

UK AGRICULTURE

The Plant Breeding Institute is set up in Cambridge in 1912 to develop improved wheat varieties, followed by the establishment of the Official Seed Testing Station in London in 1917.

The Ministry of Agriculture and

YEARS OF PLANT SCIENCE

The National Institute of Agricultural Botany is established by Sir Lawrence Weaver under the motto 'Better Seeds: Better Crops'. The Institute is a response to the need for quality seed and improved varieties in safeguarding food Fisheries is formed in 1919, the predecessor of MAFF and Defra.

VARIETIES AND AGRONOMY

Average wheat yield is 2.2 t/ha. Squareheads Master (1868), Little Joss (1908) and Yeoman (1916) provide consistency, yield and disease resistance in wheat crops, in a marketplace previously dominated by landraces and 'local' variety synonyms.

Fungicides include copper oxychloride and phenyl-mercury chloride.

supplies post-WW1.



"The birth of the infant..." NIAB founder Lawrence Weaver invites the Plant Breeding Institute's Director Professor Biffen to the signing of the Trust Deed on 13 January 1919.

9th January, 1919. My dear Biffen You may like to see the enclosed proof of the Trust Deed, which I hope will be fixed up next Monday at 3 o'clock in my room. It will be a formal meeting of a few of the donors. If you should be in town look in to see the birth of the infant. I hope to go to Cambridge with Morley Horder on Thursday, the 16th inst. to have a good look at the site. On the following Monday at 3 o'clock I hope there will be the first Council meeting, which will decide to purchase it, so things Yours sincerely,

The NIAB Crest sits above the original entrance to the 1921 NIAB Building on Huntingdon Road.

LAWRENCE WEAVER. Professor R. H. Biffen, 138, Huntingdon Road, Cambridge.



The National Institute of Agricultural Botany's Huntingdon Road HQ is opened in 1921, and the OSTS joins the Institute.

The first Fellows Scheme is launched and a regional trials network is established.





NIAB plays a crucial role in seed testing, ensuring the seed is healthy and fit for sowing. The OSTS, and its mainly female staff, relocates from London to Cambridge in 1918 and integrates into NIAB in 1921.

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The International Seed Testing Association is founded at a meeting at NIAB in 1924.

A national variety structure is established in potatoes and cereals.

Harry Ferguson invents the three point linkage in 1924.

VARIETIES AND AGRONOMY

Average wheat yield is 2.4 t/ha. Little Joss (1908) and Yeoman (1916) remain the most popular wheat varieties.



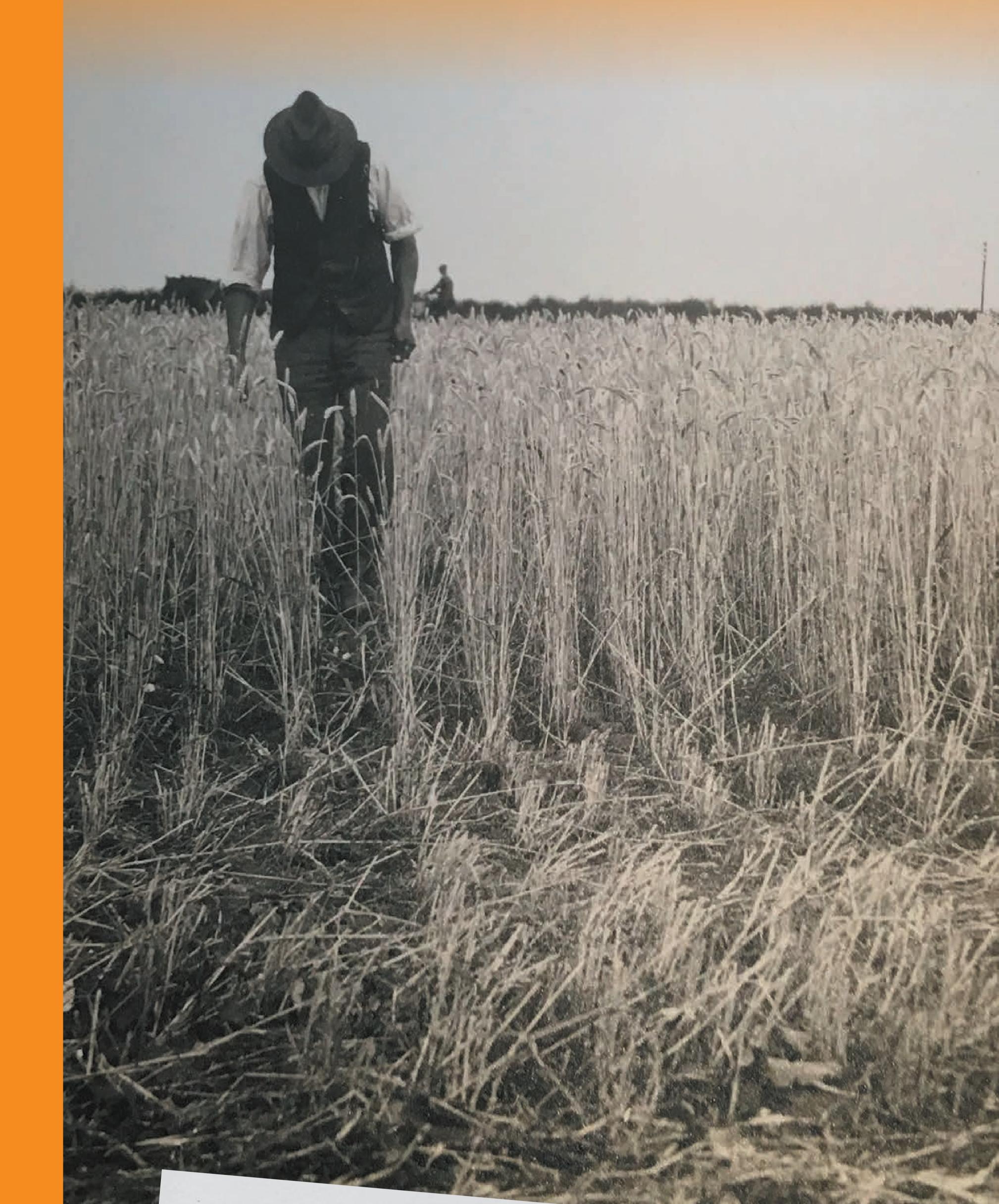
Below: A regional trials network is established with variety comparison and seed multiplication plots.

Fungicides include copper sulphate and copper carbonate.





NIAB issues the first Farmers' Leaflets across a range of crops, precursor to the Recommended, NIAB adopts the new 'randomised control trial' system in place of large scale, multi-site un-replicated trials which had been the mainstay of early variety testing.



Descriptive and National Lists today.

The Institute pioneers the use of randomised trial design in 1936 and releases authenticated stocks of proven state-bred varieties in 1939.

UK AGRICULTURE

The Agricultural Research Council is set-up in 1931, predecessor to the Biotechnology & Biological Sciences Research Council.

The Milk Marketing Board is established in 1933 to control milk production and distribution.

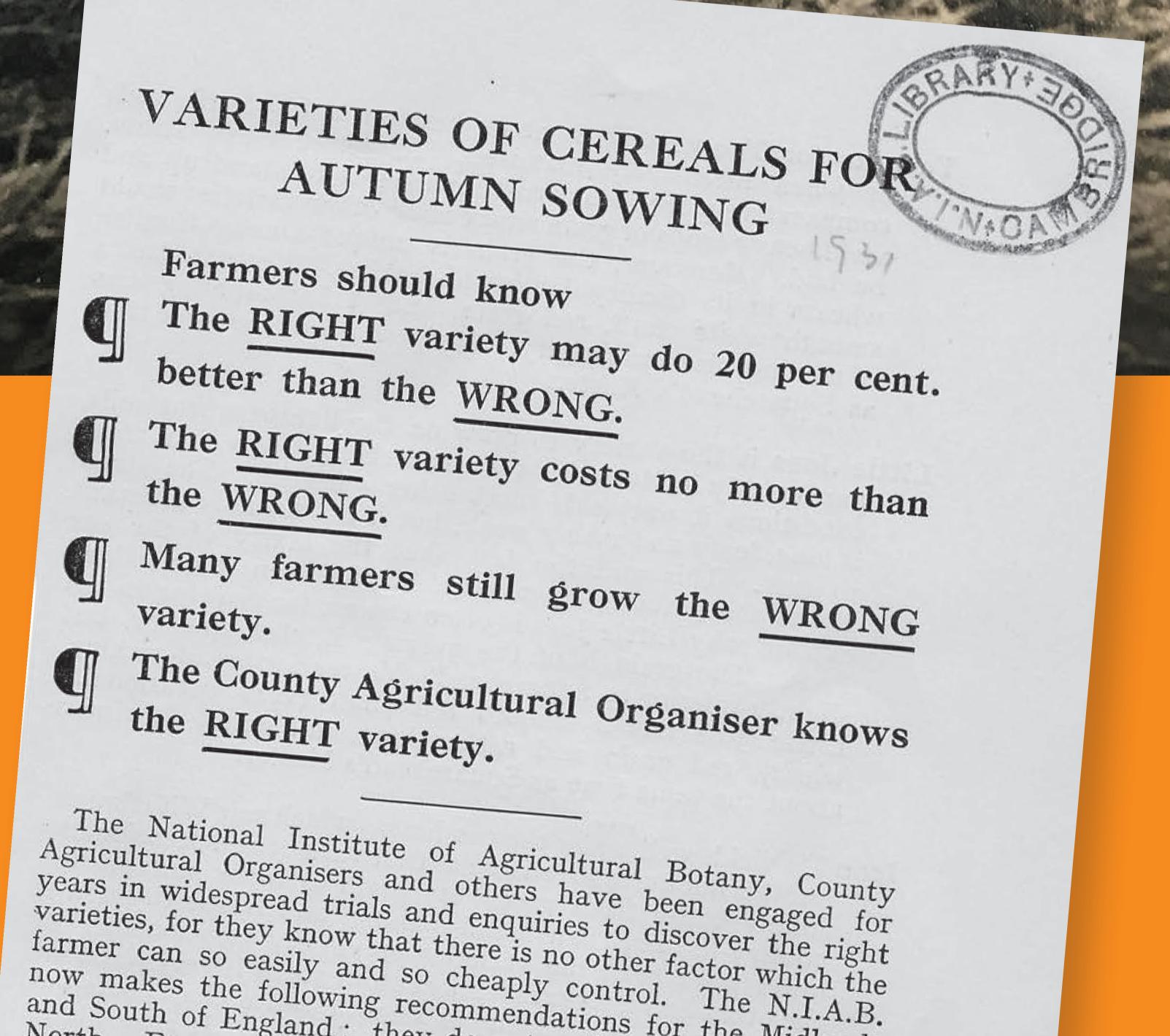
The UK is 30% self-sufficient in home-grown crops.

VARIETIES AND AGRONOMY

Average wheat yield is 2.4 t/ha. The winter wheat variety Holdfast is released in 1935.

Spring varieties Plumage (1902), Plumage-Archer (1905) and Spratt-Archer (1908) account for 80% of the total barley acreage in 1939.

DDT is discovered in 1939.





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The first NIAB variety list for autumn and spring sown cereals is published in 1931, although many still believe varieties 'acclimatise' to regional conditions.



NIAB launches the first winter wheat Recommended List in 1944, and introduces virustested potato seed into Northern Ireland in 1946.

UK AGRICULTURE

Food rationing is introduced in 1940 after the start of WW2, finally ending in 1954.

The state advisory service, the National Agricultural Advisory Service (NAAS) is formed in 1946.

The Agriculture Act (1947) revamps agricultural law, improving tenancy rights and guaranteeing prices and markets.

A seed production committee is formed to supervise home-produced seed and Hill Farm, near Cambridge, becomes NIAB's seed production farm in 1947.

VARIETIES AND AGRONOMY

Average wheat yield is 2.6 t/ha.

The first synthetic herbicides are released (MCPA is discovered in 1941) with dithiocarbamate fungicides used on-farm.

NATIONAL INSTITUTE OF AGRICULTURAL BOTANY Farmers' Leaflet No. 8, August, 1944 VARIETIES OF WINTER WHEAT **Recommended** List There are at present about one hundred named varieties—or so-called varieties-of wheat in existence in the United Kingdom. This is clearly a disadvantage to those who purchase and distribute the home crop. They cannot readily bulk their purchases for large buyers who are apt in consequence to give preference to foreign supplies which arrive in In considering the possibility of reducing the number of varieties it is necessary to bear in mind (a) that wheat is required for several purposes,

It is recommended, however, that where growers have no definite evidence in favour of some other variety as suiting their own particular locality and conditions, they should give preference Redman Warden Yeoman Wilhelmina: Wilma* Juliana Victor Little Joss Steadfast Squarehead's Master or Standard Red



- and (b) that it is grown under many differing conditions.
 - (a) It is required for bread making, for which purpose a large proportion of "strong," steely grain is preferred, for biscuit making, which demands "weaker" grain, and in peace time for stock feed, principally poultry; for this the most important consideration is a stiff straw able to carry a high yield of grain.
- (b) It is grown on soils of different types and varying levels of fertility, in districts of varying rainfall; on some farms it is cut by the combine harvester and on others by the binder. Finally, it is sown both in the autumn and the spring.

Thus the problem of wheat production and utilisation is more complicated than that of malting barley, where in a few years it has been possible to divert some 80 per cent. of the crop on to two varieties-Spratt-Archer and Plumage-Archer-to the great benefit of all concerned. Nevertheless, a beginning should be made to concentrate on those

varieties of wheat which have hitherto proved themselves each in their sphere, to be the best for the various purposes and conditions mentioned. To this end the following list of wheats for autumn sowing is issued after full consultation with millers, bakers, seedsmen and growers. It is hoped to publish a similar list for spring wheats in due course.

It must be pointed out, however, that there are other promising varieties which have not yet been fully tested for milling and baking qualities, or for yield over a full range of soil and levels of soil fertility. Moreover, plant breeders may produce improvements at any time. For these reasons the list is subject to later amendment in the light of additional knowledge and experience; from time to time varieties

Jubilégem: Bersée* Squarehead II Vilmorin 27 Rivet

*Provisionally included.

The Institute does not propose to issue certified seed of varieties which are not in the recommended list.

The first four varieties-Holdfast, Redman, Warden and Yeomanare primarily suited for bread making; the next seven—Wilhelmina, Wilma, Juliana, Victor, Little Joss, Steadfast and Squarehead's Master-for biscuit making. The remainder are good yielding wheats which are only used for milling, and baking to a limited extent, varying with commercial

The choice of the recommended varieties in relation to the physical character of the soil, to its level of fertility, and to the rainfall is most important, and is indicated in the diagram. It will be observed that there is overlapping. Little Joss, for instance, is recommended for light soils of low and average fertility, and also for medium soils of low fertility. In the same way Juliana, Victor, Wilhelmina and Wilma are recommended for light, medium and heavy soils, but on light soils their use should be confined to those of high fertility in districts of high rainfall: on heavy soils, which retain moisture, their use should be restricted to conditions of average fertility since their standing power is not equal to that of varieties such as Yeoman, Holdfast, etc. Rivet presents another illustration of the importance of choosing a variety suited to the conditions in which it is grown. Possessing a very long and whippy straw it is recommended for heavy soils only when they are of low or average fertility. On soils of similar texture but at a high level of fertility its straw is likely to become unmanageable.

The first winter wheat 'Recommended List' includes 16 varieties, but excludes yield data.



The 1-9 trait scoring system is used for the first time in the 1952 NIAB Recommended List.

The first Fellows Crop Conference is held in 1952, with a Cereal Field Approval Scheme introduced in 1956.

Pathology trials in 1950.



1950S

The first international seed analysts training course begins in 1954 and NIAB becomes the technical co-ordination centre

Inspecting the variety demonstrations at the 1956 NIAB Fellows Day.

UK AGRICULTURE

The Potato Marketing Scheme starts in 1955.

VARIETIES AND AGRONOMY

Average wheat yield is 3.3 t/ha. Capelle Desprez is launched in 1953. Its resistance to yellow rust stands for 50 years and is found in the lineage of many modern wheats. The variety dominates the British wheat area for another 20 years with yields up to 5 t/ha. Proctor spring malting barley is also launched in 1953.

Fungicides include folpet and captan.

for international seed certification schemes in 1958.

A new seed multiplication branch handles the increase in state-bred varieties and seed production for trials.

The view from the Huntingdon Road building across to the new granary on Whitehouse Lane, built in the late 1950s.





NIAB's Huntingdon Road Building extension opens in 1960, with the regional centre network expanding to 13 in 1961.

OSTS celebrates 50 years in 1967 with NIAB celebrating its golden anniversary in 1969.

The first vegetable advisory leaflet is issued in 1961.

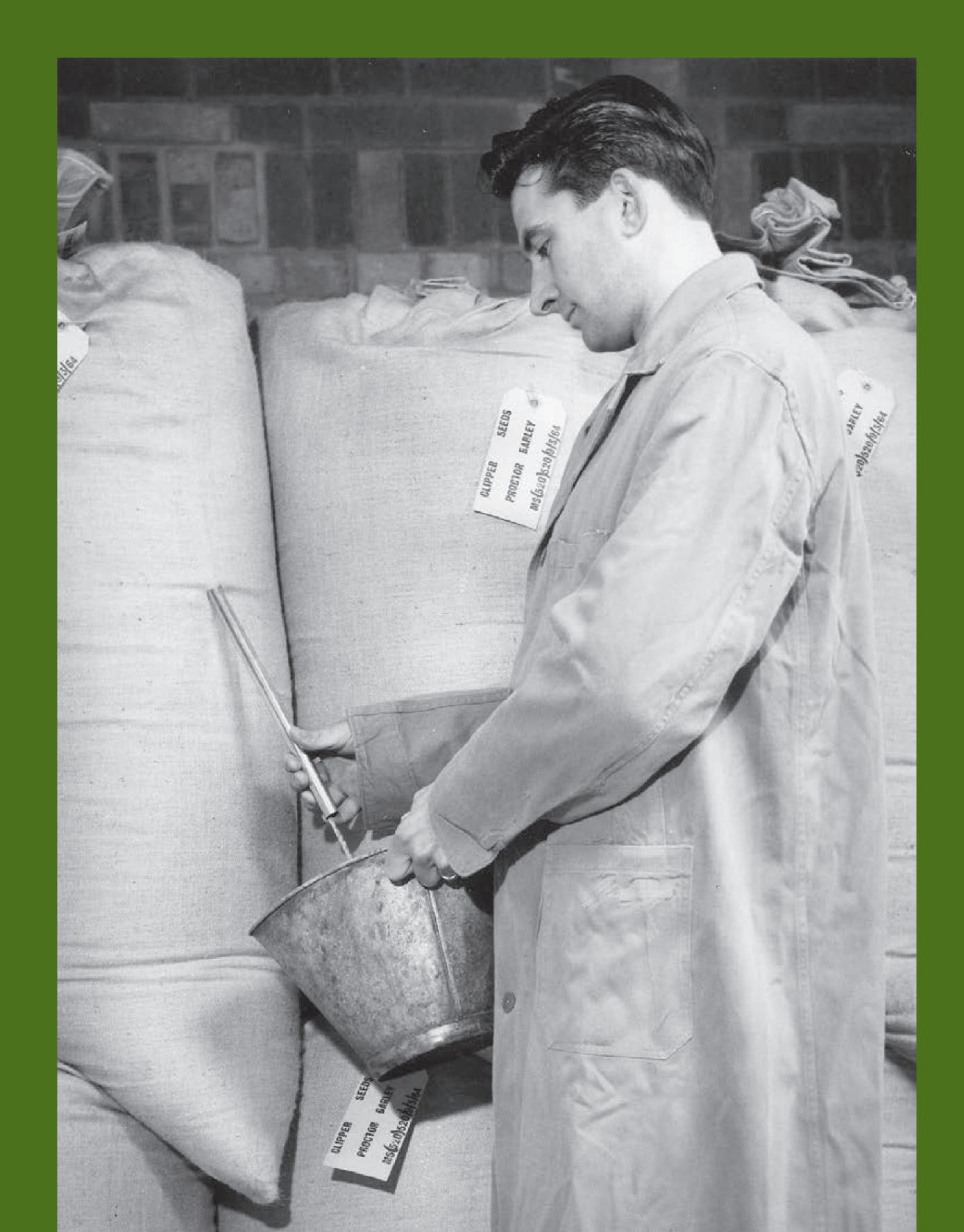
NIAB variety plot assessments in 1960.



In 1964 MAFF commissions NIAB for the first time to test varieties for distinctness, uniformity and stability (DUS) and conduct statutory performance trials.

UK AGRICULTURE

The Plant Varieties and Seeds Act is introduced in 1964, establishing a system of royalty payments on individual plant varieties, known as Plant Breeders' Rights. This is the trigger for a rapid expansion of commercial plant breeding and seed multiplication.





A seed analysts training course in the main hall at NIAB Huntingdon Road in 1961.





YEARS OF PLANT SCIENCE

VARIETIES AND AGRONOMY

Average wheat yield is 4.2 t/ha. Maris Widgeon is launched in 1964.

Fungicides include imazalil, prochloraz, thiophanate-methyl, triadimefon and triadimenol.

DUS (distinctness, uniformity and stability) and VCU (value for cultivation and use) statutory variety testing is defined under a new NIAB: MAFF contract following UK accession to the European Community.

The PVRO (Plant Variety Rights Office) moves to NIAB's Huntingdon Road site.

NIAB's Hill Farm is sold and Park Farm at Histon is bought. The granary on Whitehouse Lane is redeveloped into new offices, laboratories and storage for the seed certification department in 1973.

UK AGRICULTURE

The UK joins the Common Market in 1973 and seed certification becomes statutory.

NAAS becomes the Agricultural Development and Advisory Service (ADAS).

VARIETIES AND



AGRONOMY

Average wheat yield is 4.6 t/ha. Maris Huntsman (1972) offers 20% yield advantage over previous market leader Capelle Desprez. Golden Promise is the UK's leading spring malting barley and single and double low oilseed rape is introduced.

Glyphosate is introduced in 1974. Triazoles are introduced in 1976, establishing the use of routine fungicide programmes. Fungicides include imazalil, prochloraz, thiophanate-methyl, triadimefon, triadimenol.

An aerial view of NIAB Huntingdon Road in 1978.







molecular biology laboratory opens which complements biochemical and image analysis technology.

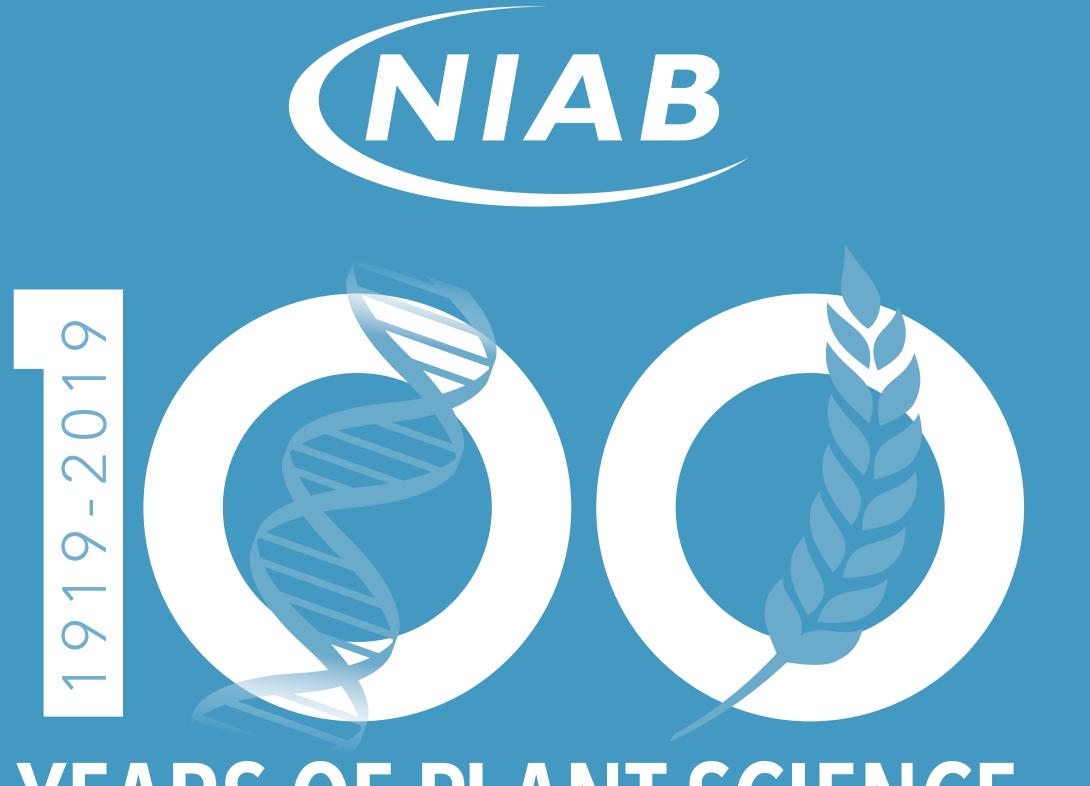
NIAB opens the Library Building at Huntingdon Road in 1983 and becomes the single European Centre

UK AGRICULTURE

State-bred varieties still share 80% of the winter wheat market in 1984 with UK flour millers' usage of home-grown wheat exceeding 80% for the first time in 1986.

The British Society of Plant Breeders is formed in 1986, with private sector levies supporting the Recommended List programmes. The RL and NL trials system is integrated in 1989.

for PBR tests for ornamentals.



YEARS OF PLANT SCIENCE

In 1987 the Plant Breeding Institute is sold to Unilever.

New legislation includes the Pesticides Act (1986) and Set-aside Regulations (1988).

VARIETIES AND AGRONOMY

Average wheat yield is 6.4 t/ha. Avalon winter wheat is launched in 1980 with Mercia in 1985, Sleipner in 1986, and Riband in 1989.

Fungicides include cyproconazole, fenpropidin, fenpropimorph, flusilazole, flutriafol, propiconazole, tebuconazole.

In 1996 the National Institute of Agricultural Botany formally moves into the private sector and officially changes its name to NIAB. The National Institute of Agricultural Botany Trust is created with responsibility for land and assets.



NIAB SeedStats service is launched in 1993.

UK AGRICULTURE

A UPOV Convention confirms the right to farm-saved seed royalty collection

by plant breeders, with the introduction of European Plant Breeders' Rights and establishment of the Community Plant Variety Office in 1995.

ADAS is privatised in 1997 and the Food Standards Agency is established in 1999.

New legislation includes the Nitrates Directive (1991), Crop Residues Burning Regulation (1993) and the Environment Act (1995).

VARIETIES AND AGRONOMY

Average wheat yield is 7.5 t/ha. Winter wheat varieties include Hereward (1991), Consort (1995) and Claire (1999).

Fungicides include azoxystrobin, cyprodinil, epoxiconazole, fluquinconazole, kresoxim-methyl, metconazole, quinoxyfen.





YEARS OF PLANT SCIENCE

NIAB Huntingdon Road in 1990.



Genetic research and pre-breeding capabilities are established at NIAB in 2005. NIAB extends its applied agronomy research and farm knowledge transfer and advisory services with the creation of NIAB TAG in 2009.

The MacLeod Complex research and plant breeding glasshouses open at Park Farm in 2009.



UK AGRICULTURE

Responsibility for the Cereals and Oilseeds Recommended Lists transfers to the Home-Grown Cereals Authority in 2001. HGCA becomes part of the Agriculture and Horticulture Development Board in 2008.

New legislation includes the Water Framework Directive (2000).

An outbreak of foot and mouth disease in the UK in 2001 causes a crisis in British agriculture and tourism.

Defra replaces MAFF in 2001.

The Voluntary Initiative is launched in 2001, ensuring industry self-regulation of pesticide use.

VARIETIES AND AGRONOMY

Average wheat yield is 7.8 t/ha. Winter wheat varieties include Robigus, Oakley, Cordiale and Solstice.

Fungicides include boscalid, fluoxastrobin, picoxstrobin, prothioconazole and pyraclostrobin.

NIAB's pre-breeding platform accelerates genetic advances in wheat, including groundbreaking re-synthesised wheat research.







YEARS OF PLANT SCIENCE



Evaluating new cereal varieties in the DUS plots at NIAB Cambridge.

The new glasshouses allow different environmental conditions to be created to suit the diverse range of plant material NIAB works on.

NIAB Innovation Farm is established in 2010 to showcase plant genetic innovation, with the Sophi Taylor conference centre opening its doors in 2013.

NIAB extends its potato



research capabilities with the creation of NIAB CUF in 2014 and moves into the soft and top fruit sector with the integration of East Malling Research to form NIAB EMR in 2016. BCPC joins the NIAB Group in 2018.



UK AGRICULTURE

The UK Government's AgriTech Strategy launch begins a renewed emphasis on farm-level research and innovation.

VARIETIES AND AGRONOMY

Average wheat yield is 8.1 t/ha. KWS Santiago is launched in 2011.

Fungicides include benzovindiflupyr, bixafen, cyflufenamid, fluopyram, fluxapyroxad, isopyrazam, metrafenone, penthiopyrad.

A new alliance with the University of Cambridge forms the Cambridge Centre for Crop Science (3CS) in 2015.

Park Farm redevelopment begins in 2017, followed by the Lawrence Weaver Road site in 2018. And it is the end of an era as the



The application of scientific computing and software development is crucial to NIAB's crop research.

Huntingdon Road HQ is sold.



YEARS OF PLANT SCIENCE



Over 100,000 winter oilseed rape seedlings are planted in the glasshouse for DUS cotyledon character recording.

NIAB celebrates 100 years of plant science in 2019.

A new crop science campus and NIAB headquarters building is opened at Lawrence Weaver Road in 2020.









UK AGRICULTURE The UK leaves the EU in 2019.

VARIETIES AND AGRONOMY Average wheat yield is 8.2 t/ha. Fungicides include adepidyn,



fenpicoxamid, isoflucypram and mefentrifluconazole.

