Supplementary Material

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Appendix A.

Appendix B.

Appendix A. Organisations represented at the engagement

Table A1. Organisation represented at the engagement

Sector	Organisation	Number consulted
Policy	*Welsh Government*	2
	Welsh Local Government Association	1
	Powys County Council	1
Farming unions	*NFU Cymru*	2
Farmers support organisations	*Tir Dewi*	1
	DPJ Foundation	2
	Farming Community Network (FCN)	1
	Royal Agricultural Benevolent Institution (R.A.B.I)	1
	NSA	
Mental health support agencies	*Cardiff Mind*	1
	Mid Powys Mind	1
Local public health team	*Hywel Dda Health Board*	1
	Betsi Cadwaladr University Health Board	3
	Central public health team	1
Agricultural organisations	*Farming Connect*	2
Rural health	*Rural Health and Care Research Wales*	2
Farmers and farming family	*Farming community*	19
Academia	*University of Chester*	1

Appendix A. Stakeholder recruitment invite

Annwyl/Dear XXX,

Developing a framework to support the mental health and resilience of farmers at times of uncertainty, and translation into action.

In recognition of the potential impact of Brexit on the agricultural sector and farmers in Wales, we have been funded by the Welsh Government to complete a rapid review and an engagement programme to coproduce a framework to support the mental health and resilience of farmers at times of uncertainty.

We would like to invite you as a key stakeholder to inform this important work. We recognise many are already actively involved in engaging and supporting the health and wellbeing of farmers across Wales. We want to bring together key groups including farmers, agricultural workers (e.g. agricultural vets), farming unions, third sector organisations, the health sector, **in a workshop in May** to:

- reflect on current challenges and support for farmers, both from the international literature and from across Wales, (*paper will be shared in advance*),
- identify best practice (within or transferrable to a Welsh context),
- recommend action on how to drive forwards support.

This is an opportunity to come together with a focus on building the resilience of famers in Wales, to understand approaches across key partners with the potential to impact on the future support for farmers in Wales, in the short and longer term. The findings will be reported to Welsh Government in July to inform action.

If you are interested in being involved, please provide your availability and preferred locations via the following link:

https://www.surveymonkey.co.uk/r/D732XLF

We would greatly appreciate your valuable input and support,

Looking forward to hearing from you,

Appendix A. Circulation for stakeholder engagement workshops

Annwyl Gyfaill/Dear Colleague,

Building Resilience in the Farming Sector

You are invited to join us as at our engagement event (details below) at one of the two workshops in **Mid Wales on Wednesday 15th May** or **Cardiff on Tuesday 21st May**, which will provide an opportunity to share your views and input into the development of the framework to support the mental wellbeing and resilience of farmers at times of uncertainty. The purpose of this event is to build on work already being done to support the health and wellbeing of Welsh farmers, by bringing together key groups including farmers, farming unions, third sector organisations, and the health and policy sectors to share views, reflect on challenges, and potential solutions and actions. During the day we would particularly like to:

- reflect on current challenges, concerns, and sources of stress facing Welsh farmers
- identify potential solutions and what is needed to take these actions forward
- map out existing assets, support provision, and best practice in Wales; and identify gaps
- reflect on proposed models of support identified from the international literature, and their transferability to a Welsh context

The workshop dates and venues are as follows:

Date	Time	Venue	Registration
Wednesday 15th May 2019	10.00 –14.45	Welshpool Livestock Market, Large Conference Room	To register contact
Tuesday 21st May 2019	10.00- 14.45	Cardiff, Radisson Blu Hotel Cardiff, Azzuro Ballroom;	To register contact

Refreshment (tea & coffee) will be provided, as well as a 'working lunch'. **Please let me know, if you have any specific dietary requirements.**

Agenda

09.30 - 10.00	Refreshment (Tea & Coffee)
10.00 – 10.10	Welcome – setting the scene
10.10- 12.15	A. Key challenges facing farmers in Wales and solutions for Wales to protect mental health and wellbeing
12.15-12.30	Break
12.30-13.30	B. Learning from international approaches, examples: how do we apply to Wales?
13.30- 14.30	C: What's needed to implement solutions in Wales
14.30-14.45	Close and networking

This is a wonderful opportunity to come together to focus on building the resilience of famers in Wales, to work across partners, with the potential to develop and impact on the future support for farmers in Wales, in the short and longer term.

We do hope you will be able to attend and look forwards to hearing your views.

Yours sincerely,

Appendix A. Questionnaire

INTERVIEWER READ OUT: Hello, my name is.....and I work for..... [SHOW ID]. We are working with Public Health Wales and Mental Health Foundation, looking at ways to help support farming families at times of uncertainty. As part of this, we are conducting a short consultation, exploring the views and perspectives of farmers in Wales.

The consultation takes 15 minutes and will only ask you questions about your general views. All of your answers will be anonymous and confidential. You are free to withdraw any point.

Are you happy to take part?

1. Yes
2. No

INTERVIEWER NOTE: *Use the screening questions to see if they are a farmer in Wales, or a farming family member.*

QA. Are you currently a farmer in Wales, or have a farming family background?

1. Yes

   If yes, please indicate which of the above _____

2. No

Section A: Top challenges/sources of stress

1. What do you see as top challenges /sources of stress for farmers in Wales, currently?
• What are the top 3 challenges/sources of stress?

2. In your view, how do these challenges/concerns tend to impact on farmers' health and mental wellbeing?

Section B. Solutions

3. What do you see as potential solutions to help address these challenges/issues?
• What can help to protect against the negative impact of these on mental health and wellbeing? • **Prevention:** How do we prevent these challenges from happening/from having a negative impact in the first place?

Section C: What is needed to address these issues?

4. What are the key sources of support for farming families at the moment? (e.g. existing assets in Wales)
• And what is missing?
5. These are some examples from other countries: [Showcards international examples]
a) Would this approach help? b) Does this exist already in Wales? c) What would encourage farming families to use/engage/access support?
6. What would a resilient farming family look like in Wales?

Section D: Current sources of support

7. From the list below, what have you found to be a useful source of support in Wales? [Tick all that applies]	
NFU Cymru	
FUW	
NSA	
RABI	
Young Farmers Clubs	
Farming Connect	
Farming Community Network (FCN)	
Farm Safety Partnership	
Tir Dewi	
Business Wales	
DPJ Foundation	
GP	
My local health board	
My local church	
Mind	
Men's Shed	
Mind Your Head campaign (Yellow Wellies)	
Time to Change Wales campaign	
Other fellow farmers	
Local farmers support groups	
Online farmers support groups (e.g. Facebook)	
Vets	
Welsh Government	
Other, please specify _____	
None of the above	

This section is about you

Section E: About you

8. What is your gender?	
Male	
Female	
Other	

9. What is your age?	
16-17 years	
18 – 29 years	
30 – 39 years	
40 – 49 years	
50 – 59 years	
60 – 69 years	
70 – 79 years	
80 – 89 years	
90 years or over	

10. What county of Wales do you farm in?	
North Powys	
Mid Powys	
South Powys	
Monmouthshire	
Carmarthenshire	
Ceredigion	
Pembrokeshire	
Gwynedd	
Anglesey	
Conwy	
Flintshire	
Wrexham	
Denbighshire	
Rhondda Cynon Taf	

Caerphilly	
Blaenau Gwent	
Merthyr Tydfil	
Torfaen	
Newport	
Swansea	
Neath Port Talbot	
Bridgend	
Vale of Glamorgan	
Cardiff	

11. A. Which of the following best describes your current employment/farming status?	
Farming is my main occupation (e.g. full time farmer)	
Farming is my secondary occupation (e.g. part-time farmer)	
Principal farmer, farm owner (small holding)	
Principal farmer, farm owner (large holding)	
Farm tenant	
Farm director/manager	
Family run farm (family member)	
Farm worker/employee	
Other (please state):_____	

11. B. Who else works on your farm?	
Spouse (full time/part time)	
Other family members (full time/part time)	
Other business partners	
Salaried managers	
Paid workers	
Unpaid workers (e.g. volunteers)	
Other (please state): _____	

12. What kind of farming do you do? [Tick all that applies]	
Growing arable crops	
Horticultural activity (e.g. growing vegetable, orchards, nursery stock/flowers)	
Grassland (Grazing)	
Farming Dairy cattle	
Farming Beef cattle	
Farming Sheep, rams, lambs	
Farming Poultry (e.g. chicken; turkeys)	
Farming Pigs/swine	
Other livestock (e.g. goats, horses, farmed deer) Please specify_____	

13. Would you be happy to stay on our database, so we can contact you, if the programme develops?

1) Yes
2) No

[SHOWCARD: SHOW THE PHW PRIVACY STATEMENT, with link to the website for more details, if requested]

Email address: _____	

Thank you for taking time to help input into the consultation!

Appendix A. Topic Guide: Semi-structured telephone interviews

Challenges

What are the top challenges/issues of concern facing farmers in Wales?

- What are the top three and why?
- How do these concerns/challenges tend to impact on farmers health and wellbeing?
- Who else is impacted?

Solutions

What could help to address these challenges/could be solutions to address the above challenges?

- How can we prevent their negative impact on mental health
- How can we prevent them becoming such a challenge in the first place

Key assets and sources of support

- What support provision already exists in Wales (formal/informal)
- What is the level of awareness amongst the farming community?
- What are the key sources of support for farmers currently? Where do they go for support/what type?
- Gaps: What is missing/needed?

Interventions

- Reflecting on international interventions identified from the evidence review [*Discussion based on findings from models implemented in other countries]*
- What would work well in Wales?
- What would be transferable to the Welsh farming/rural context?
- Is there anything like this which already exists in Wales and works well?
- How can we sustain/maintain such approaches?
- What else is needed to move action forward?

Success

- What would success look like in farming communities in Wales?

Measuring changes and evaluation

- Measuring and evaluating success

Any other thoughts and conclusion

- Any other thoughts
- Is there anything not captured above that you think is key?

Appendix A. Consent form for participating stakeholders

CONSENT FORM

Title of Project: Building resilience in the farming communities

Please tick the box next to each item to confirm that you agree, and then sign at the bottom of the sheet.

Please initial all boxes

1. I confirm that I have read and understood the information previously circulated to me about the purpose of the engagement workshops, and how the key information collated at the workshop will be used. ☐

2. I agree to my quotes being paraphrased in order to illustrate/summarise key points in the final report, and I understand that these will be anonymised. ☐

3. I agree to provide feedback on the summary of key discussion points, which will be circulated shortly after the workshop, to help sense check for accuracy. ☐

4. I agree for my email address to be kept on the contact list for the project database, in order to be contacted in the future to help inform the further development of the Farming Support programme. ☐

5. I agree to being named in the list of key stakeholder contributors, listed in the final report. ☐

Name of Participant	Date	Signature
Name of Person taking consent.	Date	Signature

Appendix B.

Evidence Review paper

Developing a framework to support the mental health and wellbeing of farmers at times of uncertainty, and translation into action

Interim report: Summary of a literature review on approaches to support farmers' mental health and wellbeing

Not for publication or wider dissemination

Authors

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Date **4th April 2019**

Contents

Executive Summary

Periods of uncertainty can have a detrimental impact on mental wellbeing, and in such times efforts to support mental health should be intensified. Farmers and those living in rural communities are facing a period of significant uncertainty, in the short to medium term, with potential negative impact on mental health and wellbeing.

To inform action, the aim of this rapid programme was to develop a framework to support the mental health and wellbeing of farmers at times of uncertainty, and considerations for translation into action. This literature review is the interim report to Welsh Government and provides an overview of the evidence base to support farmers and their families to improve mental health (Section 3 & 4), and identifies key themes to address barriers to engagement (Section 5).

Key findings

1. Three programmes which had a strong rationale, sound theoretical approach, and were developed and implemented in partnership with farmers and organisations linked to agriculture were identified (summarised in Table 1 & 2);
    - ***Sustainable Farm Families/Sustainable Dairy Farm Families Programmes (Australia)****: a structured programme over 3 years embedding a health and wellbeing narrative into farming, through links to the farm business. The impact included identification of unmet health needs (including mental health), changes in expressed approach to health, and small, but positive reductions in health indicators in those involved (see section 3.1).*
    - ***Farm-Link*** *(Australia): a programme focused on developing mental health literacy across the farming sector, and strengthening co-ordinated, cross-agency networks to facilitate access to health support, and raise awareness of mental wellbeing. An increase in mental health literacy and linkages across key organisations was evident, but there was no evaluation of the impact on farmers' mental wellbeing (see section 3.2).*
    - ***Mental health literacy*** *(Australia, New Zealand): programmes including Mental Health First Aid implemented to improve mental health literacy in the agricultural sector and farming communities. Programmes have been well received and improve understanding and awareness, but there is, as yet, no empirical evidence to suggest it has a long term beneficial impact on farmers' mental health outcomes (see Section 3.3).*
2. A number of other initiatives targeted to farming populations were identified, many with good engagement amongst farming populations, but not supported by evidence of any impact on outcomes.
3. Across the programmes implemented, common factors supporting good engagement across the agricultural sector were identified, summarized in Table A, which could inform future action.

Table A. Summary of common factors supporting good engagement with the agricultural sector

Challenges to engaging farmers in mental health	Approaches identified in the review
Reluctance to engage in health – stoicism, tendency to self-manage, work ethic, independence, stigma	• Linking the wellbeing of the farming business to the farmers' resilience • Using local contacts and frontline agricultural agencies to assist farmers' access to mental health support. Building agents mental health literacy can give knowledge and confidence to deal with farmers' stress. • Using positive language • Include farmers in the development to tailor content to their needs. • Increasing farmers' mental health literacy
A traditional focus on 'practical' problem solving as opposed to 'seeking help'	• Using asset based approaches and positive language helps de-stigmatise and encourage positive solution focused approaches. • Provide support which is goal and action orientated.
Reluctance to engage with health professionals	• Delivery of support through non-health professionals linked to agriculture with knowledge of farming life. • Peer-led interventions can break down barriers and promote social capacity. • Deliver through existing networks to increase participation.
Unsustainable programmes	• Draw on existing, or build, strong local links between agricultural agencies, community organisations and health services.

4. There are a number of evidence-based approaches to supporting mental wellbeing which have *not* been implemented within farming communities (see Table 4 in the full report). Due consideration is needed to explore whether these programmes could be adapted for the agricultural sector, drawing from the lessons learned (Table A) to support successful implementation. The implementation of any programme needs to be supported by a robust evaluation framework, in place before implementation, to capture the impact on outcomes.

Next steps

The programme will now carry out a planned series of stakeholder engagement exercises to reflect on the international evidence in this report, consider transferability of information on the challenges and possible solutions to Wales, and understand Wales' assets.

This external engagement will support the translation of evidence to support the development of a framework for action to maintain/improve the mental wellbeing and resilience of farmers, their families and agricultural communities in Wales, and how to demonstrate an impact on outcomes.

1. Background

The Welsh Government, through its national strategy 'Prosperity for all', is committed to improving the social, economic, environmental, and cultural wellbeing of its people. In particular, it states its commitment to building a resilient agricultural sector following Brexit (1). The impact of leaving the European Union (EU) on Welsh farming is not yet fully known, but the experience of the Brexit

process is one of significant financial uncertainty for farmers (2–4). Periods of uncertainty can have a detrimental impact on mental wellbeing (5–8), and in such times efforts to supporting mental health should be intensified (9).

Post-Brexit trading scenarios and future funding mechanisms will challenge the Welsh farming industry (10). Public Health Wales' recent health impact assessment of Brexit in Wales, highlighted that farmers and those living in rural communities will probably see a major negative impact in the short to medium term due to the loss of income streams, and readjustment to new regulatory frameworks; but in the longer term the impact may be positive on the basis of new opportunities to shape and tailor agriculture policy in Wales (4). The Welsh Government's 'Securing Wales' Future' white paper highlights that Welsh farmers and landowners currently benefit from around £274m per year in direct subsidies under the Common Agricultural Policy (11). In the year to June 2017, 81% of direct exports of food and live animals from Wales went to the EU (12). Welsh sheep farming may be particularly at risk of decline due to pressures of market access and funding under different trade arrangements, unless there is a realistic transition period of continued access to the EU single market while new trade agreements are negotiated (13,14).

In 2015, 88% of the land in Wales was utilised as agricultural land (15,16). Welsh farms are comparatively smaller than elsewhere in the UK, and 75% of their land is classed as disadvantaged (17). This means that income generated per hectare is lower than the rest of the UK (17), leaving farmers heavily reliant on subsidies; with 96% of net agricultural income coming from this source (18). Farmers operate at considerable economic vulnerability; less than 50% farmers are making a living from farming and levels of borrowing have nearly doubled in the last ten years (2014/15 figures) (19). Thus, managing financial uncertainty can have a detrimental impact on the farmer and their families. Also, given the close connections between farming and local economies (for every £1 invested in British farming, farmers put more than £7 back into the local rural economy (20)), the impact of Brexit is likely to extend across rural communities with the potential to increase health, social and economic inequities in the rural populations of Wales (21,22).

Uncertainty can have a detrimental impact on mental wellbeing as a result of managing change, concerns about the impact of social and economic shocks on an individual's business or employment, individual and family/household financial circumstances, and longer term impact on livelihoods, culture and sense of identity (5). More specifically, the uncertainty as a result of Brexit, could have a detrimental impact on the health and wellbeing of farmers, families and rural communities, in the absence of emotional resilience (6). Farmers are unique in the challenges they face, having little control over farming sector processes (competition and regulation) (23,24) and the environment effecting farming practice (disease and weather) (25–28).

Farmers are likely to employ few, if any, workers beyond the farming family (29), so maintaining their own health is essential to the success of their business (30), but often not recognised when combined with long hours (31), and strenuous, physical, and hazardous nature of the work (24,27).

Farmers have higher levels of poor physical health (32,33), including increased risk of injury and physical health outcomes such as respiratory problems, poisoning, zoonoses, ergonomic hazards, musculoskeletal injuries, and farm-related injuries (24); and higher mortality from stress-related illnesses, including heart and artery disease, hypertension, ulcers and nervous disorders (27), and health harming behaviours (high-risk alcohol and obesity) (33,34), compared to the general population.

Farmers are a high risk group for occupational stress (25–27), although there is no consistent evidence that farmers experience higher rates of mental health problems (psychological morbidity) than non-farmers (24,35–42). Farmers have higher levels of psychological distress (34,40,43,44) and higher rates of suicide (27,36,37,41,43,45–49) compared to the population as a whole, and many other occupational groups (27,36,37,43,45–49). Farmers are at increased risk of feelings at times that life not worth living (41,50), having a lack of social support (38). Family members, whilst often a source of support, can also themselves suffer mental ill health (51).

Given the uncertainty facing the farming sector in Wales, there is a need to understand how to support the mental health and wellbeing amongst farming populations (52). **The overarching aim of this rapid programme funded by Welsh Government was to develop a framework to support the mental health and wellbeing of farmers at times of uncertainty, and considerations for translation into action**. This programme includes:

- A literature review to identify evidence-based approaches to supporting farmers' mental health and wellbeing.
- A series of stakeholder engagement activities to understand assets in Wales and how to translate evidence into action.

This literature review is the interim report to Welsh Government providing an overview of the evidence base to support farmers and their families to improve mental health (Section 3 & 4), and identifying key barriers to health engagement amongst farmers, and potential approaches to overcoming these (Section 5).

This report is not for wider circulation and will be further refined and developed following the stakeholder engagement to produce a final programme report in July 2019. The programme is a partnership between Public Health Wales and the Mental Health Foundation.

2. Our approach

A literature review of academic and grey literature was undertaken (full methods are available in Appendix 1) to identify;

- programmes and approaches implemented to support farmers and their families to improve mental health and resilience, and
- potential approaches to overcoming common barriers to engagement amongst farmers on health.

Three programmes developed specifically to support mental wellbeing within farmers and farming communities were identified (summarised in Table 1). Most of the programmes identified were located in Australia and New Zealand where Governments have invested in addressing the health and wellbeing needs of farmers and rural communities. Drivers in Australia included the *National Action Plan for Promotion, Prevention & Early Intervention for Mental Health 2000* in response to a need to improve access to mental health services and to reduce suicides; and during 2004/5 a number of programmes were instigated in Australia in response to severe drought leading to the *NSW Farmers Blueprint for Maintaining the Mental Health and Wellbeing of the People on NSW Farm*s (53). In New Zealand, the agricultural industry and therefore rural communities and farmers, were identified as being at the core of the national economy, people and environment, and a major determinant of employment and social wellbeing (54).

A number of other initiatives implemented within farming communities were identified, but an evaluation of their impact was not found in this review. Nonetheless, these examples provide valuable insights into the approaches taken to engage with farming communities, and are collated in Section 4.

A key challenge is the lack of robust, evidence-based studies of programmes specifically designed to support farmers and their families. **Whilst we recognise that given the time available we may not have identified all studies in this area, there is insufficient evidence to draw a conclusion on effective programmes to support mental wellbeing amongst farmers.**

Table 1. Overview of key programmes implemented within farming and rural communities

Programme name	Country (year implemented)	Type of Intervention	Programme aims and objectives	Brief description	Population targeted
Sustainable Farm Families Project (SFF) and Sustainable Dairy Farm Families (SDFF) programs (30,33,34,55–59) **(see Section 3.1)**	Australia, Victoria, southern New South Wales, and South Australia (2003-ongoing)	Health promotion programme	The SFF project is a health information and physical assessment face to face programme delivered at structured workshops by health professionals with expertise in women's/men's/rural health to farmers. The aim is to improve poor health status of farm families by addressing farmer health, wellbeing and safety issues. *Additional programmes developed include:* • *Alcohol Intervention Training Program (AITP)* • *Farming Fit study (tackling psychological health and obesity)*	Individuals followed up over 3 years. Year 1: two-day workshop covering topics linked to relevant health issues in farming, resource manual, and brief physical assessment. Years 2 & 3: one day workshop. Personal goal setting, peer education, and industry collaboration. • *AITP training developed as a brief intervention by the SFF health professionals to recognise alcohol misuse and with expertise in rural health. Designed to be delivered in four sessions over two days, included training support kit.* • *Farming Fit: An individualised exercise coaching program for the intervention group, designed by an exercise physiologist and undertaken over 6-month period. Regular monitoring of exercise activity and goals by phone, email and/or mobile text message.*	Men and women aged 18 to 75 years, with five or more years of active involvement in farming (Broad-acre farmers producing mainly beef, wool, and grains; or dairy).
Farm-Link (60) **(see Section 3.2)**	Australia, New South Wales (2007-2011; programme	Two elements: (1) Mental Health First Aid (MHFA) training	(1) Improving mental health literacy, suicide prevention, improve health and wellbeing, improve access to and responsiveness of mental	(1) 12-hour MHFA seminar delivered by trained presenters; (2) Farm-Link project workers established, maintained, and expanded Farmers' mental health networks, also known as	A range of frontline workers in agriculture, finance, and

	ongoing as Good SPACE)	(2) develop cross-agency partnerships	health services to the needs of people who live and work on farms. (2) Rural Support Service Networks developed to facilitate effective response to mental health challenges and needs.	rural support service networks, which consisted of workers from the health and welfare sector and agricultural support and service sectors meetings (quarterly) to focus on pathways to care for farmers at a local level.	environmental and livestock management
Mental Health First Aid (MHFA) (see Section 3.3)	*Multiple (see below)*	MHFA training	Mental health literacy: increase awareness of signs and symptoms of common mental illnesses, confidence in starting a conversation, and knowledge of help services.	*Variable (see below)*	*Variable (see below)*
	Australia, New South Wales. Farmers Association Mental Health Network (2005-2006) (61)			12-hour seminar delivered by trained presenters. Training also included introductions to local area mental health representatives.	Workers in the Agricultural Industry, Farmers and their families.
	Australia, Southern Queensland (2007) (62–64)			12-hour seminar delivered by trained presenters. Training also included an overview of the major mental health challenges in Australia, and application of the MHFA approaches to depression, anxiety disorders, psychosis and substance use disorders.	Farm Advisors from two government agencies, and two non-government organisations.
	New Zealand, National programme (2015-2016) Good Yarn (65)			Interactive peer-led (by those with farming industry background) workshop (2.5 hrs) based on MHFA.	Farmers and families, Frontline Agricultural Workers and rural professionals.

					Recruitment largely through (1) rural organisation/ networks (2) industry bodies, (3) social media.

3. Evaluated initiatives implemented in rural farming communities

The challenge of improving mental wellbeing, and enhancing emotional resilience against uncertainty, amongst farming communities is of global importance, reflected in the number of international studies reporting the lower levels of health and factors that impact on farmers' health across multiple countries. However, there are few studies which have evaluated a programme specifically designed to support farmers and their families' wellbeing. The programmes identified in the review are summarised in Tables 1 and 2 and collated into key approaches below.

3.1 Embedding a health narrative into farming: Sustainable Farm Families (SSF) and the Sustainable Dairy Farm Families (SDFF)

The Sustainable Farm Families (SSF) and the Sustainable Dairy Farm Families (SDFF) were developed by Western District Health Service, in Victoria, New South Wales and South Australia, in 2003 as a pilot in response to concerns over farmers' health (55,59). Between 2003 and 2018, 151 programmes had been delivered to over 2500 farmers, and in 2014 SFF commenced in Canada (55). The programmes is a train-the-trainer programme, delivered by health, rural and agricultural professionals to farmers (66).

The initiatives were developed in partnership with health services, university, agricultural agencies, training bodies and farming communities (large mixed crop and livestock and dairy farmers) to address the health, wellbeing and safety of farming families across Australia. Starting from the premise that the wellbeing of the farming industry requires healthy farming families, the programme provided participants with information on personal health, wellbeing, and safety whilst exploring attitudes to personal health (58). SSF is still in place today, with the programme content developing to reflect current needs (e.g. Alcohol Intervention Training Programme (AIPT) (56) and a Farming Fit project (34,57). For more detail see Table 1).

In an evaluation of the SFF and SDFF programmes (2003-2005), a sample of 321 men and women (aged 18-75 years) actively involved in farming were followed up at one-day workshops delivered annually by health care professionals aware of rural health. The workshops provided health information, and encouraged personal goal setting where participants shared common beliefs and values with their peers, leading them to make a joint commitment to improve their health and wellbeing (30,59). In the first year of follow up, personal clinical health assessment identified individuals with unmet health issues relating to mental health, alcohol consumption, body pain, poor work practices/safety (60% men, 71% women referred to a medical practitioner or allied health specialist) (30). For SFF participants who attended all three assessments (n=99), a statistically significant improvement in knowledge and retention of knowledge was found in men (retaining 67% of questions after one year) and women (retaining 88% of questions after one year), and at year three, information presented in year one was still retained (85% for men and 86% for women) (30). A significant change in positive approach to farm safety and looking after health and wellbeing was also evident, with 54% concerned with farm safety and actions to improve personal health, and 24% concerned with improving wellbeing by spending more time with family and taking a holiday (30).

Health indicators measured over the three years (2003-2005) in farmers (n=99) who took part in the SFF programme (body mass index (BMI), total cholesterol, fasting blood glucose, and blood pressure), showed a reduction across all clinical indicators. However when the results were controlled for confounding effects (age at baseline, gender, smoking status) the only statistically significant reduction was the measure for cholesterol (59).

To address higher rates of obesity (64.3% of SFF participants compared to 59.6% as the age standardised national average), and a high prevalence of psychological distress (45.9% of participants compared to 35.6% as the age standardised national average) (67), the SFF developed **Farming Fit** – a psychological health and obesity programme with the aim to reduce obesity and improve health behaviours, such as diet patterns in farm men and women (34,57). A pilot six month study, reported improvements in physical activity and measures of obesity but no change in overall mental health (DASS scores). However, participants were recruited from those already engaged in an established programme and not individually randomised, therefore there is insufficient evidence to draw a definitive conclusion.

SFF and SDFF take a holistic approach to promoting health, engaging with farmers to provide regular assessment and review. The programme recognises the commonalities of the farming experience and health across different sectors (Broadacre and Dairy), and the challenges and pressures that exist for all farming communities. These include having different work patterns, daily and seasonally, for example Broadacre farmers have working hours that are impacted by the changing seasons and can be very long at certain times of the year whilst dairy farmers' working days are more regulated (58).

The SFF and SDFF programmes have been a forum for learning about farming and health in Australia, providing an opportunity to undertake specific studies of different populations as in the comparative study of Broadacre and dairy farmers (30) and the specific study of farming men, which revealed significant areas of concern relating to men's health (obesity and excessive alcohol consumption (33)).

Linking personal health with the health of the farming business provides a rationale for farmers to address their own wellbeing. SFF have demonstrated small, but positive reductions in health indicators over three years of study in those who were involved. However, it is not known how representative these farmers are of the wider farming community. An economic evaluation was undertaken in 2007, but there are marked weaknesses to the methodology and the findings are not generalisable to Wales (68).

3.2 Building cross-agency working to promote wellbeing and resilience: Farm-Link

Building capacity across agricultural agencies (for example; rural banks, financial advisors, insurers, auction marts, veterinary practices, farmers unions) to respond effectively to health needs of farmers is core across the programmes identified in this report (Table 1). SFF, SDFF, and Farm-Link, in Australia, and Good Yarn in New Zealand all recognise the importance of bringing agricultural support agencies together with third sector helping organisations (farmers unions, advice bureaux, rural helplines, and farmer welfare charities), and health services to create a network that can exchange information and provide signposting and referral.

Farm-Link was established in 2007 in New South Wales (NSW), Australia and aims to build cross-agency networks to facilitate access to health support, and raise awareness of mental wellbeing amongst the farming profession through Mental Health First Aid training (see Section 3.3) (60).

Farm-Link was implemented as a two-year pilot at a time when the area had suffered more than six years of drought and concerns about farmers' mental wellbeing was growing. *"Many farming people felt that their reserves of fodder, capital, and resilience had been depleted, and hope was fading"* (60). Farm-Link was jointly funded by NSW Farmers Association and NSW Health and was based on a needs assessment informed by farming communities and a 'Blueprint for Mental Health' which proposes 22 areas of action that can effectively address key risk factors that impact on farmers' wellbeing and resilience (53).

To build effective cross-agency networks, Farm-Link Project Officers mapped the relationships that farmers had within their locality, (for example; local markets, veterinary practices, rural banks) and used these contacts to encourage closer relationships between key rural community organisations and health services. At this time, as there was a proliferation of new 'short contract' service providers addressing issues directly related to the drought crisis, Farm-Link played an important role in bringing together NSW Farmers Association and NSW Rural Mental Health Network to co-ordinate these new services to improve pathways to mental health support (60):

In order to facilitate the extent to which agencies across the networks linked with each other with regards to mental health, and build confidence amongst agricultural support agents, Farm-Link introduced a programme of mental health literacy training. The courses were held in rural communities with populations below 2000, in the belief that high visibility of the events helped to embed conversations about mental health and engage the wider community. The skills developed in the courses were seen by professionals and community members as an extra resource, at no extra financial cost, that increased awareness of mental wellbeing.

A service network analysis, administrated by Farm-Link Project Officers, demonstrated an increase in links, post-implementation, between agricultural support agencies and local mental health resilience and wellbeing support services. For the analysis, three local advisors (each representing a different sector) in each of four communities within each rural areas health service were used, resulting in identification of between 19 and 32 agencies. Demonstrated increases in linkages between mental health and related services were reported; for example the total number of agency links with mental health services increased, and an increase in the number of times agencies recommended clients onto mental health services. But it is not clear over what time period, or the impact on outcomes, for the farmers themselves.

The qualitative data identified that Farm-Link Project Officers were valued as 'brokers' between the agricultural and health sectors, helping to translate the farming landscape and context to health professionals and building the confidence of agriculture agency workers to take an active role in supporting farmers' wellbeing. *"The experience of Farm-Link has been that the concept of the embedded worker who actually does know "the front-end of a cow from the back" is appreciated by the farming and agricultural sector and is also valuable when transferring information to and from the health sector"* (60).

The evaluation of Farm-Link has its limitations. It is not clear over what period the changes were found and if the results were sustained. It was prone to bias as the selection of communities and the surveys were administered by employees of Farm-Link, in the absence of control groups to provide

an objective comparison. Lastly, whilst this demonstrates improvements in linkages between organisations, it does not demonstrate the impact on farmers' mental wellbeing.

It is important to recognise that Farm-Link was responding to a serious farming crisis and was working in an environment of rapid change and development (69). Its value was in being able to move quickly, mapping established rural networks and coordinating stronger and more strategic links to support helping pathways for farmers. Using MHFA training adapted to a rural setting helped Farm-Link to actively engage with key agencies and create a forum for talking about mental wellbeing. An important success factor was the employment of rural development officers with knowledge and experience of farming or rural industry as well as a good grounding in health and wellbeing. This enabled Farm-Link to build credibility and trust with the farming community.

Farm-Link appears to have evolved into GoodSPACE, a suicide prevention training programme focused on farmer suicide, and aimed more broadly towards communities, individuals and clinicians, designed to address the specific needs of rural and remote communities (70). GoodSPACE offers a four-hour suicide workshop open to all participants, a two-day applied suicide intervention skills training open to community members and clinicians, a conversation about suicide that lasts up to three hours open to all participants, a six-hour clinical training for clinicians and health workers, and a five-hour workshop specifically aimed at Aboriginal and Torres Strait Islander People (70). GoodSPACE also offers community engagement and linking people to services (70). The literature search has not identified any published evaluation of GoodSPACE.

3.3 Increasing mental health literacy and awareness amongst farming professionals (e.g. Mental Health First Aid)

Mental Health Literacy describes the ability to understand and use information to promote and maintain good mental health. Its three key elements are:

- how mental health conditions can be recognised,
- how good mental health can be maintained, and
- actions for support and prevention of poor mental health (65)

Mental Health First Aid (MHFA) was originally developed in Australia to build mental health literacy in the general population (64). It has been used extensively as an intervention in different countries, including Wales, and across a range of populations, including emergency workers such as police and firefighters, and corporate office environments.

MHFA is a licensed structured programme that consists of a 12-hour interactive workshop and manual. It can be delivered face to face or online. MHFA aims to enhance non-health professionals' knowledge and skills in recognising the symptoms of poor mental health, build their confidence to talk and offer support, and inform them of appropriate agencies they can signpost people to for professional help. The course uses a five-step approach, similar to a traditional first aid course that can be applied to specific situations (63).

MHFA training has been adapted to work with agricultural agencies that have close contact with farmers and their families. Such agencies often encounter farmers in distress but do not necessarily know how to help, for example a national study of financial advisors highlighted a need to build skills and confidence of mental health issues to support farmers in distress (61).

The literature review identified six papers (see Tables 1 and 2) that examined the development of mental health literacy in farming communities. Five evaluated MHFA training in Australia, and the sixth evaluated a similar approach (GoodYarn) working with rural communities across New Zealand (65), The delivery of the training was supplemented with local information in the majority:

- The Australian studies, providing MHFA training delivered by trained presenters (61), were overseen by the Centre for Rural and Remote Mental Health (CRMMH) from 2005 to 2011. This included training to frontline agricultural workers and rural non-health professionals (60,61) in New South Wales (includes Farm-Link), and farm advisors from government and non-governmental organisations in Southern Queensland (62–64).
- GoodYarn in New Zealand is a licensed mental health literacy programme, based on a similar premise to Australia's MHFA training programme, that was developed by a Primary Health Organisation for farming regions (65). A "yarn" in New Zealand rural communities is an informal conversation, thus the name GoodYarn identifies the importance of communication and sharing of experiences about mental health and wellbeing. GoodYarn workshops are delivered by people who have both a farming or rural industry background and personal or close personal experience of mental health problems. This peer delivery model is a response to a consultation that articulated *"Farmers don't want to listen to a 'health' person, delivering a health message. They want someone they can relate to and who will understand the different issues that rural people experience"* (65).

Common findings across all studies are that there is evidence mental health literacy is well-received and participants' awareness and understanding improves directly after the training (pre- and post-comparison), but there is as yet no empirical evidence to suggest it has a long term benefit impact on farmers mental health outcomes or across the population (Table 2). *"This course was presented well with facts and provided insight into mental health as well as the treatments."* (64). *"There is really no more important way to service their members than this… this is probably one of the most important things that could and should be done for farmers"* (62). There is a need for further study to explore the potential impact amongst farming communities in the longer term, on mental health awareness, stigma and outcomes.

Public Health Wales undertook a Health Improvement Review (HIR) in 2012 that made an assessment of the Welsh Mental Health First Aid programme that has been running since 2011 (71). The HIR examined the potential effectiveness of the Welsh programme by reviewing research of similar initiatives, as well as a review of any available evaluation reports for MHFA training in Wales. The HIR found: *"There is evidence that this intervention has the potential to increase confidence and skills in recognising mental health problems and in reducing stigma in a range of settings. There is inconsistent evidence of an increased likelihood that participants will intervene when they recognise a potential mental health distress. There is no evidence that widespread mental health first aid training has the potential to impact on population mental health outcomes."* (71). A Cochrane systematic review of MHFA, which aims to understand the impacts on the recipients of the intervention across a range of settings, is currently underway (72).

4. Other initiatives implemented in rural farming communities – unevaluated studies

The literature review also identified some initiatives which have been implemented to specifically address the health needs of farming populations, but not evaluated (73). An overview of the different initiatives found are provided below:

Farming specific healthcare clinics and outreach programmes across the UK:

- Mobile services taking health care to the farming community (e.g. auction marts and agricultural shows) including a two-year nurse practitioner led health project in South Cumbria and North Lancashire (74), "The Farmers Health Project" (1999) in the North West of England (73), offering advice to the farming community targeting farm accidents, mental health, health checks.
- A "Farm Out" clinic was set up in 2001 by Derbyshire Community Health Service NHS Trust in response to the economic decline in farming and an increase in enquiries for physical and mental health issues at a weekly walk-in community kiosk at an agricultural market, with the role of bridging the gap between the farming community and health services provided in traditional settings (73,75).
- Examples of farming support groups, such as Lincolnshire's Rural Support Network (1999), provide health screening services for farmers at auction marts, and some charities (e.g. UK charity YANA (2008) in the eastern counties of England) provide campaigns, counselling and support for farmers in rural areas of the UK (76).
- A mental health framework, the 'Strategy for Action on Farmers' Emotions' (SAFE) (1991), highlighted the importance of community mental health programmes fitting around farm-work and reflected on farmers trusted relationships with other farmers and agricultural workers above all others making it challenging for outsiders to break in, particularly without good knowledge of farming life. SAFE included the following elements; building the picture (liaison and networking, information gathering); establishing priorities; getting the message through (e.g. health promotion campaign at agricultural shows, farmers' union offices, veterinary surgeries and so on); making the link (between farmers and mental health nurse); maintaining involvement (developing a trusting relationship); evaluating the response (49).
- The Farm Safety Foundation (2014) in the UK, funded by NFU Mutual, has held national campaigns aimed at young farmers, such as Farm Safety Week, Yellow Wellies - Who Would Fill Your Boots? and Mind Your Head, to tackle stigma and raise awareness of farm safety and mental health/suicide issues (77).

In some countries, dedicated occupational health services have a role in farmers' wellbeing:

- In Finland, Farmers' Occupational Health Services (FOHS) are available to farmers part funded by farmers and partly by the state through membership of Farmers' Social Insurance Institution' (FSII). This includes a survey of working conditions at least every four years and includes a mental wellbeing assessment through observation, and health examinations of farmers every two years that includes tests for burnout, depression, work ability and alcohol consumption (23,25). The 'Resource barn' (Voimavarariihi), carried out by the Finnish extension service organisation ProAgria, is a special service for farmers facilitated through an

agricultural advisor to evaluate their situation that was developed during 2004-2007 and then spread nationally, with the aim of considering wellbeing comprehensively and to assess foreseeable risks and avoid burnout and harmful stress (25). A helpline service "Support network for the rural population," was set up in 1992, is now funded by Finland's Slot Machine Association, and is staffed by 60 (trained) voluntary support workers and 300 (trained) local support people who work together to help the rural population (23,25). In Finland, the organisation 'Mela' is charged by the country's Ministry of Social Affairs and Health with overseeing a taxpayer-funded holiday allowance national scheme that includes around 4-5000 professional relief workers that are continually employed in the system moving from farm to farm (76). However, no further details were provided on the individual elements.

- In Sweden, owners and users of agricultural land have had the option of joining an occupational health care (OHC) program specially designed for those working in agriculture, with nearly half of full-time-employed farmers having access to the service (78).

Other wellbeing projects focused around farming include:

- Sowing the Seeds of Hope (SSoH) project (2001) developed in seven states in the USA, as a regional programme, in response to the 1980s social and economic farm crisis, where initial response was telephone hotlines, financial and legal advice, and mental health counselling (79). The project aimed to identify service components and make them available throughout all seven states. These included: trained outreach workers, training and education of behavioural healthcare providers, community education on behavioural health issues, information clearing houses, crisis telephone hotlines, means to access services, early intervention, coalition-building, advocacy for the socially underserved, social marketing, educational retreats, support groups for farm couples and families (79). An evaluation of the programme concluded that it improved the delivery of mental health services and other resources to underserved farm families; by increasing the cultural competency of the care providers, and increased access in many rural regions receiving little or no prior mental health services (79). One of the successes of the programme was sharing expertise, tools and best practice, and identifying the most productive elements of a behavioural health support program for the agricultural population, for example those which were confidential and readily available without cost (79). However, no further details were provided on the individual elements.
- Farmstrong (2015) is a New Zealand based nationwide rural wellbeing programme for farmers and growers to help them 'Farm Well Live Well', with the objective that farmers and growers are the most important asset on the farm and that developing habits that increase wellbeing will increase resilience (76,80). The programme has developed tools and resources with input from farmers and in a variety of media formats (video, print and others), that are shared through a website (farmstrong.co.nz) and social media platforms (Facebook and Twitter), and through partnership with rural media channels; as well as educational workshops (such as Healthy Thinking), and the programme attending agricultural and rural events (80). The programmes takes a preventative approach and teaches practical, proactive measures that the farmer can integrate into their lives to benefit wellbeing, such as building mental and physical resilience (76). Farmstrong has annually measured outputs and uses a self-reporting survey to measure impact for participants but there is no independent evaluation study available. Measures include website, social media activity and an (not independent) impact

survey of 65 Farmstrong users in 2017 (80). This showed that over two years, over 120,000 visited the website, 16% visiting more than once and over 8500 visitors spending more than five minutes on the website; also nearly 300,000 social media views (80). The survey found that 39% of participants reported improved 'ability to cope with the ups and downs of farming' as a result of Farmstrong, and three-quarters attributed at least one dashboard measure of improvement to Farmstrong (80).

- The Dairy Farmer Wellness and Wellbeing Programme (2010) is a change management strategy specifically targeted to change the behaviours and attitudes of New Zealand dairy farmers and their families, and improve and maintain emotional wellness (76,81), that is now run by Dairy NZ and the NZ Institute of Rural Health (82). The main feature of the programme is farmer 'Health Pit Stops' (also referred to as pit stops) that are held during major dairy events nationwide, where farmers have the opportunity to get a free physical health check by health professionals and to receive a free emotional wellness screening by social researchers (81). Only baseline information was presented, as a conference paper.
- Men's Health Pit Stop programs have also been conducted in Australia at local farming events providing convenient, speedy health-related screening, advice and information on cardiovascular health, diet, lifestyle, weight, alcohol consumption and mental health; and linked to support from area health services and general practices (83).
- In Denmark, over 20 peer support groups for farmers and farming couples were set up as part of a crisis support scheme that also provided a helpline and free package of social work run by Denmark's main farming advisory and extension service, 'SEGES' (76).
- In Australia, the Rural Mental Health Support line was established in 2005 to help support people living in rural farming communities experiencing prolonged drought and locusts. It offers a 24-hour 7-day-a-week support service overseen by the New South Wales Centre for Rural and Remote Mental Health and is part of state-wide Drought Mental Health Assistance Program. It aims to provide farmers and other members of rural communities with quick assistance with mental health problems through the provision of basic triage, referral, self-care advice and brief supportive counselling to callers. Call centre staff are mental health professionals who have been trained by people experienced in working with farmers and the impact of the drought. A pilot study into the line's efficacy found that the support line staff identified closely with the line's key aims and indicated their main tasks involved providing referral to drought support, counselling and mental health services, and supporting callers who felt that they had exhausted all other resources. All believed that the needs of the majority of callers were being met, but further evaluation is needed to confirm that view. The average number of callers a month was 48 with a range of 21 to 98. The paper gives no further detail (84)
- The Ripple Effect (2015) is an interactive online digital tool that aims to reduce stigma among males with a personal experience of suicide in the Australian farming community, although it is also accessible to women. It is specifically tailored to rural and farming contexts, encouraging participation from a strengths-based perspective. It is designed to allow access by as many isolated men as possible. The components of the tool are: a) shared stories by peers, highlighting the experience of suicide stigma and how it can be overcome, b) information and education in the form of a five topic online course, c) personal SMART goal setting with regular opportunities for feedback, d) resources and signposting to support services. A research protocol details plans for a non-randomised controlled trial with

quantitative and qualitative elements (85). However, only an uncontrolled evaluation with self-selected participants was found in the literature search. Participants (n=536) were recruited from across Australia, 62% were involved in farming, whilst 38% had never farmed. More females than males contacted the site (65.5%), however a higher proportion of males were more likely to have had a direct personal experience of suicide (attempted or had thoughts of suicide) than females. Ripple Effect was promoted as a suicide prevention tool for farming communities, it is understandable that the project may have appealed more to males who had considered or attempted suicide and rural females concerned about males in their lives (85).

5. Discussion

This interim report provides an overview of the evidence base to support farmers and their families to improve mental health, and the findings could contribute to the development of a framework to support the mental health and wellbeing of farmers at times of uncertainty.

A key challenge to inform action in this area is that few programmes have been formally evaluated, and of those that have, the majority are small pilot studies and do not adequately examine the primary outcome - mental wellbeing amongst farmers (summarised in Table 2). **Whilst we recognise that given the time available we may not have identified all studies in this area, there is insufficient evidence to draw a conclusion on effective programmes to support mental wellbeing amongst farmers. However, there are transferable lessons on the implementation of programmes targeted to farming communities, which may be taken into consideration to inform the development of a framework to support the mental health and wellbeing in farming communities in Wales.**

A key challenge is the lack of robust, evidence-based studies of programmes specifically designed to support farmers and their families, however, we identified three key programmes which had a strong rationale, sound theoretical approach, and were developed and implemented in partnership with farmers and organisations linked to agriculture. Whilst most demonstrated high levels of engagement amongst rural communities (largely through the links with agricultural partners and peer support elements) and a change in knowledge and awareness of mental health, none demonstrated a significant improvement in farmers' mental wellbeing as an outcome. Additional limitations include the short length of follow up, small number of participants, and lack of a comparator groups.

Nonetheless, across the programmes implemented within farming communities identified in this review (Section 3 & 4), there are common factors representing good practice supporting good engagement across the agricultural sector. These include using appropriate language, utilising peer/link workers or building on existing networks to engage with farmers, maintaining a focus on business, and ensuring coproduction of programmes and tools with the sector. Key learnings from the literature on barriers and mitigation factors are summarised in Table 3.

Table 3. Key challenges engaging farmers in health and lessons from the approaches identified within the literature review

Challenges to engaging farmers in mental health	Approaches identified in the review
Reluctance to engage in health – stoicism, tendency to self-manage, work ethic, independence, stigma	• Linking the wellbeing of farming business to the farmer's resilience helps engage them in looking after their general health and wellbeing (Sustainable Farming Families). • Using local contacts and frontline agricultural agencies is a useful resource to assist farmer's access mental health support. Building mental health literacy can give knowledge and confidence to deal with farmers' stress. • Use positive language - Farmstrong (focusing on assets and strength), Good Yarn (yarn is a colloquial language for an informal discussion). • Include farmers in the development to tailor content to their needs.
A traditional focus on 'practical' problem solving as opposed to 'seeking help'	• Using asset-based approaches and language helps destigmatise and encourage positive solution-focused approaches. (Sustainable Farming Families, Farmstrong). • Provide support which is goal and action orientated.
Reluctance to engage with health professionals	• Delivery of support through non-health professionals (other professions linked to agriculture with knowledge of farming life) e.g. During the Foot and Mouth crisis (2001), studies suggested that farmers found it easier to talk to veterinarians and other agencies that were offering practical information (94). • Peer-led interventions can break down barriers and promote social capacity (Farmstrong). • Deliver through existing networks to increase participation.
Not sustainable	• Draw on existing, or build, strong local links between agricultural agencies, community organisations and health services, leading to sustainable rural community capacity (Farm-Link).

When the evidence in an area is not strong enough or widely available to support the development of interventions, from a public health perspective, it is possible to adapt programmes from different countries or settings, pilot locally, and incorporate evaluation to inform learning and programme development. However, the transferability of programmes is often uncertain (86), as an effective model in one area or population, may not be effective in a different context.

There are a number of evidence-based approaches to supporting mental wellbeing which have *not* been implemented within farming communities specifically (Table 4). There is the potential to consider if these programmes could be transferred to the agricultural sector, adapting and drawing from the lessons learnt in the interventions in farming communities found in this review (summarised in Table 3) to support successful implementation. A robust evaluation framework in place before implementation would be essential to capture the impact on outcomes.

For example, it may be possible to adopt universal approaches aimed at the whole population (e.g. an awareness anti-stigma campaign where evidence for such campaigns - either for whole populations or specific communities - show that they can improve public attitudes towards mental health, reduce discrimination and improve help-seeking behaviours) and implement it within a farming community (97–99). Another approach would be to apply targeted interventions used for people and other communities at risk, to farmers and the agricultural community. For example the Mental Health Foundation's peer support and self-management programmes, delivered across all levels of prevention, have enhanced the recovery model, helped people develop positive attitudes and identify life purpose (100). The SAHMRI Resilience Skills training and PERMA wellbeing model, based on work by Seligman, has shown sustained improvements in wellbeing and resilience, and reductions in distress in occupational groups and wider populations facing uncertainty (101–103). Lastly, further opportunities for intervention can be identified through indicated approaches for people experiencing distress; these have included helplines, CBT-based strategies for those at high clinical risk, training programmes for people in positions of leadership or influence, community suicide prevention programmes for middle-aged men (104).

Table 4. Evidence of public health interventions tested in settings outside farming

Type	Intervention	Examples	Evidence
Universal	Anti-stigma campaign	Mass-media interventions, Awareness Raising, Time to Change, See Me	Moderate evidence in reduction in prejudice (which can support help-seeking) (87), evidence of improved lifestyle change outcomes with education of practitioners and volunteers (88)
	Psychoeducation	Educational interventions targeting treatment compliance or better diagnosis	Increasing awareness of symptoms and conditions is recommended by NICE for a range of problems like Post Traumatic Stress Disorder (PTSD) (89), low quality evidence suggests impact on reducing relapse and improving treatment compliance in serious mental illness (90)
Targeted	Peer support and self-management	Peer support interventions (peer-led groups, or facilitated groups, or peer mentoring) with self-help and goal setting aspects	NICE recommends peer support and self-management interventions for: subthreshold depressive symptoms, mild to moderate depression, GAD, mild to moderate panic disorder, mild to moderate OCD; PTSD, psychosis (91,92)
Indicated	Co-production (collaborative care)	Co-design of services	Strong evidence that co-production improves prevention and care (framework available) (93), including in depression and anxiety (94)
	Telephone lines	24/7 suicide prevention line, remote peer support	Telephone or text helplines recommended by NICE for suicide prevention (95), medium quality evidence suggests peer support telephone calls can improve health and health-related behaviour (96)

6. Next steps

The programme will now carry out a planned series of stakeholder engagement exercises to reflect on the international evidence in this report, consider transferability of information on the challenges and possible solutions to Wales, and understand Wales' assets.

This external engagement will support the translation of evidence to support the development of a framework for action to maintain/improve the mental wellbeing and resilience of farmers, their families and agricultural communities in Wales, and how to demonstrate an impact on outcomes.

Table 2. Overview of the outcomes, strengths and weaknesses of the different programmes identified

Programme, year of implementation		Population and sample size *(N)*	Type of evaluation design	Process / participation	Outcomes	Strengths/Weaknesses
Sustainable Farm Families Project (SFF) and Sustainable Dairy Farm Families (SDFF) programs (2003) (30,33,34,55–59) **(see Section 3.1)**	Sustainable Farm Families Project (SFF) and Sustainable Dairy Farm Families (SDFF)	Participants identified through farming industry networks, or other organisation linked to farming operations. 321 recruited to take part in a three-year intervention, which included 210 dairy farmers across 11 sites within Victoria. SFF 43% Men SDFF 52% Men Average age across men and women and both programmes in the range 46-49 years	Evaluation of clinical health indicators over 3 years for 99/128 Broadacre farmers who completed all three workshops.	Programme found to encourage participants to think differently about managing work on the farm, overall 54% were concerned with improving farm safety and consideration of their health.	Change in participants' state of health and a reduction in the need for referral to healthcare agencies.	Sound theoretical base for programme content and approach. The workshops had good engagement by farmers and high retention, but it is not known how representative the population who took up part are of the wider farming community. No control group – those who stayed in the programme may have been those more engaged with "health". Important role of intersectoral collaboration and evidence-based health education. Programme has been repeated and transferred to Canada.

	Farming Fit controlled follow up over 6 months.	Recruited from SFF: N intervention= 35 (baseline), 34 (6-month follow up); N control 37 (baseline), 34 (6-month follow up).	Quasi-experimental study with a control group followed up for 6 months.	High retention/completion rate - 97 % intervention, 92% control.	Reduction in measures of obesity (BMI, waist circumference). Increase in physical activity. No effect on cortisol levels or depression, stress and anxiety observed.	Unknown if change sustained. Small study with a self-selected group. Insufficient evidence to draw definitive conclusion.
Farm-Link (2007-2011) (60) **(see Section 3.2)**		(1) MHFA Three Farm-Link project officers delivered 15 MHFA courses to frontline agricultural workers (2008/09). (N=353 participants). (2) Farmers' mental health networks developed and expanded.	Process evaluation examining project records, service network meetings, service network analysis (between 19 and 32 participating agencies across the three regions were surveyed pre and post intervention to measure change in the network),	15x12 hour sessions over 4 months delivered to 220 participants. Agricultural support sector found to be interested in mental health and a willingness from them to engage in mental health activity, such as through training and participation in a local network.	Reported linkages on relationships between mental health and related services increased. Increased in the number of other agencies linking with mental health and related services (overall from 63 to 147). Authors report Farm-Link is now clearly recognised locally as a working link between farmers and mental health services.	Authors suggest established conditions for successful cross-agency networks to flourish. The evaluation only included agencies known to local advisors (biased group); one area was excluded because "of program difficulties". Some qualitative evidence to suggest improved referrals to mental health services. The model is dependent on referrals and capacity in mental health services. No data was collected on outcomes in farmers.

			and interviews with four project staff.			
Mental Health First Aid (MHFA) (see Section 3.3)	NSW Farmers Association Mental Health Network (2005-2006) (61)	Workers in the Agricultural Industry, Farmers and their families. (N=99 participants from a range of rural community organisations across 11 towns in rural and remote NSW).	Single participant survey before and 6-8 weeks after training.	No info provided	Improved (self-assessment) participant 1) ability to recognise mental health needs and conditions, 2) degree of concordance with mental health professionals, 3) expressed stigma about depression and schizophrenia, and 4) confidence in ability to provide appropriate help or referral.	Targeted to services with close contact with farmers have on-farm contact and trust, and are often the first point of contact. Unknown if change sustained. The impact on identification and support of mental wellbeing in farmers / rural communities is not known. Insufficient evidence to draw a definitive conclusion
	Australia, Southern Queensland (2007) (62–64)	Governmental (Department of Primary Industries and Fisheries and the Department of Natural Resources and Water) and non-governmental Farm Advisors (N=32 participants, from 5 organisations).	Participant survey pre and post. Survey and interviews with 15/32 participants after 12 months.	Participants reported the course material was new to them, easy to understand, presented well and the content relevant for them.	Improved (self-assessment), participants' confidence and knowledge of mental health issues, empathy toward persons with mental health problems. Increasing awareness of mental health issues among clientele was considered by all who participated as of benefit to field staff.	Participants are self-selected so all employees may not have benefitted in a similar way. The impact on identification and support of mental wellbeing in farmers/rural communities is not known. Small pilot study - insufficient evidence to draw definitive conclusion.
	Good Yarn (2015) (65)	Farmers and families, Frontline Agricultural Workers and rural professionals	Single participant survey at the end of the workshop.	No info provided	Improved (self-assessment), participant awareness of signs and symptoms of mental health, confidence to talk	No baseline measurement. Unknown if change sustained. The impact on identification and support of mental

		(Workshop size range 4-20, average size 13, total participants 430).	Response rate to questions ranged from 90% to 100%.		to someone when concerned about their mental health. The majority would recommend the training to others.	wellbeing in farmers/rural communities is not known. Insufficient evidence to draw definitive conclusion.

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Appendix 1: Methodology

Due to the rapid turnover of this work in answer to a specific policy question, and to identify research evidence that supports the review question, a topic focused literature search was undertaken. This followed the standard methodology used within the Public Health Wales Observatory Evidence Service to identify existing relevant documents. **A full evidence review** of primary and secondary sources, using an approach based on systematic principles, was applied to specifically answer the the policy questions:

a) What evidence-based practice to support farmers and their families to improve mental health and resilience is there?

b) What are the potential approaches to overcoming common barriers to engagement amongst farmers on health?

A comprehensive search strategy was developed as outlined below. Five databases were searched (Medline, Embase, Psychinfo, NICE, Cochrane). Limitations were articles and reports published in English language, in the period 2005-19.

Search term 1		Search term 2
farmer* OR farmworker OR farm worker OR farming	AND	depression OR “mental health” OR anxiety OR “mental illness” OR stress OR suicide OR “mental disorder”
	AND	support OR coping OR exp suicide/pc [Prevention]
	AND	resilien* OR wellbeing OR well-being OR well being

A search of the grey literature was performed manually by the authors using a structured search of Google, using the same search terms and search limits as outlined above (e.g. dates, EN language). Additionally to searches in online databases, a manual snowballing search was performed in the reference list of selected articles.

A rapid answer approach was further undertaken to find supporting evidence-based practice to improve resilience and wellbeing in comparable, non-farming populations (i.e. men, rural residents) from relevant secondary sources that use a reliable (in that they use transparent robust) methodology and/or produced by a recognised (e.g. expert body). This aimed to allow the identification of the nature and quality of the evidence available. The search was targeted towards specific databases (NICE, Cochrane, What Works Centre for Wellbeing) and a search of the grey literature using a structured search of Google.

The searches identified a total of 1150 records (843 after duplicate removal) that were screened using the PRISMA statement (Figure 1) (105). After screening by title and abstract, 130 full text record were examined. Of these, 14 studies and reports were finally included in the review. The quality of the included papers and reports was ascertained through the selection criteria, and intervention studies were intended to be critically appraised using the CASP checklists (106).

However, due to the sparsity of good quality studies in the literature, critical appraisal was not possible; so the evidence mapping was applied to understand what evidence is available and whether it answers the policy question.

Figure 1. PRISMA Flow Diagram