BEESPOKE

Benefitting **E**cosystems through **E**valuation of food **S**upplies for **P**ollination to **O**pen up **K**nowledge for **E**nd users

Estimating Pollination Potential in Apples and Pears

Select **five** study trees from a central row in each orchard area/variety. Trees should be at least 10 m from the edge and 10 m apart. On each study tree, label **two** similar branches (**Yellow for Open, Blue for Hand Pollination**).

Flower Assessment; on a warm dry day, firstly record the number of flowers, from same age wood, on the truss at the end of each branch.

Open Pollination; this flower truss is left to insects and no intervention is needed.

Hand Pollination; pick some opened blossoms from a pollinizer tree and with a small artist's paintbrush gently move pollen from the pollinizer blossoms to each blossom on the labelled flower truss. Move the pollen from the anthers of the pollinizer flowers onto the stamens of the receiver flowers (NB: if no pollinizer flowers are available locally you will need to use flowers from the same variety). Repeat this activity twice, a few days apart.

Pollen on artist paintbrush

Harvest Assessment; Count set fruit (on labelled trusses), measure fruit **width** with a sizing ring and score the fruit **shape** (**0=perfect, 1=slight misshape, 2=misshapen,** e.g. flattened on one side, **3=severely misshapen and too small**). Cut open and count mature (brown) **seeds**.

Calculate mean number of fruits, fruit size, shape score and number of mature seeds per truss.

If **open pollination** has lower means than **hand pollination** this could indicate a pollination deficit in the orchard and action may be needed to increase insect pollinators in the landscape.

Collecting pollen from stigma's of pollinizer flowers

Gently transferring pollen to stamen of flower on labelled truss

Labelled truss

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Benefitting Ecosystems through Evaluation of food Supplies for Pollination to Open up Knowledge for End users

Assessing Pollination Potential in Apples and Pears – RECORD SHEET

ORCHARD:	ROW:	VARIETY:	POLLINIZER TREE VARIETY:

Number of flowers	TREE 1	TREE 2	TREE 3	TREE 4	TREE 5
Open Pollinated					
Hand Pollinated					

Number of fruits	TREE 1	TREE 2	TREE 3	TREE 4	TREE 5
Open Pollinated					
Hand Pollinated					

Fruit size	TREE 1	TREE 2	TREE 3	TREE 4	TREE 5
Open Pollinated					
Hand Pollinated					

Fruit shape score (0-3)	TREE 1	TREE 2	TREE 3	TREE 4	TREE 5
Open Pollinated					
Hand Pollinated					

No. of brown seeds/fruit	TREE 1	TREE 2	TREE 3	TREE 4	TREE 5
Open Pollinated					
Hand Pollinated					

MEAN	FLOWERS	FRUIT	FLOWERS/ FRUIT (SET)	SIZE	SHAPE	SEEDS
Open Pollinated						
Hand Pollinated						

Instruction video: *www.youtube.com/watch?v=XQ_X8U0veNk*

Further reading: Garratt *et al.* 2019. Capacity and willingness of farmers and citizen scientists to monitor crop pollinators and pollination services. *www.sciencedirect.com/science/article/pii/S2351989419304081*

Garratt *et al.* 2021. Opportunities to reduce pollination deficits and address production shortfalls in an important insect-pollinated crop. *www.esajournals.onlinelibrary.wiley.com/doi/full/10.1002/eap.2445*