* * Cover with certified weed free compost and water. |  | * Many invasive weeds find a foothold in disturbed earth. * Seeding with native plants helps suppress invasive species. |
|  | **NOTE :** | * Other native thistles found on Crowley Ranch can be left alone. * Contact the Crowley Open Space Committee for more information * For more pics & help identifying thistles go to <https://tinyurl.com/4j7p9tsv> |  | \* Use only seed mixes guaranteed not to contain invasive seed. NRSC/SJCD in Pagosa is a reliable, publicly available source. |

**Chemical weed control methods**

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| If you see this… | It is: | Do this | At this time | Notes |
|  | Bull thistle rosette   * Deeply lobed, spiny leaves * No flowers or seed heads present at this stage (see below for how to treat flowering plants.) | * Follow all safety instructions on herbicide labels. * Spray within confines of your property. * Avoid overspray by applying in low wind conditions only. * The chemical *Milestone* considered effective for use on these weeds by the USDA. | Spring | * The makers of glyphosate (Roundup, etc) have lost multiple civil lawsuits in US Appeals courts totaling over $10 billion claiming it causes non-Hodgkins Lymphoma. * Colorado law requires disclosure of any pesticides used on your property during real estate sales. Use of glyphosate may effect property values and impact real estate transactions. |
| ../../Desktop/thistles/musk%20thistle%20rosette.png | Musk thistle rosette   * Leaves somewhat lobed, wavy white outlined margins * Prominent, light green mid –vein * No flowers or seed heads present at this stage (see below for how to treat flowering plants.) |  |  |  |
|  | Bull thistle flower   * Vase-shaped flower head * Purple flower * Golf ball sized flower head * Biennial (last 2 years) | * Follow all safety instructions on herbicide labels. * Spray within confines of your property. * Avoid overspray by applying in low wind conditions only. * The chemical *Milestone* considered effective for use on these weeds by the USDA. | Best to spray *before* flower/seed formation |  |
| ../../Desktop/thistles/musk%20thistle%20flower2.jpeg | Musk thistle flower   * Flattened flower head * Purple-ish flower * Golf ball sized flower head * 1 flower head per stem * Biennial (last 2 years) |  |  |  |
| **NOTE :** | * The above thistles are invasive & are treated in the same way. * Canada thistle (on other side) has a different treatment regime | * Other thistles found on Crowley Ranch are native and can be left alone. * Contact the Crowley Open Space Committee for more info. * For more pics & help identifying thistles go to <https://tinyurl.com/4j7p9tsv> |  | \* Use only seed mixes guaranteed not to contain invasive seed. NRSC/SJCD in Pagosa is a reliable, publicly available source. |
| If you see this… | It is: | Do this | At this time | Notes |
| ../../Desktop/thistles/canad%20thistle%202.jpeg | Canada thistle plant   * Pink or purple flowers (rarely white.) * Flowers the size of tip of thumb * Multiple flowers per stem * Highly invasive, tenacious perennial. | * Follow all safety instructions on herbicide labels. * Spray within confines of your property. * Avoid overspray by applying in low wind conditions only. * The chemical *Milestone* considered effective for use on these weeds by the USDA. Do not use near desirable trees or near water (lakes, streams, etc.) | Late Spring  Fall | IMPORTANT:   * **Fall application is the most effective for control of Canada thistle.** * Herbicide choice is important. Milestone is the suggested herbicide. * Application in late spring may serve to knock back the plant, but it will re-grow. * It takes multiple seasons to control Canada thistle. |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.34.03%20AM.png | Canada thistle flower |  |  |  |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.27.18%20AM.png | Oxeye Daisy | * Follow all safety instructions on herbicide labels. * Spray within confines of your property. * Avoid overspray by applying in low wind conditions only. * The chemical *Milestone* considered effective for use on these weeds by the USDA. Do not use near desirable trees or near water (lakes, streams, etc.) | See notes | * Apply when plants are actively growing and in pre-bud stage of development. |
| ../screenshots/Screen%20Shot%202022-02-05%20at%2011.30.59%20AM.png | Disturbed earth | * Seed with native grasses / wildflowers.\* * Cover with certified weed free compost and water. |  | * Many invasive weeds find a foothold in disturbed earth. * Seeding with native plants helps suppress invasive species. |
|  | **NOTE :** | * Other native thistles found on Crowley Ranch can be left alone. * Contact the Crowley Open Space Committee for more information * For more pics & help identifying thistles go to <https://tinyurl.com/4j7p9tsv> |  | \* Use only seed mixes guaranteed not to contain invasive seed. NRSC/SJCD in Pagosa is a reliable, publicly available source. |