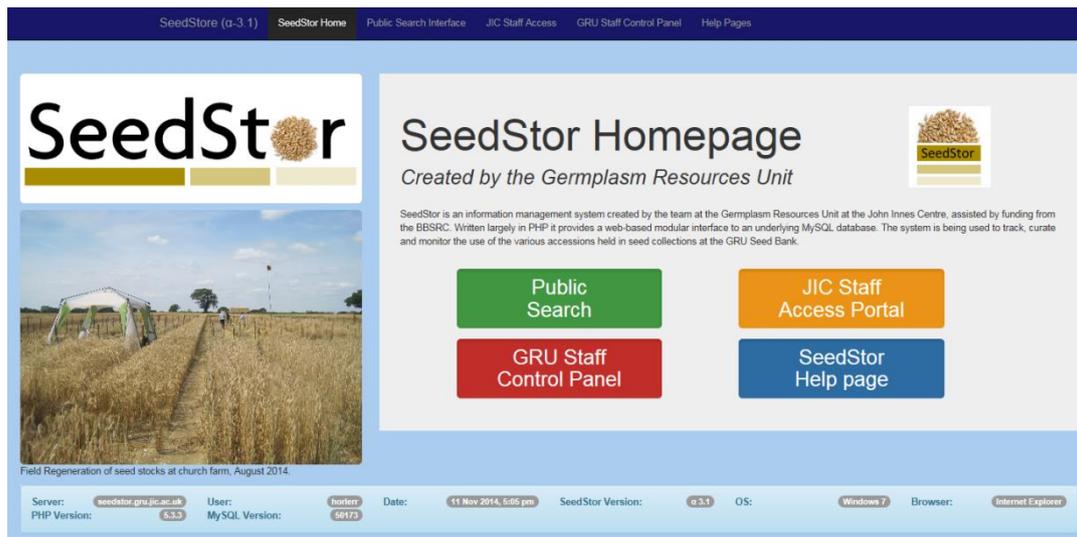


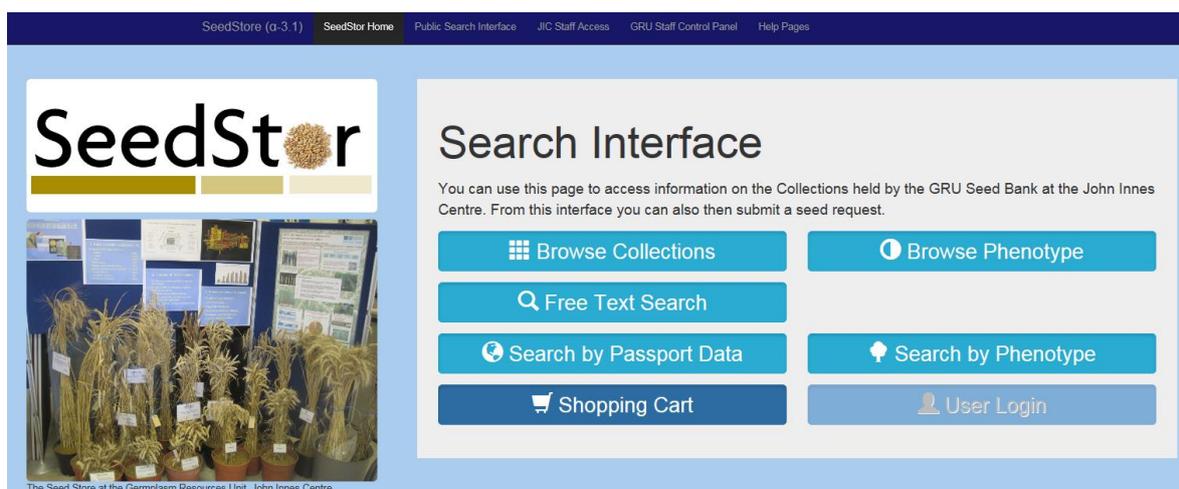
A new online system used for the management of seed stocks from the various collections of the Germplasm Resources Unit. Incorporating both a public facing aspect to allow easy searches against the collection and a restricted LIMS to enable managed processing of requests by GRU staff.

This workshop session is intended as a starting point for JIC staff to familiarise themselves with the various public facing search tools and to seek feedback to improve these tools and for future development of the resource.



The SeedStor Homepage: This is the current version of the homepage of SeedStor incorporating both functions (<http://seedstor.gru.jic.ac.uk/>).

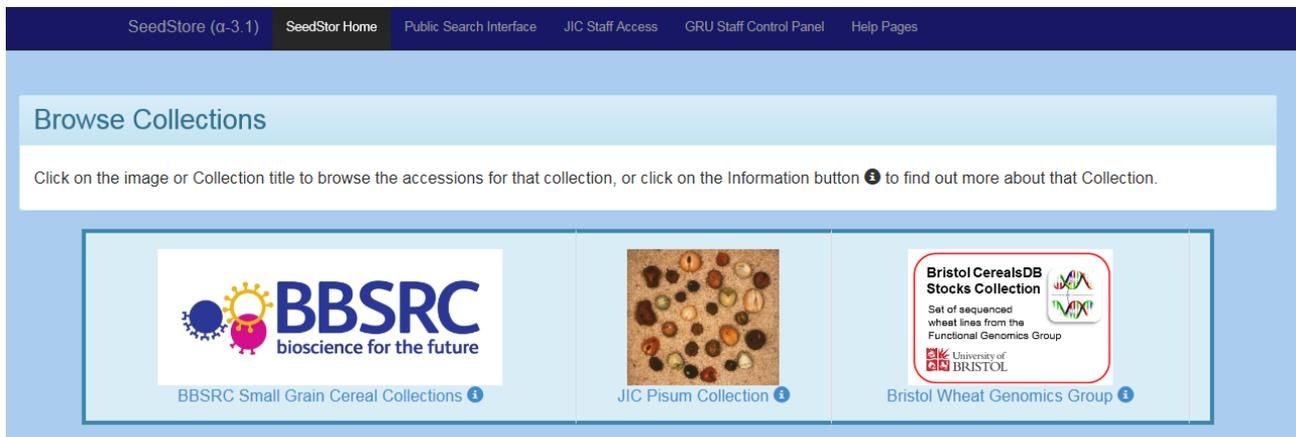
Today's workshop will be focused on the "Public Search" functionality of the site, accessed via the green button above or the "Public Search Interface" link on the navigation bar that remains at the top of all pages on the site.



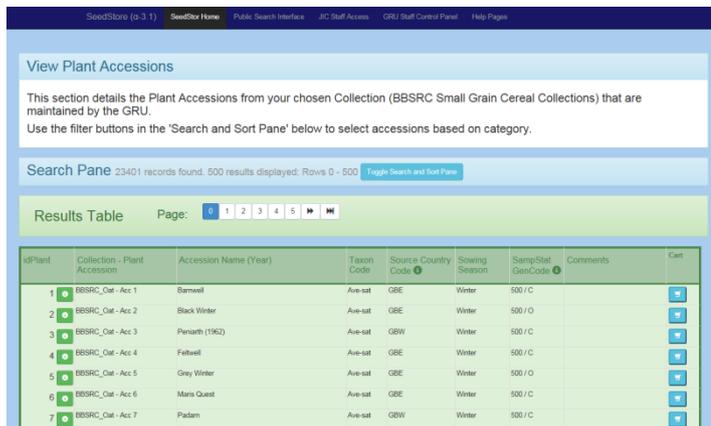
The SeedStor Public Search Interface: This is the access point that will be publically available via the Internet for all users and allows JIC staff and the general public to interrogate the database of accessions held by the GRU.

Browse Collections

There are many methods that can be used to access the accessions held by the GRU the simplest (but potentially the least useful) is to merely browse by collection. This will provide an overview of specific collections held by the GRU and allow one to read information about the collection via the **i** icon. Clicking on the **Collection Name** or **photo** will take you to a list of accessions held within that collection.



Browse Accessions:



View Collection Information:



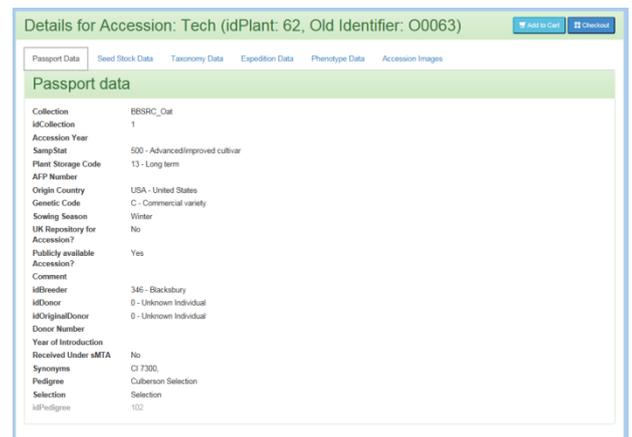
QUESTION: What are the Accession Names of the first three accessions within the *Pisum* collection?

The page of accessions will show how many accessions are associated with that collection and then list the first 500. As there are many accessions in each of the collections they are split across multiple pages, these can be accessed from Page links by clicking on the relevant **page number**.

QUESTION: How many pages are required to show the entire BBSRC Small Grain Cereal collection?

To view the specific information for an accession click on the information button **i** for the line of interest. This will take you to a multi tabbed view of the accession. The tabs include data on:

- Passport – Core accession information
- Seed Stock – Current Stock availability
- Taxonomy – Taxonomy of the accession
- Expedition – Original collection source info
- Phenotype – Recorded phenotypic descriptions.
- Accession Images – Any Accession images and photos.



Free Text Search

This will be one of the most useful ways to interrogate the collections; this allows a specific search term to be used. You can search for a specific term in a number of different fields within different information sources. The simplest to understand is a search for a known accession name, type the term you wish to look for in the "search text" box and then select "Accession Name" and finally click on Search. This will then result in a list, which will show any results that contain the term as shown in the search "green" against Accession Name and the matches below.

Basic Free Text Search

Search across collections for a specific term. Select one or more categories to search using the tick boxes below.

Search Box

Enter search term here

Search text

This is an Exact Search for values that contain the term given above. The % wildcard can be used to represent any character. For example g%n will result in 'gun', 'green' and 'grey moon'.

Select the fields from database tables to search 2

Plant Accessions idPlant Plant Accession Accession Name Comments Country GenCode SampStat idDonor

Collection Collection Name Collection Description Collection Comments

Misc Synonyms StoreCode
(Do not select both of these fields together)

Phenotype Phenotype Parameter Phenotype Value

Click the button below to submit your search

Search Box

Search Text Submitted: green
Search plant table fields: AccessionName

32 Result(s) from Plant table. Displaying All Results

idPlant	Collection - Plant Accession	Accession Name (Year)	Comments
135	BBSRC_Oat - #141	Green Mountain	
1006	BBSRC_Oat - #1102	Green Mountain (1974)	
1599	BBSRC_Oat - #1698	Green Russian-Bond * Fulgrain (1972)	
3518	BBSRC_Barley - #4246	HB 429/5713 Green Stem (1968)	
4259	BBSRC_Barley - #5004	BGM_33 Short Straw Deep Green	
4265	BBSRC_Barley - #5011	BGM 41 Pale Green Seedling	

QUESTION: When searching Accession Name which of the four Seasons does not produce any matches?

One point to remember is that each record is a separate stock that may be not be unique – we may have more than one source of a specific cultivar e.g. Green mountain above. Other searches can be done against many other fields, for example search the Comments field in passport for "salt".

Search Box

Search Text Submitted: salt
Search plant table fields: Comment

8 Result(s) from Plant table. Displaying All Results

idPlant	Collection - Plant Accession	Accession Name (Year)	Comments
22418	BBRSC_Wheat - #9286	Blue Silver (1994)	Salt tolerant
22419	BBRSC_Wheat - #9287	Lyallpur 73 (1994)	Salt tolerant
22422	BBRSC_Wheat - #9290	LU 26S (1994)	Salt tolerant
22424	BBRSC_Wheat - #9292	KRL 1-4 (1994)	Salt tolerant
23049	BBRSC_Wheat - #9922	H 68 (1997)	Salt tolerant
23051	BBRSC_Wheat - #9924	M 283 (1997)	Salt tolerant
23064	BBRSC_Wheat - #9937	Pak-70 (1997)	Salt tolerant
23065	BBRSC_Wheat - #9938	Blue Silver Selection (1997)	Salt tolerant

QUESTION: How many unique accessions have the synonym "Irish red Velvet Chaff"?

Search by Passport data

There are some core parameters that make up the Passport data for each accession including genus, species, sowing period and country of origin these allow the user to narrow down searches based on particular desired characters. It is possible to select multiple characteristics or allow the search to include all values for a specific character. Some selections can alter the options presented in other boxes, for example selecting a specific genus will limit the species shown to those within the genus (Dependent on the browser used, does not work with Internet Explorer). The UK is divided into nations with the UK prefix within SeedStor e.g. UK - Wales.

Search Passport Data

Search across collections for specific passport characteristics - use one or more of the selection boxes in the panel below.
The species list will update after a genus is selected but this process is not supported within the Internet Explorer browser.

Search Box

Enter Filter Selections here

Filter by Collection ==== ALL COLLECTIONS ==== Archive stocks (Andy Maule) Avalon x Cadenza Barley Starch Mutants BBSRC Small Grain Cereal Collections	Filter by Genus ==== ALL GENUS ==== Aegilops Agropyron Avena Dasypyrum	Filter by Species ==== ALL SPECIES ==== Aegilops bicornis Aegilops biuncialis Aegilops caudata Aegilops columnaris	Filter by Sowing Season ==== ALL SEASONS ==== Alternate Mixed Spring
Filter by Status ==== ALL STATUS VALUES ==== Breeders line (B) Commercial variety (C) Diploid (D) F1 hybrid or selfed F1 (F)	Filter by Country of Origin ==== ALL COUNTRIES ==== Country Unknown (*) Afghanistan (AFG) Albania (ALB) Algeria (DZA)	Filter by SampStat ==== ALL SampStat Codes ==== 100 - Wild 110 - Natural 120 - Semi-natural/wild 200 - Weedy	
Filter by Accession Year ==== ALL Accession Years ==== 1920 1921 1922	Filter by Stock Description ==== ALL Stock Descripti ==== Primary Bulk Bagged Other	Filter by Ploidy ==== ALL Ploidy ==== 0 2 4 6	

Click the button below to submit your search

QUESTION: How many Wild (SampStat) Oat (*Avena*) accessions does the GRU store?

Search Box

Searching these field criteria: (idCollection: Any Term), (Genus like 'Triticum'), (Species like 'aestivum'), (GenCode: Any Term), (OriginCountry like 'EGY'), (SampStat: Any Term), (SowSeason: Any Term), (AccYear: Any Term), (StockDesc: Any Term), (taxon.Ploidy: Any Term)

QUESTION: How many Egyptian *Triticum aestivum* accessions does the GRU store?

QUESTION: How many Wild, English accessions does the GRU store?

Browse by Phenotype

This allows users to look at specific phenotype distributions from within a specific genus. First select the genus from the list then select the phenotype of interest. This will result in a pie chart showing the different values assigned to plant accessions of that phenotype. The blurb text states the total number of accessions with data on the phenotype and then the pie chart shows the percentage for each value, clicking on a specific slice of the pie chart will take you to a list of accessions that match that phenotypic value. The system will merge all values that comprise less than 3% of accessions into a pooled group known as 'others' and then list these and their percentages above the chart.

Phenotype Pie chart

Show observed values for a chosen phenotype for a selected genus as pie charts

Search Box

Select Collections / Taxon To Search Across

Taxon

- Aegilops
- Agropyron
- Avena
- Dasypyrum
- Eremopyron
- Hemiradia
- Hordeum
- Pisum

Click the button below to submit your search

🔍 Search within Taxon

Phenotypes listed for *Pisum*

Phenotypes

- Flowers - Flower Wings
- Flowers - Flowers per Node
- Foliage - Leaf Anthocyanin
- Foliage - Leaf Colour
- Habit - Aerial Branching
- Habit - Basal Branch Number
- Habit - Fasciation
- Habit - Inter Node Length
- Habit - Rogue
- Inflorescence - Height to Flower
- Inflorescence - Nodes to Flower
- Leaflets - Leaflet Margin
- Leaflets - Leaflet Margin Grey Spot
- Leaflets - Leaflet Margin Lower Wax
- Leaflets - Leaflet Margin Upper Wax

🔍 Display

🔄 Reset

Showing Hilum Colour for *Pisum*

We have a total of 2888 accessions with this phenotype defined, phenotype values that make up less than 3% of observed values are amalgamated into 'Others'

Colour	Percentage
Cream	60.9%
Black	15.1%
Brown	23.9%

There are 436 Accessions that meet your search criteria. All Results Listed

Hilum Colour: Black in *Pisum*

idPlant	Accession Name (Year) [Old DB - Accession Number]	Matching Phenotypes	Comments
26542	P. ELATIUS (1991) [Pisum - #3155]	Hilum Colour: Black	
26433	P. ABYSSINICUM (1997) [Pisum - #3046]	Hilum Colour: Black	
26334	RIL 15x1194_08 (1994) [Pisum - #2947]	Hilum Colour: Black	
26163	APPELBLOSSOM-cr (1994) [Pisum - #2776]	Hilum Colour: Black	de Haan line
26085	P. HUMILE (1994) [Pisum - #2698]	Hilum Colour: Black	from the Weizmann Inst. Israel
26017	P. ELATIUS (1992) [Pisum - #2629]	Hilum Colour: Black	
25940	P. SATVUM (1991) [Pisum - #2552]	Hilum Colour: Black	
25911	P. FULVUM (1991) [Pisum - #2523]	Hilum Colour: Black	

QUESTION: How many different Aleurone colours exist within the genus *Hordeum*?

QUESTION: What percentage of *Triticum* accessions have a Black Kernal colour?

Search by Phenotype

This allows users to look for accessions that match a specific phenotype or set of phenotypes. This can also be limited to a specific genus but unlike Browse by phenotype need not be. Once the genus has been selected (or "Search Whole Database") a list of phenotypes stored within the system is shown together with the possible defined values that exist. One or more phenotypes can be selected and then a "search performed", remember that combining phenotypes can easily result in no matching accessions.

The screenshot shows the 'Search Phenotypes' section of the SeedStore website. At the top, there is a navigation bar with links for 'SeedStore (4.3.1)', 'SeedStore Home', 'Public Search Interface', 'JIC Staff Access', 'GRU Staff Control Panel', and 'Help Pages'. Below this is a header for 'Search Phenotypes' with a sub-header 'Search Box, Showing phenotypes for Genus: *Hordeum*'. The main content area contains a search box with the text 'Enter Filter Selections here' and eight dropdown menus for selecting phenotype values. The dropdowns are: α-amylase activity (values: 1000-5000 FU/mg, 5001-8000 FU/mg, 8001-13000 FU/mg, 13001 - 16000 FU/mg), Aleurone colour (values: White, Blue, Red), Alternaria race reaction (value: No test reaction), Awn length (values: 1 - Extremely short, 2 - Very short, 3 - Short, 4 - Below average), Awn Retention (values: 1 - Very deciduous, 2 - Deciduous / Very deciduous, 3 - Deciduous, 4 - Below average), Awn roughness (values: Rough, Smooth), Barban reaction (values: Resistant, Susceptible (retarded growth + chlorosis), Susceptible (retarded growth)), and Brown rust race reaction (values: No test reaction, Positive test reaction).

If you chose only a single phenotype to search against then results will be shown immediately, if instead you chose to identify accessions that match multiple phenotypes then a summary showing the matches that meet 2 or more of the selected characteristics are shown up to accessions that meet all criteria. For example searching within *Hordeum* accessions for *Red Aleurone*, *smooth awns*, *grey lemma* and *6 row ear distribution* produced three sets of results: 4 accessions that meet three of the four criteria and a further 669 that meet two of the four criteria selected, you will note that we do not have any accessions that meet ALL four criteria selected. These individual summaries can be expanded by the **Toggle Results** button to reveal the matching accessions. The toggled results table will show the matching phenotypes and their trait values adjacent to the accession information.

The screenshot shows the search results summary for a query with four criteria. The search box contains the text: 'Searching 4 field(s) for phenotypes that match these criteria: PhenotypeParameter = 'Aleurone colour' and PhenotypeValue = 'Red', PhenotypeParameter = 'Awn roughness' and PhenotypeValue = 'Smooth', PhenotypeParameter = 'Ear Distribution' and PhenotypeValue = '6 row', PhenotypeParameter = 'Lemma colour' and PhenotypeValue = 'Grey'. Below this, there are three summary rows: 'There are No Accessions that meet all 4 of your search criteria', 'There are 4 Accessions that meet 3 of your search criteria(s). All Results Listed' (with a 'Toggle Results' button), and 'There are 669 Accessions that meet 2 of your search criteria(s). All Results Listed' (with a 'Toggle Results' button). A 'Reset Search' button is also visible in the top right corner.

QUESTION: How many *Avena* accessions does the GRU have that meet the following phenotypes: Awned, Compound diaspore, White Lemma, Equilateral Panicle Distribution and Simultaneous maturation?

QUESTION: From the *pisum* collection how many accessions show both 'Rogue Syndrome' and green testa?

QUESTION: Name the accessions in the genus *Hordeum* that have 'Very deciduous' Awn retention?

Filters & Sorting

Many of the results from the search and browse functions have the option of imposing filters on the resulting data. These can be accessed from the "Toggle Search and Sort Pane" button next to the result summary. It is also worth noting that we may have equivalent lines from multiple original sources and so these are often shown as repeats with for example different Accession Years.

View Plant Accessions

This section details the Plant Accessions from your chosen Collection (BBSRC Small Grain Cereal Collections) that are maintained by the GRU. Use the filter buttons in the 'Search and Sort Pane' below to select accessions based on category.

Search Pane 23401 records found. 500 results displayed: Rows 0 - 500 [Toggle Search and Sort Pane](#)

Results Table Page: 0 1 2 3 4 5

Search Pane 23401 records found. 500 results displayed: Rows 0 - 500 [Toggle Search and Sort Pane](#)

Collection Source Sowing Season Filter Sample Status Filter Country of Origin Taxon

Show rows FROM THIS PAGE that match this text search term:

The default option is to remove any filters in place, and using the drop down boxes you can select filters to add. The filters are cumulative and will only update the results once the **Filter Results** button has been clicked. Another filtering function allows you to extract specific search terms from the page in a similar method to using Find via your browser but it will hide rows that do not match rather than highlight those that do match.

SeedStore (0-3-1) [SeedStore Home](#) [Public Search Interface](#) [JIC Staff Access](#) [GRU Staff Control Panel](#) [Help Pages](#)

View Plant Accessions

This section details the Plant Accessions from your chosen Collection (BBSRC Small Grain Cereal Collections) that are maintained by the GRU. Use the filter buttons in the 'Search and Sort Pane' below to select accessions based on category.

Search Pane 8947 records found. 500 results displayed: Rows 0 - 500 [Toggle Search and Sort Pane](#)

Filtering Active, only displaying results that match the filter criteria: Sowing Season = Spring and Collection Source = BBSRC_Barley Sorted by idPlant Asc

Results Table Page: 0 1 2 3 4 5

idPlant	Collection - Plant Accession	Accession Name (Year)	Taxon Code	Source Country Code	Sowing Season	SampStat GenCode	Comments	Cart
2703	BBSRC_Barley - Acc 3384	Akan Mugi (1960)	Hor-vul_vu	JPN	Spring	500 / C		<input type="button" value="Cart"/>
2704	BBSRC_Barley - Acc 3385	Archplume	Hor-vul_vu	GBE	Spring	500 / O		<input type="button" value="Cart"/>
2705	BBSRC_Barley - Acc 3386	Archer-Goldthorpe (1951)	Hor-vul_vu	GBE	Spring	500 / C		<input type="button" value="Cart"/>
2706	BBSRC_Barley - Acc 3387	Archer (1951)	Hor-vul_vu	GBE	Spring	500 / O		<input type="button" value="Cart"/>
2707	BBSRC_Barley - Acc 3388	Iran Asadabad	Hor-vul_vu	IRN	Spring	300 / L		<input type="button" value="Cart"/>
2708	BBSRC_Barley - Acc 3389	Aniel (1951)	Hor-vul_vu	FRA	Spring	500 / C		<input type="button" value="Cart"/>

Sorting the resulting plant accession list can be done by a number of different fields by simply clicking on the **blue sort** buttons to sort A through Z or ascending numerical order or vice versa.

Results Table Page: 0 1 2 3 4 5

idPlant	Collection - Plant Accession	Accession Name (Year)	Taxon Code	Source Country Code	Sowing Season	SampStat GenCode	Comments	Cart
2703	BBSRC_Barley - Acc 3384	Akan Mugi (1960)	Hor-vul_vu	JPN	Spring	500 / C		<input type="button" value="Cart"/>
2704	BBSRC_Barley - Acc 3385	Archplume	Hor-vul_vu	GBE	Spring	500 / O		<input type="button" value="Cart"/>
2705	BBSRC_Barley - Acc 3386	Archer-Goldthorpe (1951)	Hor-vul_vu	GBE	Spring	500 / C		<input type="button" value="Cart"/>
2706	BBSRC_Barley - Acc 3387	Archer (1951)	Hor-vul_vu	GBE	Spring	500 / O		<input type="button" value="Cart"/>
2707	BBSRC_Barley - Acc 3388	Iran Asadabad	Hor-vul_vu	IRN	Spring	300 / L		<input type="button" value="Cart"/>

Shopping Cart

For Seed requests there is a simple interim Shopping cart which allows seed requests to be made via email to the GRU team. Lines can be added to the shopping cart by simply clicking on the "Add to Cart" button found on the specific accession page or on many search result pages each record has the ability to add and remove single accessions by clicking on the **cart** or **tick** buttons respectively.

View Plant Accession Details

This page shows the information held on a specific plant accession from all tables that contain relevant information. Some Tabs will show additional information on mouse over e.g. phenotypes tab.

Details for Accession: Archplume (idPlant: 2704, Old Identifier: B3385)
 Add to Cart
Checkout

Passport Data
Seed Stock Data
Taxonomy Data
Expedition Data
Phenotype Data
Accession Images

Taxon data

TaxonCode	Hor-vul_yu
Genus & Species	<i>Hordeum vulgare</i>
Subspecies of Variety	vulgare
Spec_c	VU
Ploidy	2
Karyotype	2n=14
Genome	HH
Common Terms	
Species Authors	
Taxon Comments	

Search Pane 8947 records found, 500 results displayed: Rows 0 - 500 Toggle Search and Sort Pane

Filtering Active, only displaying results that match the filter criteria: Sowing Season = Spring and Collection Source = BBSRC_Barley

Results Table

Page:
0 1 2 3 4 5

idPlant	Collection - Plant Accession	Accession Name (Year)	Taxon Code	Source Country Code	Sowing Season	SampStat GenCode	Comments	Cart
2703	BBSRC_Barley - Acc 3384	Akan Mugi (1960)	Hor-vul_yu	JPN	Spring	500 / C		
2704	BBSRC_Barley - Acc 3385	Archplume	Hor-vul_yu	GBE	Spring	500 / O		
2705	BBSRC_Barley - Acc 3386	Archer-Goldthorpe (1951)	Hor-vul_yu	GBE	Spring	500 / C		
2706	BBSRC_Barley - Acc 3387	Archer (1951)	Hor-vul_yu	GBE	Spring	500 / O		
2707	BBSRC_Barley - Acc 3388	Iran Asadabad	Hor-vul_yu	IRN	Spring	300 / L		

To checkout select the checkout option from either the Public Search home page or the specific accession page. This will then take you to your shopping cart for review and then once "Checkout" is selected a form will appear for you to complete. This form asks for name, address and email so that we can link the request to a specific person to ship to. Future progress will expand the information requested to allow users to create accounts with SeedStor so they can save this information between job requests. A comments field allows notes for GRU staff to be included.

SeedStore (a-3.1)
SeedStor Home
Public Search Interface
JIC Staff Access
GRU Staff Control Panel
Help Pages

The Seed Store at the Germplasm Resources Unit, John Innes Centre.

Shopping Cart

Please complete the fields below so that we can fulfill your request

Requested Lines

Name

Address

Email

Comments

QUESTION: Send a seed request for the following Barley Lines: Albion, Fox and Zulu.

Page 8 of 8