

STRATEGIC PLAN FOR THE HOP RESEARCH COUNCIL

Prepared by the Strategic Planning Committee

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- In relation to chemical application management
 - Production, collection, archiving and distribution of data and biologies for agricultural genomics, diversity data, phylogenies, DNA libraries, sequence data, molecular maps and markers, and molecular diagnostics

Time to impact 1: 1-10 years
Comment 1: As the amount of disparate disciplinary information increases, so does the need for responsibility in integration, deployment and application of knowledge. HRC and its sponsorship have an increased responsibility to growers and processors to deploy technologies. Strong leadership can have a large impact on our relatively small constituency. Integration and practical dissemination need to be developed and encouraged. Co-ordination and harmonization with the international community is essential as a niche crop, where limited resources are available. This is especially true of agricultural genomics development, which is too costly for any one country or interest to pursue.

Section Breeding & IPM
Priority Group 2. Identify superior germplasm.
Item 1. Screen and characterize cultivated and wild accessions for heritable traits of value to disease control
Examples 1: Some specific traits that germplasm development should focus on are as follows (in order of importance or priority):

- Resistance to powdery mildew (caused by *Podosphaera macularis* spp. Humuli).
- Resistance to downy mildew (caused by *Pseudoperonospora humuli*)
- Resistance to spider mites (*Tetranychus urticae*)
- Resistance to hop aphid (*Phorodon humuli*)

Time to impact 1: 2-12 years
Comment 1: While varietal development is a critical requirement for the continued success of USA hop growers, there is some concern that public breeding programs should not be involved in the development and release of varieties. Several private breeding companies actively work towards developing and releasing public and proprietary varieties grown with the support of a marketing system that helps growers sell their product on the world market. In almost all other crops, public breeding programs no longer serve as the major developer of varieties but do serve as developers of germplasm containing a specific trait or traits. Germplasm developed by public programs is then utilized by private breeders for use in the development of superior varieties-the better the germplasm, the better the varieties that are ultimately made. Goals for germplasm development are centered on one or a few traits, while selection for a variety requires the identification of a line or lines that have excellent characteristics for many traits. As a result, much fewer offspring are required for selection in germplasm development in comparison to varietal development where up to 10X the number of offspring are required for successful identification of a variety containing all the desirable traits necessary for making a new and

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better variety. In some cases, new material may be fortuitously developed that contain enough superior traits to warrant release as a variety. It is important to note that variety development will not be the focus of HRC support but may be pursued by individual members of the HRC utilizing private funds.

