NIAB

1919-2019

100 YEARS OF PLANT SCIENCE

OUR IMPACT

INDEPENDENT CROP RESEARCH FOR ALL

NIAB's establishment in 1919 had a major impact on the UK industry. Never before had agricultural scientists come together under one roof.

Today NIAB is unique as an independent, science-based crop research organisation, working across plant science, crop evaluation and agronomy, and ensuring these advances are transferred effectively onto farm.

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SEED TESTING AND CERTIFICATION

NIAB played a major role in establishing a system of seed testing and certification in the early 20th century. These went on to become central features of the seed industry that are still used today.

The Government's 'Testing of Seeds Order' of 1917 required that all seed sales had to be preceded by the testing of a sample of the seed stock. NIAB played a major role in establishing this system and still does. The Official Seed Testing Station (OSTS) has been located at NIAB since 1921, and has led the development of seed testing arrangements and methods around the world.

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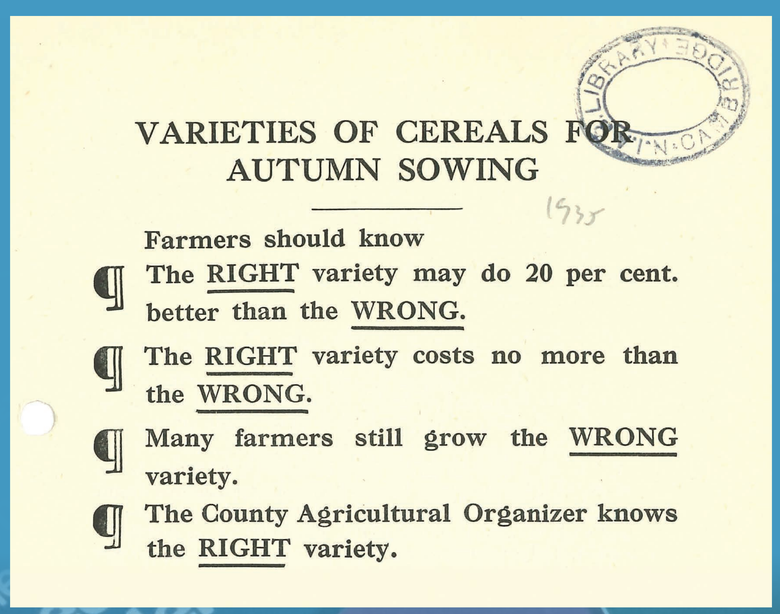
VARIETY EVALUATION

As the first UK organisation to formally test and evaluate varieties for the benefit of farmers and growers NIAB developed the original Recommended Lists across a wide range of crops.

Over the years, NIAB's crucial role in variety evaluation has improved the performance information available to farmers. It also supported the early development of the plant breeding industry and the associated regulatory frameworks for variety registration.

Extract from the 1935 Farmers' Leaflet, a precursor to the Recommended List



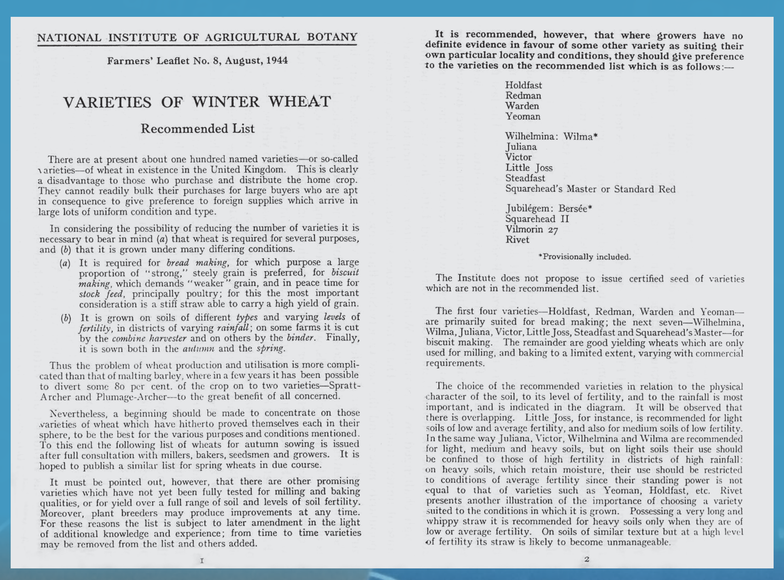
VARIETIES OF CEREALS FOR AUTUMN SOWING

1935

Farmers should know

- The RIGHT variety may do 20 per cent. better than the WRONG.
- The RIGHT variety costs no more than the WRONG.
- Many farmers still grow the WRONG variety.
- The County Agricultural Organizer knows the RIGHT variety.

The first NIAB Recommended List for wheat was published in 1944. At the time there were still over 100 wheat 'varieties' being sold in the UK, many of them the same variety



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 large lots of uniform condition and type.

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, 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 may be removed from the list and others added.

1

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 to the varieties on the recommended list which is as follows:—

Holdfast
Redman
Warden
Yeoman

Wilhelmina: Wilma*
Juliana
Victor
Little Joss
Steadfast
Squarehead's Master or Standard Red

Jubilégem: Bersée*
Squarehead II
Vilmorin 27
Rivet

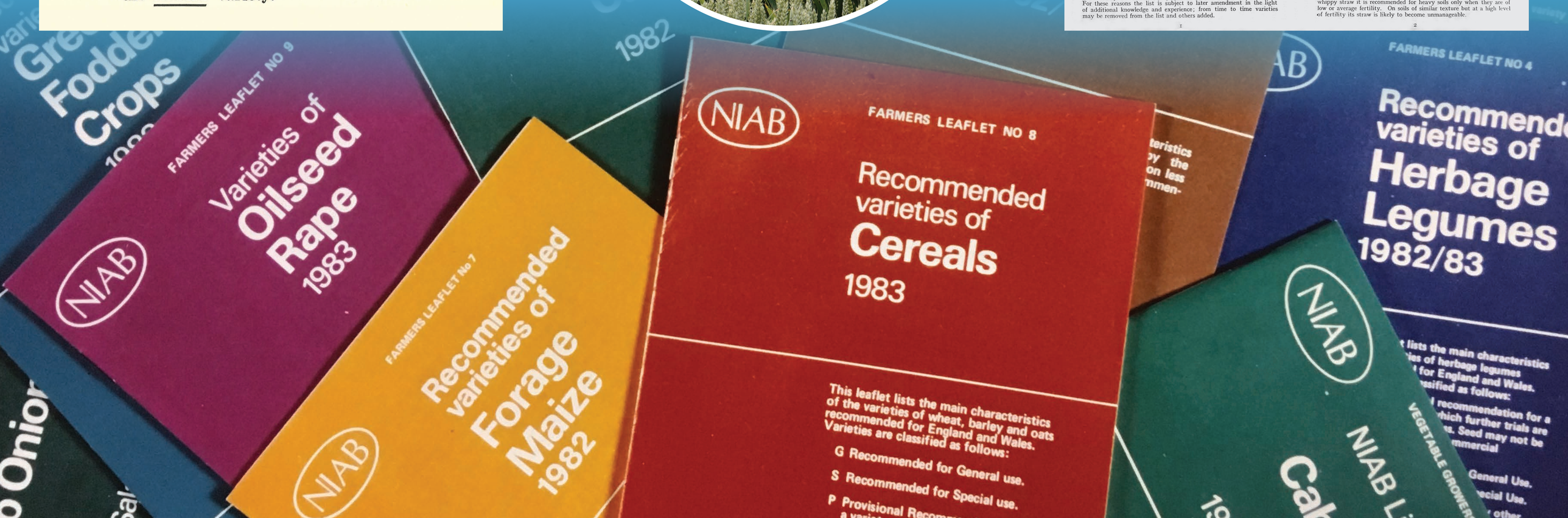
*Provisionally included.

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 Yeoman—are 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 requirements.

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.

2



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PLANT BREEDING

NIAB has supported the science of modern plant breeding from its beginnings in the early 20th century. It is now a global leader in crop genetics research and plant breeding, from its ground-breaking resynthesised wheat, MAGIC populations and crop transformation, to its commercial success in soft fruit, including the strawberry variety Malling™ Centenary.

"It is now possible to make a new plant possessing valuable economic qualities.....out of the fragments of another"

AB Bruce, Board of Agriculture and Fisheries, 1917

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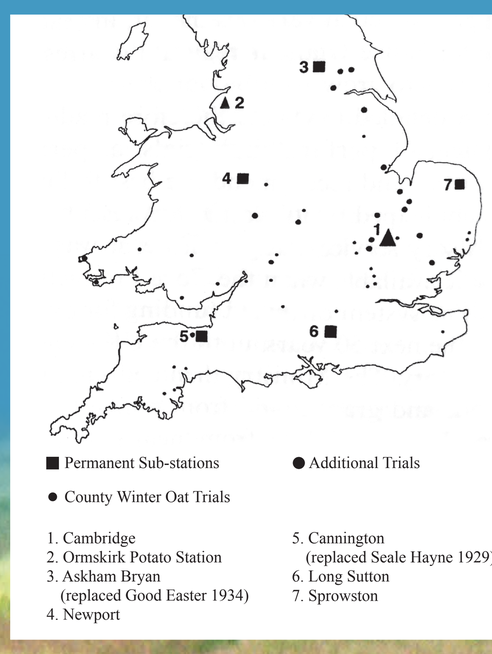
TRIALLING

NIAB is the leading UK trials organisation with over 150,000 plots across 100 sites.

The delivery of successful field trials is one of the most crucial elements of NIAB's operations. It is achieved by dedicated teams located at ten field trial centres in the major agricultural areas of England and Wales, combining experience with local knowledge to manage a wide range of crops.

Today, NIAB's field trials programme is large and complex, across more than 50 different crop species, covering all major and minor combinable crops, root crops, livestock feeds, vegetable and salad crops, and top and soft fruit.

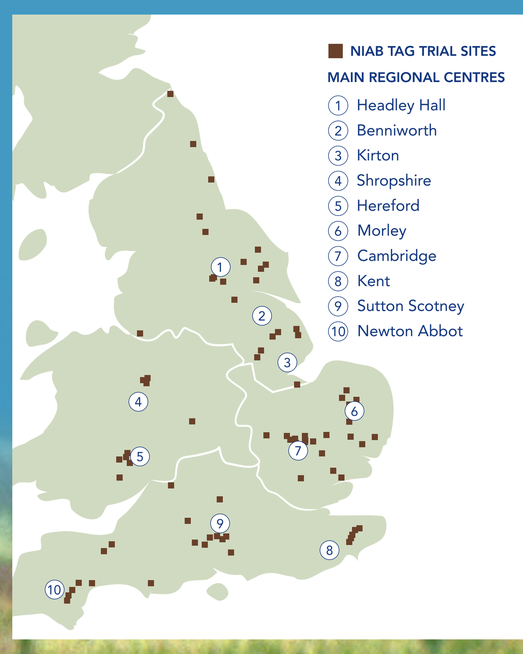
NIAB trial centres, 1935



■ Permanent Sub-stations
● Additional Trials
● County Winter Oat Trials

1. Cambridge
2. Ormskirk Potato Station
3. Askham Bryan (replaced Good Easter 1934)
4. Newport
5. Cannington (replaced Seale Hayne 1929)
6. Long Sutton
7. Sprowston

NIAB trial centres, 2019



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FIGHTING YELLOW RUST

NIAB has been instrumental in identifying and monitoring new races of yellow rust for over 50 years, providing an early warning system to growers and plant breeders of variety resistance breakdown.

The establishment of the UKCPVS, managed by NIAB, followed the dramatic breakdown of yellow rust resistance of the popular wheat variety Rothwell Perdix in the late 1960s.

NIAB works with AHDB, plant breeding companies and other research organisations to assess the threat that each new race poses to commercial varieties. This includes international collaborations, linking up with the Global Rust Reference Centre in Denmark.