



CONSERVATION ENHANCEMENT ACTIVITY

E528B

CONSERVATION STEWARDSHIP PROGRAM

Grazing management that improves Monarch butterfly habitat

Conservation Practice 528: Prescribed Grazing

APPLICABLE LAND USE: Range, Pasture, Forest

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Implement a grazing management plan that will increase the abundance and diversity of monarch nectar-producing perennial forbs, including milkweed, while maintaining ecosystem benefits for other wildlife and livestock.

Criteria

- Evaluate habitat in the enhanced, delineated Monarch areas with the state NRCS Monarch Butterfly Wildlife Habitat Evaluation Guide (WHEG) and manage delineated Monarch areas to improve the WHEG score at least one category (e.g. from poor to fair, or from good to excellent).
- Enhance diversity of rangeland plants to optimize delivery of nutrients to domestic grazing animals by incorporating the intensity, frequency, timing and duration of grazing and/or browsing needed as determined by a planning process that includes:
 - Clear objectives,
 - A resource inventory with ecological site description or reference sheet and structural improvements and existing resource conditions,
 - Grazing plan,

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- A contingency plan, and
- Monitoring and needed adjustments for Monarchs, domestic grazing animals, and other wildlife (including pollinators).
- Defer, rest, or graze the enhanced, delineated Monarch areas to meet the nectar-producing forbs, including milkweed, needs of Monarch Butterflies when the Monarchs will be migrating through the area (e.g. spring and fall for the southern Great Plains, summer and fall for the Midwest, northern Great Plains and east, and spring through fall for the west.
- Delineate Monarch area(s) within the planned enhancement area/acres, comprising at least 5 acres or at least 5% of the planned enhancement area/acres, whichever is most.
- A written plan for matching the forage quantity and quality produced with the grazing and/or browsing demand by livestock and wildlife will be followed.
- Supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired nutritional level for the kind and class of grazing and/or browsing livestock.



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Documentation and Implementation Requirements

Participant will:

- Y Prior to implementation, develop a map delineating the areas where the Monarch habitat will be implemented.
- Y Prior to implementation, obtain a written grazing plan (NRCS can provide assistance as needed). Plan must include:
 - o Clear goals and objectives of the plan, including identification of the specie(s) of concern and the plant functional groups providing structure and composition.
 - o Map identifying all permanent pastures, water sources, and any riparian area or watershed drainage locations improved or maintained by this management.
 - o Forage inventory
 - o Forage-animal balance sheet
 - o A grazing plan narrative describing the basis for when livestock movement or rotation will occur, including deferment plans.
 - o Contingency plans for forage shortfalls and for events that trigger adverse results.
 - o Monitoring locations, key species, and monitoring techniques.
- Y Prior to implementation, work with NRCS to complete an assessment of the site using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).
- Y During implementation, keep the following documentation:
 - o Livestock herd management records with seasonally important phenological stages of plant growth relative to species of concern.
 - o Annually complete a forage utilization worksheet, such as NRCS Conservation Practice Standard Prescribed Grazing (Code 528) job sheet.
 - o Grazing intensity records for all key grazing areas that accommodate the criteria.
- Y During implementation, defer, rest, or graze the enhanced, delineated Monarch areas to meet the nectar-producing forbs, including milkweed, needs of Monarch Butterflies when the Monarchs will be migrating through the area (e.g. spring and fall for the



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southern Great Plains, summer and fall for the Midwest, northern Great Plains and east, and spring through fall for the west.

- Y During implementation, consult with NRCS to adjust and adapt the grazing plan to current conditions to verify the changes meet enhancement criteria. Changes to the grazing plan will be documented in writing.
- Y After implementation, make all records available for review by NRCS to verify implementation of the enhancement.
- Y After implementation, complete an assessment of the site with NRCS using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG).

NRCS will:

- Y As needed, provide technical additional assistance to the participant as requested.
- Y Prior to implementation, verify there are at least two delineated Monarch areas within the enrolled area, comprising at least 5 acres or 5% of the enrolled area, whichever is most.
- Y Prior to implementation, provide and explain NRCS Conservation Practice Standard Prescribed Grazing (Code 528) as it relates to implementing this enhancement, including any state approved job sheets or work sheets.
- Y Prior to implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG). Minimum score after implementation will be one category higher than initial score when specifically rated for Monarch Butterflies.

WHEG score before implementation: _____

WHEG score after implementation: _____

- Y Prior to implementation, assist the participant with development of a grazing plan, if requested. If NRCS does not assist with plan development, the plan(s) will be reviewed by NRCS for approval prior to implementation to confirm the written objectives meet the criteria of the enhancement.
- Y During implementation, as requested, assist the participant with adapting the grazing strategy and plan to current conditions.



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Y After implementation, review grazing plan, records, and documentation to verify the enhancement was implemented to meet the criteria.

Y After implementation, complete an assessment of the site with the participant using the state's approved NRCS Wildlife Habitat Evaluation Guide (WHEG). Minimum score after implementation will be one category higher than initial score when specifically rated for Monarch Butterflies. **WHEG score after implementation:** _____

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

NRCS Technical Adequacy Signature

Date

ALABAMA – E528B Supplement- Grazing management that improves Monarch butterfly habitat

Requirements:

1. Written conservation plan that includes producer goals, objectives and resource concerns. Plan map will show and label all fences, feeding/watering areas, and sensitive areas. Livestock should be restricted from sensitive areas.
 2. Average annual livestock dry matter needs will be balanced with available forage without deficiency for the yearly summary. The Forage/Animal Balance Worksheet will be completed to document.
 3. Livestock will be rotated between at least 3 pastures in a particular functional group (e.g. warm season pastures or cool season pastures) to facilitate prescribed grazing. Fences and water sources should be in place so that trails do not occur, and concentrated livestock areas are minimized. Starting and ending grazing periods will meet the guidelines in the table below. Pastures will be sized and stocked to facilitate meeting the requirements for grazing heights and resting periods. It is anticipated that with a three-pasture rotation that each pasture would rest about 66 percent of the grazing cycle. Additional pastures are preferred and will enable more forage rest.
 4. Suitable Monarch habitat is not normally present in Alabama pastures. Monarch habitat plants must be established according to the table at the end of this document. Milkweed species (*Asclepias* sp.) are known to contain toxins that can be lethal for livestock if consumed in large quantities. Livestock do not normally eat milkweed due to an undesirable taste however livestock should not be allowed to graze areas planted to milkweed when other forage sources are not plentiful, such as during times of drought. Monarch habitat planting areas must be excluded from other pasture areas by polywire or other fencing and livestock allowed to graze through on an infrequent basis (once or twice a year) once plants are fully established. Do not mow milkweed areas for hay because the toxins do not break down even after drying. Delineate Monarch areas within the pastureland comprising at least 5 acres or 5% of the pastureland acres, whichever is most. The area should be treated with appropriate herbicides prior to establishment of monarch/pollinator habitat if johnsongrass, bermudagrass, bahiagrass, fescue or other hard to eradicate species are present. Treatments in two consecutive years or twice in one year is allowable for introduced pasture grasses, because they are so tough to eradicate. Common herbicide applications are spring and summer prior to fall planting or spring and fall prior to spring planting. **Tillage, if planned, should occur prior to the last chemical application. Ample time between these activities is imperative for the success of control of existing vegetation, (10-21 days depending on the weather conditions).** It is best to use herbicides to kill competing vegetation and then do a prescribed burn afterwards to expose mineral soil rather than tillage. Tillage brings weed seeds to the soil surface that can be very competitive with the planted seeds.
- For sites that are tilled, smooth the area by disking and dragging. After smoothing, the site should be conditioned by using a culti-packer, roller, or other equipment to compact the soil surface. This will keep the seed from being buried too deeply.
 - Sites that are burned (and not tilled) will not need to have the soil surface compacted with equipment.
 - A firm seed bed is essential and never plant seeds deeper than $\frac{1}{4}$ ".
 - Fall or dormant season planting is recommended for forbs/wildflowers since seed germinates better after exposure to a period of cold temperature and moisture (stratification). On sites where weeds have been eliminated and are completely dead by fall, forb seed can be planted in late fall by hand or drill with no soil tillage (seed will work its way down as the soil freezes and thaws over winter).
 - After planting on a rolled or cultipacked site, roll or culti-pack the area again to ensure good seed to soil contact.
 - Select plants from the approved plant list. At least three must be planted from each bloom period for a total of at least 9 species.
 - More diverse mixes will likely result in superior habitat for monarchs and for pollinator communities in general, so please aim to include mixes with more than 9 species of monarch

plants where possible. More diverse mixes can be designed without major increase in cost by adding a mixture of low-priced, moderately priced and high-priced species.

List of planned species and rates must be generated with the Alabama Monarch Butterfly Seed Mixture Calculator (Excel spreadsheet). Work with a seed vendor or nursery to obtain appropriate plant materials, make substitutions as needed based on available plant materials and site conditions. The list of species and rates must be approved by NRCS before practice is installed. Examples of seed mixtures are provided in the Alabama Monarch Butterfly Seed Mixture Calculator (Excel spreadsheet). There are many species mixture possibilities.

- If using a native seed drill, mix seed with a carrier such as pelletized lime or cat litter (clay bentonite) so that small seed are spread evenly.
- When broadcasting seed, mix seed with a carrier such as pelletized lime, cat litter (clay bentonite), sand, soy hulls, or cracked corn in order to facilitate good seed coverage. Use at least 3 times as much carrier as seed. The more the seed is diluted, the better it will be distributed. Divide the seed/carrier mixture in half. Broadcast half the mixture in one direction over the area, then broadcast the other half at a right angle to the first pass to insure equal coverage.
- Planting multiple species of *Coreopsis* or *Rudbeckia* should be avoided.
- Maintenance shall be completed on these areas beginning the second winter after establishment outside of the season when monarch larvae or adults are present. December and January are the best months to perform maintenance in Alabama. Some form of maintenance must be completed on all acres at least once every 3 years or the preferred method of 1/3 of acreage annually on a 3-year rotation. If annual grazing has not maintained the Monarch habitat in good condition, prescribed burning is the recommended form of maintenance, but mowing or light disking is acceptable. Growing season burns will provide better control of woody plants. Mowing only could allow a duff layer to develop and potentially limit pollinator plant growth and survival. Disking should be limited to a very shallow depth as the seeds of monarch/pollinator plants are generally small and will not survive being covered with more than 1/4" of soil or plant debris.
- Spot spraying of invasives or unwanted vegetation is recommended but ensure herbicide label directions are followed.

*Some information was obtained from the South Carolina NRCS monarch butterfly habitat establishment job sheet.

5. Perform a soil test annually for each field with different soils and/or management and apply lime and fertilizer according to soil test results. If manure or by-products are applied, follow Phosphorus Index and Nitrogen Leaching Index limitations according to the Nutrient Management Standard (590).

6. Seed invoices are required. Photographs of habitat areas should be taken after plants are fully established and grazing records specific to these areas kept, in addition to regular grazing records.

7. Maintain grazing records to include pasture or field number, acres, forage type, animal type and number, forage height in and out-with dates. Records should be submitted quarterly along with the Pasture Condition Score.

Grazing will be managed according to the Prescribed Grazing (528) Standard.

The days of rest needed for plant recovery and regrowth range from 7 to 45 days, depending on the forage species (see below table). Stocking rates and growing conditions can also affect the forage growth. Grazing systems should be designed to meet the rest requirements of a specific forage as well as the needs of the livestock. For example, by using four pastures with 14 days of grazing per pasture, the grazing cycle is 56 days and each pasture rests 75% of the time or 42 days.

FORAGE GUIDELINES FOR PRESCRIBED GRAZING SYSTEMS

Common Forages	Begin Grazing (in)	End Grazing (in)	Usual days of Rest
Alfalfa grazing types	10	4	35 - 40
Bahiagrass	6	2	10 - 20
Bermudagrass common	5	2	7 - 10
Bermudagrass hybrid	6	3	7 - 10
Big Bluestem	18	10	30 - 45
Dallisgrass	6	3	7 - 15
Eastern Gamagrass	15	8	30 - 45
Tall Fescue	6	3	15 - 30
Indiangrass	12	6	30 - 40
Orchardgrass	8	3	15 - 30
Switchgrass	18	10	30 - 45

Grazing Management Records

Keeping accurate records is a continual and critical process in effective pasture and livestock management.

Pasture ID		Pasture acres	Forage type			
Soil test date		Lime/ Fertilizer rate	Lime/ Fertilizer type		Date applied	
Livestock		Date in	Forage height	Date out	Forage height	Notes (fertilizer applied)
Type	Number					

Pasture ID		Pasture acres	Forage type			
Soil test date		Lime/ Fertilizer rate	Lime/ Fertilizer type		Date applied	
Livestock		Date in	Forage height	Date out	Forage height	Notes (fertilizer applied)
Type	Number					

SPECIES RECOMMENDED FOR MONARCH BUTTERFLY PLANTING AREAS IN ALABAMA

The following list of monarch butterfly plants are eligible for planting as part of the NRCS Monarch Butterfly Habitat establishment practice. The practice requires a mixture of seeds to be planted at a density of 50 pure live seeds per square foot. Milkweed must make up a minimum of 1.5% of the total mixture. Seeds per pound are required to calculate the mixtures and determine if milkweed seeds are present in numbers to meet national requirements (1.5%). There is an excel spreadsheet that can be used by NRCS employees to assist with mixture development. Please consult this list (soil moisture, sun and color may be important to landowner needs) when developing your species to include in the excel spreadsheet. **Species highlighted in yellow have less value to monarch butterflies but are beneficial to other pollinator species. Only one yellow highlighted species may be included in the mix for monarch butterfly habitat establishment.** Tropical milkweed (*Asclepias curassavica*) should not be planted under any circumstances as part of a monarch butterfly habitat establishment effort.

Southeastern regional ecotype seed should be used if available, ask seed vendors

Flowering Period	Soil Moisture	Sun	Botanical Name	Common Name	Color	Height	Seeds Per PLS Pound*
Early	dry to medium	sun to partial shade	<i>Coreopsis lanceolata</i>	Lanceleaf tickseed	yellow	1' – 2'	220,000
Early	medium to wet	full sun	<i>Coreopsis tinctoria</i>	Plains Coreopsis	yellow, red	1' – 3'	3,200,000
Early	dry to medium	full sun	<i>Asclepias syriaca</i>	Common milkweed	pink	3' – 6'	48,000
Early	dry to medium	full sun	<i>Asclepias tuberosa</i>	Butterfly milkweed	orange	2' – 3'	56,000
Early	dry to wet	full sun	<i>Penstemon digitalis</i>	Smooth beardtongue	white	2' – 4'	1,800,000
Early	dry to medium	sun to partial shade	<i>Rudbeckia hirta</i>	Black-eyed Susan	yellow,	2' – 3'	1,600,000
Early	medium to wet	full sun	<i>Zizia aurea</i>	Golden alexander	yellow	2' – 3'	192,000
Early	Dry to medium	sun to partial shade	<i>Echinacea pallida</i>	Pale purple coneflower	pink	2' – 3'	80,000
Early	Dry to medium	full sun	<i>Coreopsis grandiflora</i>	Large-flowered tickseed	Yellow	1' – 2'	227,000
Early	Dry to medium	full sun to partial shade	<i>Phlox divaricata</i>	Eastern blue phlox	Blue	up to 1'	170,000
Early	Medium to wet	full sun	<i>Coreopsis tripteris</i>	Tall tickseed	Yellow	2' – 8'	170,000
Early	dry to medium	full sun	<i>Monarda punctata</i>	Spotted beebalm	white, purple, yellow	1' - 3'	1,500,000
Early	Medium to wet	full sun to partial shade	<i>Amsonia tabernaemontana</i>	Eastern bluestar	blue	2' – 3'	22,400
Mid	moist to mesic	full sun	<i>Liatris spicata</i>	Dense or Spiked blazing star	rosy-pink-purple	2' – 4'	190,000
Mid	dry to medium	full sun to partial shade	<i>Dracopis amplexicaulis</i>	Clasping coneflower	yellow	1' – 2'	1,600,000
Mid	moist	sun to partial shade	<i>Desmanthus illinoensis</i>	Illinois bundleflower	white	2' – 3'	200,000
Mid	moist to dry	sun to partial shade	<i>Echinacea purpurea</i>	Purple coneflower	lavender	2' – 4'	115,000
Mid	dry to medium	full sun	<i>Ratibida pinnata</i>	Greyheaded coneflower	yellow	3' – 5'	450,000
Mid	medium to wet	sun to partial shade	<i>Eupatorium perfoliatum</i>	Boneset	white	4' – 6'	2,000,000
Mid	dry to wet	full sun	<i>Eupatorium rotundifolium</i>	Roundleaf thoroughwort	white	1' – 3'	2,000,000
Mid	dry to wet	sun to partial shade	<i>Monarda fistulosa</i>	Bergamot	lavender	2' – 4'	1,250,000
Mid	dry to wet	full sun	<i>Heliopsis helianthoides</i>	False sunflower or smooth oxeye	yellow	3' – 6'	105,000
Mid	Dry to medium	full sun	<i>Pycnanthemum tenuifolium</i>	Slender mountainmint	White	2' - 3'	6,000,000
Mid	Dry to wet	full sun to partial shade	<i>Pycnanthemum incanum</i>	Hoary mountainmint	white	2' – 3'	6,000,000
Mid	Dry to medium	full sun to partial shade	<i>Pycnanthemum muticum</i>	Clustered mountainmint	white	2' – 4'	2,240,000
Mid	Medium to wet	partial shade	<i>Penstemon laevigatus</i>	Eastern smooth beardtongue	Light purple-white	2' – 3'	350,000
Mid	Dry to medium	full sun	<i>Eryngium yuccifolium</i>	Rattlesnake master	white	4' – 5'	128,000

Mid	Dry to medium	full to partial shade	<i>Asclepias verticillata</i>	Whorled milkweed	white	1' – 3'	182,000
Mid	Dry to wet	full sun	<i>Eupatorium hyssopifolium</i>	Lanceleaf thoroughwort	white	2' – 4'	2,000,000
Mid	Medium to wet	full sun to partial shade	<i>Phlox pilosa</i>	Prairie phlox	Pink	1' – 2'	304,000
Mid	Dry to medium	full sun	<i>Salvia coccinea</i>	Scarlet sage	Scarlet	1' - 3'	276,800
Mid	Dry to medium	full sun	<i>Silphium asteriscus</i>	Starry rosinweed	yellow	2' – 5'	20,800
Mid	Dry to medium	full sun to partial shade	<i>Silphium laciniatum</i>	Compass plant	yellow	3' – 8'	10,560
Mid	Dry to medium	full sun to partial shade	<i>Silphium trifoliatum</i>	Southern rosinweed	yellow	up to 5'	20,800
Late	medium to wet	partial shade	<i>Eutrochium purpureum</i>	Sweet Joe-pye weed	pink	5' – 7'	672,000
Late	dry to medium	full sun	<i>Gaillardia pulchella</i>	Indian blanket	yellow, red	1' – 2'	238,000
Late	medium to wet	partial shade	<i>Helianthus angustifolius</i>	Narrow Leaved sunflower	yellow	3' – 6'	504,000
Late	Moist	full sun	<i>Helenium autumnale</i>	sneezeweed	Yellow	3' – 4'	2,000,000
Late	medium to wet	partial shade	<i>Verbesina alternifolia</i>	Yellow wingstem	yellow	4' – 8'	145,000
Late	medium to wet	partial shade	<i>Verbesina virginica</i>	White wingstem	white	3' – 6'	260,000
Late	moist	full sun to partial shade	<i>Vernonia gigantea</i>	Ironweed	purple	5' – 8'	320,000
Late	dry to medium	full sun	<i>Helianthus maximiliani</i>	Maximilian sunflower	yellow	3' – 10'	210,000
Late	moist	full sun	<i>Bidens aristosa</i>	Showy tickseed	yellow	2' – 3'	130,000
Late	Dry to medium	full sun to partial shade	<i>Symphotrichum novae-angliae</i>	New England aster	purple	4' – 5'	1,056,000
Late	Dry to medium	full sun	<i>Symphotrichum laevis</i>	Smooth aster	Blue	2' – 3'	750,000
Late	Medium to wet	full sun to partial shade	<i>Lobelia siphilitica</i>	Blue lobelia	blue	2' – 3'	8,000,000
Late	Dry to medium	full sun to partial shade	<i>Liatris aspera</i>	Button blazing star	purple	2' – 3'	256,000
Late	Dry to moist	partial shade	<i>Desmodium paniculatum</i>	Panicked tick trefoil	Purple	2' – 5'	106,000
Late	Dry to moist	full sun	<i>Symphotrichum pilosum</i>	White oldfield aster	White	3' – 5'	700,000
Late	Medium to moist	full sun	<i>Eutrochium fistulosum</i>	Tall Joe Pye Weed	pink, purple	5' – 8'	2,000,000
Late	Medium to wet	full sun to partial shade	<i>Asclepias incarnata</i>	Swamp milkweed	pink	4' – 5'	70,000
Late	Dry to medium	full sun to partial shade	<i>Liatris tenuifolia</i>	Shortleaf blazing star	purple	3' – 5'	190,000
Late	Dry to medium	full sun	<i>Salvia azurea</i>	Pitcher sage	blue and white	3' – 5'	149,000
Late	Medium/moist	partial shade	<i>Symphotrichum lateriflorum</i>	Calico aster	white, purple	1' – 2'	4,000,000

Forb (flowering) mixtures should contain at least 3 species from each of the 3 bloom periods (Early, Mid, Late). The 3 species need not be in bloom for the entirety of a bloom period. Mixtures of forbs and/or legumes should be planted at the rate of 50 pure live seed (PLS) per square foot.

Native Grasses

Native grasses (NWSG) are key components of natural herbaceous plant communities and may be a necessary component for the establishment of monarch butterfly habitat on some sites. NWSG aren't host or nectar species for monarch butterflies, but many other butterfly species utilize them as host plants. NWSG may be added to the mixture if the landowner or NRCS agent believe it is necessary for ecological stability of the site or as structure for the benefit of the pollinator species. **NWSG should not be planted at a rate greater than 1 pound per acre.** NWSG are not a substitute for the approved monarch pollinator species – they are in addition to the pollinator species. NWSG provide fuel for prescribed burning and maintenance of pollinator and monarch butterfly habitat.

<u>Soil moisture</u>	<u>Sun</u>	<u>Botanical name</u>	<u>Common name</u>	<u>Height</u>	<u>Notes</u>
Dry to medium	sun to partial shade	<i>Schizachyrium scoparium</i>	little bluestem	3-6'	likes a dry site
Dry to medium	sun to partial shade	<i>Sorghastrum nutans</i>	Indiangrass	3-8'	no more than 0.5 lbs./acre
Medium to wet	sun to partial shade	<i>Elymus virginicus</i>	Virginia wild rye	2' – 3'	cool season grass
Likes wet soils	sun to partial shade	<i>Tripsacum dactyloides</i>	Eastern gamagrass	up to 8'	
moist to dry	sun to partial shade	<i>Andropogon gerardii</i>	big bluestem	4-8'	no more than 0.5 lbs/acre

Dry to medium sun to partial shade
1-3'

Bouteloua curtipendula

sideoats grama

After establishment – Grass selective herbicides such as those with clethodim will not harm the forbs, legumes or any broadleaf plants in a monarch habitat establishment area but will remove any grasses that are present, including native warm season grasses. Spot spraying may be necessary if grasses need control. Read and apply as per label instructions.

*PLS = Pure Live Seed (% purity x % germination = % pure live seed)

Example: Where Purity is 90% (meaning 90% of the weight being purchased is actual seed) and where Germination is 70%, (meaning 70% of the actual seed are guaranteed to be viable). In this Example **PLS = .90 X .70 = 63 percent**

So, in this example, every 100 pounds of bulk seed you get actually contains 63 pounds in pure, viable seed.

As you can see, PLS is NOT the same as bulk seed. Buyer should ensure pricing is based on pls pounds!