



FINAL REPORT

National Agricultural Innovation Project
(Indian Council of Agricultural Research)

Business Planning & Development Unit
CPRI, Shimla, (HP)

Business Planning & Development Unit, CPRI, Shimla



Central Potato Research Station (ICAR)
Shimla- 171 001, Himachal Pradesh
www.cpri.ernet.in

Component-1

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Foreword

Indian Council of Agricultural Research (ICAR) is the apex body to undertake agricultural research and development in the country. Its efforts towards acceleration of research and technology development, as per need of farming community, have always been priority focused area. It has taken several demand driven initiatives for sustainable transformation of agriculture in the country to support poverty alleviation and income generation for poor farmers. National Agricultural Innovation Project (NAIP) was launched and implemented by ICAR with collaborative support of the World Bank and Government of India. NAIP is working with large number of stakeholders for development of Indian agriculture through several consortia partners including 22 BPD Units and other allied partners from farmer, Government, NGO and corporate bodies spread across the country. To a large extent, NAIP has been a change agent to lead sustainable transformation of agricultural research and technology development in the country. Efforts taken by NAIP towards demand driven research and technology development have energized the mindset of academia and research institutions to cater to the needs of farmers and agro enterprises. Business Planning and Development Units were setup under component 1 of NAIP and are promoting new agri entrepreneurs / enterprises with handholding services starting from business conceptualization to implementation and scaling up. Therefore, the role of BPD units becomes more crucial in commercialization of viable technology from research institutions to end users. BPD units are constantly endeavoring to bridge the gap between scientific community and end users. Accessibility and availability of developed technologies to a large segment of end users have been enhanced through technology awareness and entrepreneurship development programs, where scientists and end users interact with each other. Innovation nurturing is also being facilitated efficiently by BPD units. I am very happy to publish the final report of BPD unit, CPRI Shimla. I am thankful to ICAR for establishing a BPD unit at CPRI Shimla and hope that proper steps will be undertaken by ICAR for post NAIP sustainability of BPD units.

Dated 15th February, 2014
Shimla

(B.P. Singh)
Director

Preface

I am pleased to present this final report of “Business Planning and Development Unit” CPRI Shimla as subproject of NAIP component-1. BPD units have contributed significantly to the sustainable transformation of agriculture through promotion of innovation and agri-business development. Technological accessibility has been a key driver of both the agricultural productivity enhancement and the financial success of many farm and agribusiness firms in an economy. Agribusiness firms that have been innovative and creative in their R&D activities have been rewarded with strong market positions and financial success. But the challenges of bringing new technology to market in the agricultural industry are changing – it is no longer adequate to conceive a new technology and convince farmers with a strong marketing campaign that they should adopt the technology. With so many years of farming practice, our farmers keep on devising new methods, procedures and in some cases new varieties. Many farmers and rural people have become innovators today but to take their innovations to the market, they need the support of many other agencies in the form of funding, consultancy including technical expertise and facilities (instruments, machines, laboratories, testing and trials etc.). BPD unit CPRI has played a very significant role in popularizing the technologies developed by it to end users across the country. BPD unit has effectively integrated stakeholders through several programs like technology awareness programs, entrepreneurship development programs, stakeholders meet etc. In order to ensure the outreach of technology to farming community BPD unit has formed Farmer Producer Organizations (FPOs) where farmers have easy access to scientists for guidance on improved agronomic practices, varieties, pest management etc. In this endeavor, a constant encouragement, support and guidance provided by Dr BP Singh, Director, CPRI Shimla has been of immense help to all team members of BPD unit.

Constant supports in implementation of the Project provided by Er. Sunil Gulati, Scientist (FM & P) and Er. Sukhwinder Singh, Scientist (FM & P) of CPRS, Jalandhar is duly acknowledged. Contributions of Mr. Bipin Mishra, Business Manager, Dr. Karan Acharya, RA, Ms. Richa Verma and Ms. Shweta Bhardwaj, SRF, Mr. Amit, OA in assisting the project implementation are appreciated

Dated 15th February, 2014

(JS Minhas)
Consortia Principal Investigator
BPD Unit & Head, CPRS, Jalandhar

सारांश

विश्व बैंक द्वारा बित्त पोषित राष्ट्रीय कृषि नवोन्मेषी परियोजना का संचालन भारतीय कृषि अनुसंधान परिषद नई दिल्ली द्वारा कृषि अनुसंधान एवं प्रौद्योगिकी को बढ़ावा देने के लिए किया जा रहा है। परियोजना का मुख्य उद्देश्य किसानों, प्राइवेट कंपनियों एवं सरकारी शोध संस्थानों द्वारा किए जाने वाले कृषि नवीनीकरण को इन सभी के बीच सामंजस्य बैठा कर भारतीय कृषि में स्थायी परिवर्तन एवं विकास लाना है। इन सभी कठिनाइयों को दूर करने हेतु एक उद्यम नियोजन एवं विकास इकाई (बीपीडी यूनिट) की स्थापना 22 मई 2013 को केन्द्रीय आलू अनुसंधान संस्थान शिमला को प्रदान किया गया जिसको 31 मार्च 2014 तक संचालित करने की संस्तुति प्राप्त है। उद्यम नियोजन एवं विकास इकाई के संचालन हेतु रुपये 1,37,75,700 प्रदान किए गए। हमारा मुख्य उद्देश्य संस्थान द्वारा विकसित तकनीक को संबन्धित कंपनियों के उपयोग हेतु आवश्यक लाइसेन्स प्रदान करना एवं वैज्ञानिकों को कंसल्टेंसी प्रोजेक्ट प्राप्त करने को सुगम बनाना है।

नयी खोज एवं नवीनीकरण का पोषण एवं मदद करना भी हमारे प्रमुख उद्देश्यों में से एक है। अनेक किसान एवं ग्रामीण लोग खेती करने के दौरान भिन्न-भिन्न प्रकार के विधि, प्रक्रियाओं एवं कभी कभी तो उन्नत प्रजाति के बीज को विकसित कर देते हैं। किसानों द्वारा विकसित इन नवीन तकनीक एवं खोज को बाजार तक पहुंचाने हेतु उन्हें अनेकों प्रकार की मदद की आवश्यकता होती है जैसे की वित्त की सुविधा, तकनीकी विशेषज्ञ परामर्श, उपकरण, मशीन, प्रयोगशाला एवं टैरिफिंग ट्रायल की सुविधा इत्यादि। खेती एवं कृषि प्रसंस्करण को और अधिक कुशल एवं लागत प्रभावी बनाने हेतु उचित वैज्ञानिक तकनीक की भूमिका बहुत महत्वपूर्ण होती है। यद्यपि बीपीडी यूनिट **CPRI** शिमला की मंजूरी मात्र 9 महीने पहले ही मिली है फिर भी हमने समय सीमा में ही सारे उपकरण, फर्निचर, कंप्यूटर इत्यादि की खरीददारी सम्पन्न कर बीपीडी कार्यालय को स्थापित कर लिया।

सीड प्लॉट टैक्नीक की मदद से जलंधर जिला को गुणवत्ता युक्त आलू बीज उत्पादन हेतु उपयुक्त स्थान के रूप में पहचाना गया है। पोटैटो सीड इंडस्ट्री को आधुनिक बनाने हेतु **CPRI Shimla** ने एक नई तकनीकी ऐरोपोनिक्स विकसित की है जिससे उत्तम गुणवत्ता वाले रोग व्याधि मुक्त आलू बीज का उत्पादन किया जा सकता है। ऐरोपोनिक्स तकनीक का लाभ अधिक से अधिक किसानों को पहुंचाने हेतु अति आवश्यक है की **CPRI** स्वयं एक ऐरोपोनिक्स यूनिट की स्थापना अपने केंद्र जालंधर पर करे जिससे अधिक से अधिक किसानों को मिनी ट्यूबर उत्पादन का लाइव डेमोस्ट्रेशन कर टेक्नॉलजी के प्रति जागरूक एवं प्रेरित किया जा सके। बीपीडी यूनिट का संचालन केन्द्रीय आलू अनुसंधान केंद्र जालंधर से किया जा रहा है। उपरोक्त वर्णित ऐरोपोनिक्स यूनिट का उदघाटन माननीय डॉ. एन. के. कृष्ण कुमार, उप महानिदेशक बागवानी, भारतीय कृषि अनुसंधान परिषद नई दिल्ली द्वारा 15 दिसम्बर 2013 को केन्द्रीय आलू अनुसंधान केंद्र जालंधर पर किया गया। उदघाटन समारोह की अध्यक्षता डॉ. बी.पी. सिंह, निदेशक, केन्द्रीय आलू अनुसंधान संस्थान, शिमला द्वारा किया गया जिसमें 800 से भी अधिक किसान उपस्थित रहे। उप परियोजना में लक्षित उद्देश्यों को प्राप्त करते हुए बीपीडी यूनिट ने ऐरोपोनिक्स तकनीक का लाइसेन्स सेरखों बायोटेक प्राइवेट लिमिटेड, रूपनगर, पंजाब को प्रदान किया। देश में एग्री बिजनेस एवं कृषि उद्यमियों को प्रोत्साहित करने हेतु बीपीडी यूनिट ने एंटरप्रेनयोरशिप डेव्लपमेंट प्रोग्राम का आयोजन किया जिसमें 50 से अधिक कृषि उद्यमियों एवं कंपनी प्रतिनिधियों ने भाग लिया। कृषि अर्थ शास्त्री एवं विशेषज्ञ हमेशा से मानते हैं की सीमांत एवं लघु किसानों को एकोनोमिज ऑफ स्केल प्रदान कर कृषि की उत्पादकता एवं लाभ को बढ़ाया जा सकता है। कृषि संसाधन उपयोग की दक्षता को बढ़ाने हेतु सीमांत एवं लघु किसानों की कलेक्टिव बार्गेनिंग क्षमता को सशक्त करने की आवश्यकता है। इस दिशा में बीपीडी यूनिट ने जालंधर जिले में दो फार्मर प्रोड्यूसर आर्गनाइजेशन (एफ.पी.ओ.) बनाए हैं। बीपीडी यूनिट का सर्व प्रथम प्रयास है की एफ. पी. ओ. के सदस्यों को आलू बीज उत्पादन संबन्धित उन्नत सस्य प्रक्रियाओं विषय पर उचित प्रशिक्षण प्रदान कर बीज उत्पादन क्षमता को बढ़ाया जाए। एक अच्छी आलू बीज की फसल लेने हेतु यह अति आवश्यक है की किसान के पास सभी प्रकार के कृषि उपकरण उपलब्ध हों। आलू बीज उत्पादन में उपयोग होने वाले कृषि उपकरणों कि उपलब्धता को सुनिश्चित करने हेतु किसानों को बीपीडी यूनिट द्वारा आवश्यक कृषि उपकरण जैसे कि ट्रैक्टर, ट्राली, रिज्जर, डिग्गर, प्लांकर, ड्रिलर इत्यादि न्यूनतम किराए पर प्रदान किए जा रहे हैं। बीपीडी यूनिट के अंतर्गत किए जाने वाले कार्यों की जानकारी अधिक से अधिक किसानों तक पहुंचाने हेतु स्थानीय एवं राष्ट्रीय अखबारों में खबर प्रकाशित की गई साथ ही वैज्ञानिकों द्वारा रेडियो पर भी जानकारी दी गई।

आलू बीज उत्पादन हेतु उन्नत सस्य प्रक्रियाओं पर एक दिवसीय प्रशिक्षण एवं टेक्नॉलजी अवेरनेस प्रोग्राम का आयोजन 29 जनवरी को केन्द्रीय आलू अनुसंधान केंद्र जालंधर पर किया गया। 30 जनवरी को काम्प्रिहेंसिव बिजनेस ट्रेनिंग प्रोग्राम का आयोजन किया जिसमें 30 से अधिक कृषि उद्यमियों ने भाग लिया। इस दौरान सीपीआरआई शिमला द्वारा विकसित प्रमुख तकनीकी जैसे की गुणवत्ता युक्त आलू बीज उत्पादन, पोस्ट हार्वेस्ट मैनेजमेंट, पोटैटो फूड प्रोसेसिंग, इत्यादि की जानकारी विस्तार से वैज्ञानिकों द्वारा दी गयी। बीपीडी यूनिट का यह भी प्रयास है की आसपास के स्व सहाय समूह (**SHG**) के महिला सदस्यों को आलू आधारित आजीविका हेतु प्रोत्साहित किया जाए और इस दिशा में कार्य प्रगति पर है। यूनिट द्वारा चिप्स बनाने, फ्रेंच फ्राइज, डीहाइड्रेटेड चिप्स एवं क्यूब्स बनाने का प्रशिक्षण प्रदान करने हेतु दो दिवसीय कार्यक्रम का आयोजन किया जा रहा है। साथ ही बीपीडी यूनिट ये भी प्रयास कर रहा है की आसपास के **NGOs** से तालमेल बैठा कर **SHGs** को मार्केटिंग सपोर्ट भी प्रदान किया जाए जिससे वो बाजार में बेच कर आय अर्जित कर सके।

सीपीआरआई द्वारा विकसित कुछ मुख्य तकनीकियों को लाइसेन्स देने हेतु बड़ी कंपनियों से बात चल रही है और मार्च के अंत तक एग्रीमंट भी साइन हो जाएगा। अनेक वर्षों के शोध के पश्चात **CPRI** ने आलू में लगाने वाले प्रमुख वाइरस जैसे **PVX, PVA, PVS, PVY** एवं **PVM** इत्यादि का पता लगाने हेतु

किट को विकास किया है जिसको **Dipstick kit** नाम से जाना जाता है। **CPRI** ने हाल के वर्षों में **Bacillus subtilis** का बायो फार्मूलेशन “**B5**” विकसित किया है एवं पेटेंट भी प्राप्त किया है जो आर्थिक महत्व के फसलों में जैविक खाद एवं जैविक पेस्टिसाइड की भूमिका अदा करता है। बीपीडी यूनिट बहुत जल्द ही इन तकनीकियों को विभिन्न कम्पनियों को लाइसेन्स प्रदान करने वाला है। बीपीडी यूनिट ने अपनी गतिविधियों को किसानों, प्राइवेट संस्थाओं एवं उद्यमियों तक पाहुचने हेतु अनेक प्रकार के प्रचार प्रसार एवं जागरूकता अभियान भी चलाये गये जिनमें मुख्यतः पंजाब प्रैस क्लब में प्रैस कॉन्फ्रेंस करना इत्यादि प्रमुख है जिसमें सभी प्रमुख अखबार एवं चैनल के प्रतिनिधि उपस्थित रहे। इसके अतिरिक्त वैज्ञानिकों ने समय समय पर रेडियो वार्ता के दौरान भी बीपीडी यूनिट अंतर्गत की जाने वाले प्रमुख क्रियाविधियों की जानकारी भी प्रदान किया। केन्द्रीय आलू अनुसंधान केंद्र जालंधर के प्रमुख डॉ॰ जे॰ एस॰ मिनहास ने लोकल टीवी चैनल को बुलाकर स्टेशन पर विस्तार से बीपीडी यूनिट की गतिविधियों के बारे में बताया जिससे बीपीडी यूनिट का लाभ अधिक से अधिक किसानों एवं कृषि उद्यमियों तक पाहुचाया जा सके। बीपीडी यूनिट ने **CPRI** द्वारा विकसित टेक्नालजी का पेटेंट दाखिल करने में भी वैज्ञानिकों की मदद की जैसे की **dehydrated potato cubes, shreds and potato dehauling machine** इत्यादि। बीपीडी यूनिट निकट भविष्य में कुछ सरकारी संस्थाओं जैसे पंजाब एवं गुजरात एग्री इंडस्ट्रीज कारपोरेशन इत्यादि के साथ भी टेक्नालजी लाइसेन्स प्रदान करने हेतु एग्रीमेंट (**MoU**) साइन करने वाला है। बीपीडी यूनिट पंजाब, हरियाणा एवं हिमाचल प्रदेश में स्थापित अनुसंधान संस्थाओं द्वारा विकसित टेक्नालजी का डेटा बेस भी बना रहा है जिससे उनको भी किसानों एवं कृषि उद्यमियों तक पाहुचाया जा सके जैसे की पंजाब कृषि विश्वविद्यालय लुधियाना, **CAZRI** जोधपुर, चौधरी सरवन कुमार हिमाचल प्रदेश कृषि विश्वविद्यालय, डॉ॰ वाई एस परमार बागवानी एवं वानिकी विश्वविद्यालय, सोलन एवं मशरूम अनुसंधान केंद्र इत्यादि प्रमुख है। वैज्ञानिकों को कंसल्टेंसी प्रदान करने हेतु भी बीपीडी यूनिट **McCain and PEPSICO INTERNATIONAL** के साथ वार्ता कर रहा है और हमें विश्वास है की हम बहुत शीघ्र ही उनके साथ **MoU** साइन कर लेंगे।

Executive Summary

National Agricultural Innovation Project (NAIP) of ICAR was funded by the World Bank to improve agricultural research and technology in India. The project's core objective is "to contribute to sustainable transformation of agriculture and accelerate the collaborative development and application of agricultural innovations between public research organizations, farmers, private sector and other stakeholders. To addresses these challenges by changing the way in which scientists, farmers, and agricultural entrepreneurs interact in the national AIS. Business Planning and Development (BPD) Unit, CPRI, Shimla was sanctioned on May 22nd 2013 with a closing date of March 31st, 2014 with a total budget of Rs 1,37,75,700. Our main objective is to commercialize the technologies developed in the institute and facilitates institute scientists for consultancy project. Innovation nurturing is also the objective of BPDs as many farmers and rural people keep on devising new methods, procedures and in some cases new varieties. In order to take their innovations to the market they need the support of many other agencies in the form of funding, consultancy, technical expertise, facilities (instruments, machines, laboratories, testing and trials etc.). Technology plays a very important role in agriculture to make farming and processing of agricultural produce more efficient and cost effective.

Within a short span of only nine months BPD Unit, CPRI has completed on time procurement of equipment, furniture, computer and accessories. Jalandhar district is identified as competitive place for potato seed production using seed plot technique. In order to modernize the potato seed industry CPRI has developed aeroponics technology which is a novel way for quality potato minituber production. It is important for CPRI to popularize the aeroponics technology among potato seed growers for enhancing seed quality. To do so it was imperative to establish one small unit to showcase the aeroponics technology to a large number of potato seed growers. Aeroponics unit was inaugurated by honorable Dr. N.K. Krishna Kumar, DDG Horticulture on 15th December 2013 and presided by Director, CPRI Shimla. A kisan mela was also organized at Central Potato Research Station on inaugural day to demonstrate the aeroponics technology wherein more than 800 farmers participated. BPD Unit has commercialized aeroponics technology of CPRI to Sekhon Biotech Pvt. Limited, Rupnagar, Punjab. For promotion of agribusiness and agri entrepreneurship BPD Unit has organized one day entrepreneurship development program on 16th December where 51 participants attended the program from different organizations. It is argued that productivity and profitability of agriculture and allied

sector can be enhanced by providing economies of scale to small and marginal producers. To enhance the resource use efficiency collective bargaining power of small and marginal farmers needs to be strengthened. BPD Unit has formed two farmers producers organization (FPO) in Jalandhar district to enhance the capacity of potato seed growers. Our plan of action is to primarily build capacity of farmers by improved agronomic practices of potato seed production. In order to harvest good seed crop one need to have all the required equipment for potato cultivation. To ensure the accessibility of farm equipment to resource poor farmers, BPD unit is providing equipment on minimum rent basis. News is also being disseminated through different medium like radio talk, local and national news -papers etc. Full day technology awareness program was also organized on 29th January at CPRS, Jalandhar along with training on improved agronomic practices for potato seed production. BPD unit has organized comprehensive business training program on 30th January which had a participation of more than 30 delegates. All the technologies developed by CPRI Shimla were discussed and showcased to participants related to quality potato seed production, post- harvest management, potato food processing etc. BPD unit is also focusing on potato based livelihood promotion through SHGs in Jalandhar district. We are organizing two day rigorous training program by the end of February for women SHG members of nearby villages on potato processing like chips, French fries, dehydrated chips etc. BPD unit is also trying to establish linkage with NGOs who can provide marketing support to sell out processed products in nearby areas. BPD unit is communicating with agri input companies to license some of the CPRI's promising technologies. CPRI has developed dipstick kit technology for detection of potato virus PVX, PVY, PVA, PVS and PVM etc. CPRI has got patent for Bio formulation B5 a strain of *Bacillus subtilis*. B5 works as bio fertilizer and bio pesticide in many filed crops. BPD unit is also moving positively to commercialize this technology to agri input companies. Most probably by the end of February or mid of March BPD unit will exchange MoU with few leading companies for aeroponics technology. CPRI- BPD Unit has also organized many awareness and publicity programs, major ones among them are press conference at Punjab Press Club, Jalandhar.

BPD Unit has helped CPRS scientists to file patent applications for dehydrated potato cubes and shreds and potato dehauling machine. BPD unit is in touch with State Agro Industries Development Corporation to license some of CPRI technology in near future. CPRI BPD unit is also making database of technologies developed by different research institutes/ universities located in north India like Punjab Agriculture University Ludhiana, CAZRI, Jodhpur, Choudhary

Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya, Dr. YS Parmar University of Horticulture and forestry, Solan, Directorate of Mushroom Research, Solan. On the consultancy front, BPD unit is communicating with McCain and PEPSICO INTERNATIONAL and very soon will move ahead to exchange MoU for the consultancy research projects.

Part-I: General Information of Sub-project

1. **Title of the sub-project:** “Business Planning and Development Unit, CPRI, Shimla”
2. **Sub-project code:**
3. **Component:** I -NAIP
4. **Date of sanction of sub-project:** 22/05/2013
5. **Date of completion:** 31/03/2014
6. Extension if granted, from _____ to _____
7. Total sanctioned amount for the sub-project: Rs. 1,37,75,700 (Rupees one hundred thirty seven lakhs seventy five thousand seven hundred only)
8. **Total expenditure of the sub-project:** Rs. 86,77,241.00 (Rupees Eighty six lakhs seventy seven thousand and two hundred forty one)
9. **Consortium leader:**
(Name of CL, Designation, Organization Address, Phone & Fax, E-mail, Website)

Dr. B.P. Singh, Director, Central Potato Research Institute (ICAR), Shimla 171001, HP
Tel: 0177-2625073; Fax: 0177-2624460; email: directorcpri@gmail.com
Web: www.cpri.ernet.in

10. List of consortium partners:

	Name of CPI/ CCPI with designation	Name of organization and address, phone & fax, email	Duration (From-To)	Budget (₹ Lakhs)
CPI	Dr. JS Minhas, Principal Scientist (Pl Phy) & Head	Central Potato Research Station, Post Bag No 1, Model Town, PO- Jalandhar 144003 (Punjab) Ph: 0181-2791474, Fax: 0181-2780863, Email: minhas.joginder@gmail.com	22/5/2013 to 31/3/2014	1,37,75,700
CCPII	Er. Sunil Gulati, Scientist SG (FM&P)	Central Potato Research Station, Post Bag No. 1, Model Town P.O., Jalandhar (Pb.)-144003, Phone-0181-2791474, Fax: 0181-2780863 Email: gulatisunil@rocketmail.com	22/5/2013 to 31/3/2014	NA
CCPI2	Er. Sukhwinder Singh, Scientist (FM&P)	Central Potato Research Station, Post Bag No. 1, Model Town P.O., Jalandhar (Pb.)-144003, Phone-0181-2791474, Fax: 0181-2780863 Email: ss.cpri@gmail.com	22/5/2013 to 31/3/2014	NA

CPI-Consortia Principal Investigator; CCPI-Consortia Co-Principal Investigator

11. Statement of budget released and utilization partner-wise (in Lakhs):

	CPI/ CCPI Name, designation & address)	Total budget sanctioned	Fund released (up to closing date)	Fund utilized (up to closing date) (Up to February 10th 2014)
CPI	Dr. JS Minhas, Principal Scientist (PI Phy) & Head, CPRS, Jalandhar	137,75,700	1,12,00350	86,77,241
Total		137,75,700	1,12,00350	86,77,241

CPI-Consortia Principal Investigator; CCPI-Consortia Co-Principal Investigator

Part-II: Technical Details

1. Introduction

In the present scenario commercialization of technologies is becoming a major impetus in the research arena and it will have far reaching impact on the growth and development of industry oriented research leading to the eventual economic growth of the country as a whole. Challenges faced by the researchers in making a transition from the laboratory to the commercial market have to be addressed by putting in place appropriate structures and mechanisms. It has become more important to protect industrially important inventions and innovations in order to protect IPR for regulating the access, transfer and dissemination of these useful information or technologies to end users. Scientific researchers need to be sensitized and assisted towards the generation of useful data having commercial implications. Frequent interaction with the private sector will pave the way for identifying the technological needs of the industrial sector and ways to fulfil the same can be subsequently developed. A paradigm shift in the attitude of the researchers towards demand driven R&D to generate commercially exploitable technologies and products need to be facilitated as per demand of consumers in the market. Technology plays a very important role in agriculture to make farming and processing of agricultural crops more efficient and cost effective. India is an agro-based economy. The share of Agriculture in GDP has been declining for the past many years but still around 65% of Indian work force depends on agriculture for its livelihood. India has emerged as the second largest producer of fruits and vegetables in the world next only to China. In order to promote creativity and innovation, CPRI needs to protect and utilize Intellectual Property generated out of research findings. It is necessary to develop a framework through which proper documentation, protection and incentive regarding innovations are processed. The ultimate objective however will be providing access to such innovations for the public good and societal progress.

2. Overall Sub-project Objectives

1. To facilitate entrepreneur development in agri-business (To start-up a new business)
2. To facilitate commercialization of technology.
3. Training and consultancy for agri-business.

3. Sub-project Technical Profile

(Indicate briefly objective-wise work plan, monitoring indicators, expected output and expected outcome)

Work Plan: BPD-CPRI will carry out the following activities:

- Technologies based incubator
 - Training on fabrication and operation of farm implements.

➤ **Value chain based incubator (For quality seed production by FPO's)**

To promote/setup at least two FPO's for seed production in Jalandhar/Kapurthala district. Support will be provided to these FPO's for mechanization of seed production. (Procuring/fabrication and leasing out of improved farm machineries from seedbed preparation to potato harvesting and grading viz. Rotavator, cultivator, disc harrow, plunker, fertilizer drill cum line marker, automatic potato planter, inter cultivator, ridger, sprayer, potato digger/harvester , seed grader, etc.)

➤ **Seed-business based incubator:**

-Entrepreneur development Program for production of hi-tech quality planting material of potato.

1- Aeroponics technology for potato seed production (Unit for Jalandhar)

2- Hi-tech seed production through micro-propagation (Tissue culture units for Jalandhar)

- For providing access to facilities for seed business and hands-on training to entrepreneurs for starting up the production facilities.
- Consultancy is also to be provided for establishment of tissue culture/ aeroponics units.

Monitoring Indicators:

- Technologies commercialized
- Consultancy imparted
- Entrepreneurs promoted
- Services offered
- Net revenue generated

Expected Outcome/ Impact/: BPD-CPRI will have the following output/Impact

- Promotion and commercialization of CPRI developed technologies.
- Enhanced awareness among farmers and entrepreneurs in adopting new varieties/improved technologies developed by CPRI
- Orientation of research activities in concordance with today's market needs.
- Collaborations with other public/private parties may also lead to Socio-economic upliftment of farmers and entrepreneurs.

4. Baseline Analysis

(Baseline data on the pre-project situation supported by tables, charts, photographs)

Central Potato Research Institute (CPRI, Shimla) was established in 1949 and have played a pioneering role in adapting potato to Indian conditions and development of new potato varieties suited to different agro-climatic zones of the country. The institute is committed to generate technologies leading to enhanced potato productivity and its utilization. Till date, CPRI has developed more than 50 potato varieties suitable for different agro-ecological regions of the country. About 99% of the area under potato cultivation in the country is covered by the indigenous varieties developed by CPRI. The institute aims to act as a Centre for training in research methodologies and technology for up-grading scientific manpower in modern technologies for potato production and to provide consultancy in potato research and development. So far CPRI has developed more than 89 technologies out of which 2 have been patented and 2 more patents filed.

List of potential CPRI technology made available for commercialization in 2013-2014

S.No.	Name of technology	Details	Commercialized to
1.	Aeroponics	Soil less system for potato minituber production	Rajdeep Agri Products Pvt. Ltd. New Delhi
2.	Aeroponics	Soil less system for Potato minituber production	Sekhon Biotech Pvt. Limited, Rupnagar, Punjab
3.	Dipstick Kit	Potato virus detection kit	Under progress
4.	Bioformulation “B5”	Biofertilizer & biopesticide	Under progress
5.	Heap Storage	CIPC treated heap storage	Under progress
6.	Dehydrated potato cubes and shreds	Process for the preparation of high quality dehydrated potato cubes and shreds	Under process

Contract services: CPRI scientists have also been engaged in contract research. The terms and conditions for contract research are as per ICAR guidelines.

Consultancy: CPRI scientists are also engaged in consultancy services as and when required. Charges for consultancy projects are as per ICAR guidelines.

5. Research Achievements with Summary

(Give detailed technical progress partner-wise, highlighting the achievements in terms of targets fixed for each activity and the impact of sub-project. Present statistically analyzed data through tables/graphs. Attach good quality photographs. Present research achievements with critical discussion of results and conclusions, as if for publication in a journal. Explain the variation in light of the scientific technological trends, socioeconomic and agro-ecological conditions.)

Methodology:

Business Manager has segmented the CPRI’s technologies as per their potential clients, sectors and geographical acceptability. Contact data base was prepared according to nature and business potential of technology. In order to license the technology business manager writes introductory mail about features and commercial potential of technology to potential clients. Followed by telephonic calls to clients so as one to one introductory discussion can be held. If our technology offering and client requirement match with each other then we finalize date of presentation. Business manager visits the client’s office and presents the technology. We also invite clients to visit our potato research station and have demonstration and discussion with the concern scientists. We also entertain walk in inquiries, telephonic and Email inquiries for technology licensing and consultancy assignments. In addition to this Business Manager made regular visits to the agri business industry in different cities and made presentations on CPRI technologies and consultancy expertise available. Business manager also brought feedback from the market for the scientific community to align future research efforts in demand driven direction. The prospective parties were invited for preliminary meeting with the concerned scientists with prior appointment. If interested, the

party has to become a member of the BPD Unit by paying a registration fee of Rs. 500-7500 as per defined category. For technology commercialization, technology is demonstrated to the party after signing a Non-Disclosure Agreement (NDA). Party makes an application to CPI and Head for nonexclusive licensing of the technology. In case of consultancy required, a consultancy proposal is also submitted by the party to the CPI with a copy to Director, CPRI-Shimla. The terms of reference for tech commercialization/consultancy project implementation are given to the party. If agreed an MoU is signed by the party and Governing Body of BPD Unit. Post MoU signing, timely and smooth implementation of the MoU is ensured by the BPD Unit. Post expiry of MoU period, graduation and impact assessment study will also be done.

Observations recorded: In the year 2013-14 CPRI had signed MoU with Rajdeep Agri. Product Pvt. Ltd., New Delhi for commercialization of Aeroponics. BPD Unit had signed second MoUs for Aeroponics with Sekhon Biotech Private Limited, Rupnagar (Punjab). The experience in both these MoUs had been satisfying for both the parties and smoothly moving ahead to achieve the objective. Rationality behind commercialization of Aeroponics on priority basis was to promote and popularize the quality seed production through potato minituber production.

Results in Detail: Live demonstration of minituber production had been showcased to them. Schematic diagram and know-how document had been handed over to licensees. So far, progress was found to be satisfactory for both the parties. 2-3 parties are under pipeline and we are conducting testing trail for them as well in coming days and months.

Achievements in terms of targets fixed for each activity and the impact of sub-project:

S. No.	Activity	Target	Achievement	Impact of Subproject
1.	Launch Workshop of BPD Unit	1	100 participants from industry and research institutions were attended the program at CPRI Shimla on 22/8/2013	Agribusiness Promotion
2.	Training for members of Farmers Producer Organization	1	28 FPO members attended the training program at CPRS Jalandhar	Capacity building of seed growers towards quality potato seed production
3.	Technology transfer	2	Aeroponics technology has been licensed to 2 clients	Enhanced quality seed production & Agribusiness Promotion
4.	Entrepreneurship	1	51 Participants attended EDP on	Agri entrepreneurship

	Development Program		16 th December 2013 at CPRS Jalandhar	promotion
5.	Comprehensive Business training Program	1	28 participants attended the program	Agribusiness Promotion
6.	Revenue Generated	4.5 Lakhs	8.745 Lakhs	Agribusiness Promotion



Potato minituber production through Aeroponics



Virus testing with Dipstick Kit



Bio formulation "B5"



Tissue Culture derived Potato in net house

6. Innovations

(Describe about the innovations and their impacts, one page each, please be clear about innovation concept and describe only innovation(s) in brief)

Nil

7. Process/ Product/Technology Developed

(List partner-wise major Process/ Product/Technology developed and their outcome in quantifiable terms)

S. No.	(Process/Product/Technology Developed)	Adoption/ Validation/ Commercialization, etc.	Responsible Partner
1.	Aeroponics for potato minituber production	Commercialized to 1. Rajdeep Agri. Product Pvt. Ltd., New Delhi 2. Sekhon Biotech Pvt. Ltd. Rupnagar (Punjab)	CPRI Shimla
2.	Bioformulation “B5”	Under progress to get commercialized	CPRI Shimla
3.	Dipstick Kit for detection of Potato Viruses	Under progress to get commercialized	CPRI Shimla
4.	“ A process for the preparation of high quality dehydrated potato cubes and shreds”	Under progress to get commercialized	CPRI Shimla

8. Patents (Filed/Granted)

S. No.	Title of Patent	Inventor(s) (Name & Address)	Filed/Published/Granted (No./Date)	Responsible Partner
1	“ A process for the preparation of high quality dehydrated potato cubes and shreds”	Dr. Ashiv Mehta, Principal Scientist, CPRS, Jalandhar (Punjab)	Provisional application submitted to CPRI, Shimla vide letter no. CPB/PHT/Steno/1575 on dated 23/12/2013	CPRI, Shimla
2	“Design and development of a cutter bar type of potato haulm cutter”	Er. Sunil Gulati, Scientist SG (FM&P), CPRS, Jalandhar (Punjab)	3781/DEL/2013 (26/12/2013)	CPRI, Shimla

9. Linkages and Collaborations

S. No.	Linkages developed (Name & Address of Organization)	Date/Period From-To	Responsible Partner
1	Rajdeep Agri Products Pvt. Ltd. New Delhi	2013-2014	CPRI & BPD Unit
2	Sekhon Biotech Pvt. Ltd. Rupnagar (Punjab)	2013-2014	CPRI & BPD Unit
4	NABARD, Jalandhar	2013-2014	CPRI & BPD Unit
6	McCain	2013-2014	CPRI & BPD Unit
7	ITC	2013-2014	CPRI & BPD Unit
8	GSFC, Vadodara, Gujarat	2013-2014	CPRI & BPD Unit

9	Abellon Agrisciences Ltd. Ahmedabad	2013-2014	CPRI & BPD Unit
9	PAU, Ludhiana	2013-2014	CPRI & BPD Unit
10	CAZRI, Jodhpur	2013-2014	CPRI & BPD Unit

10. Status on Environmental and Social Safeguard Framework

(Please see NAIP website for clarity on the subject)

Technologies	Environmental			Social		
	Positive effects	Negative effects	Mitigation measures taken to minimize the negative effects	Positive effects	Negative effects	Mitigation measures taken to minimize the negative effects
Aeroponics	Awareness towards sustainable agriculture through use of Low cost potato minituber production reducing Incidence of insect pest and diseases.	nil	n/a	Savings on water and nutrients. Five times higher rate of seed multiplication compared to net house	nil	n/a

Social Impact

-By commercialization of Aeroponics Technology: Virus infection is biggest threat to potato seed industry. In order to ensure the productivity and profitability of potato seed industry it is our priority to produce virus free seed stocks and control the virus infection. Incidence of virus infection gets aggravated during field exposure as insect pests work as vector to spread these viruses. Moreover soil borne pathogens infect the tubers. Therefore, protected cultivation in insect proof net house /poly house and soil less culture system avoid both virus infection as well as soil borne tuber infection. Both these advantages are provided by the aeroponics technology. Additionally the technology also provides 7-10 times higher number of minitubers from *in-vitro* plantlets as compared to cultivation under net house. The system is easy to maintain and does not require expensive sterile conditions.

Business Planning and Development Unit at Central Potato Research Institute, Shimla (HP) has done a commendable work in commercialization of the Aeroponics Technology on a large scale in the agribusiness industry and is trying to ensure its outreach to the remotest potato seed industry.

11. Constraints, if any and Remedial Measures Taken:

Nil

12. Publications (As per format of citation in Indian Journal of Agricultural Sciences)**A.** Research papers in peer reviewed journals

S. No.	Authors, Title of the paper, Name of Journal, Year, Vol. & Page No.	NAAS Ratings	Responsible Partner
1.	Nil		

B. Books/ Book chapters/ Abstracts/ Popular articles, Brochures, etc.

S. No.	Authors, Title of the papers Name of Book/ Seminar/ Proceedings/Journal, Publisher, Year, Page No.	Responsible Partner
	Nil	

13. Media Products Developed/Disseminated

S. No.	CD, Bulletins, Brochures, etc. (Year wise)	No. of Copies	Distribution	Responsible Partner
1.	1 Brochure (2013-2014)	500	Distributed to Pvt. Ltd. Companies, stakeholders, EDP participants, participants of technology awareness program, industry visitors etc.	CPRI Shimla
2.	11 Fliers (2013-2014)	5500	Pvt. Ltd. Companies, Individual entrepreneurs, NGO representative	CPRI Shimla
3.	Posters (2013-2014)	12	Displayed during exhibition and Technology Awareness Program, EDP and comprehensive business training program to advertise commercially promising CPI technologies	CPRI Shimla
4.	Banners (2013-2014)	3	To popularize EDP, FPOs and technology awareness program, equipment renting to targeted clients etc.	CPRI Shimla

14. Meetings/Seminars/Trainings/Kisan Mela, etc. organized

S. No.	Details of Meetings/Seminars/ Trainings, etc.	Duration (From-To)	No. of Personnel Trained	Budget (₹)	Organizer (Name & Address)
1.	BPD Launch Workshop	22 nd August 2013 (1day)	100	1,04,810	BPD Unit CPRI, Shimla
2.	Entrepreneurship Development Program	16 th December (1 day)	51	87597	BPD Unit CPRS, Jalandhar
3.	Technology Awareness Program	29 th January (1 day)	28	7500	BPD Unit CPRS, Jalandhar
4.	Comprehensive business Training Program	30 th January (1 day)	28	Included in above	BPD Unit CPRS, Jalandhar

15. Participation in Conference/ Meetings/Trainings/ Radio talks, etc.

S. No.	Details of Meetings/Seminars/ Trainings/Radio talk, etc.(Name &Address)	Duration (From-To)	Budget (₹)	Participant (Name & Address)
1.	Training program for BPD Units at Coimbatore	17/6/2013-23/6/2013	32945	Er. Sukhwinder Singh, Scientist (FM&P), CPRS, Jalandhar
2.	The AGRI-TECH investors meet at NASC Complex New Delhi	18/07/2013-19/07/2013	14460	Dr. BP Singh, Director, CPRI Shimla Dr. JS Minhas, CPI-BPD & Head, Central Potato Research Station, Post Bag No. 1, Model Town Post office, Jalandhar 144 003 Punjab
3.	BPD Launch Workshop at CPRI Shimla	22/8/2013	19143	Dr. JS Minhas, CPI & Head, CPRS Er. Sunil Gulati, Scientist, CPRS Er. Sukhwinder Singh, Scientist, CPRS, Jalandhar Dr. Karan Acharya, RA, BPDU Ms. Richa Verma, SRF, BPDU Ms. Shweta Bhardwaj, SRF, BPDU Mr. Amit Kumar, OA, BPDU, CPRS, Jalandhar
4.	“Orientation workshop and Hands-on training	24/10/2013-26/10/2013	34137	Er. Sunil Gulati (Scientist, CPRS Jalandhar)

	Program for BPD Units in the NARS”			Mr. Bipin Mishra (BM, BPD Unit, CPRS Jalandhar)
5.	Training program on Aeroponics at CPRIC-Modipuram	05/11/2013-08/11/2013	7027	Ms. Richa Verma (SRF, BPDU-CPRS, Jalandhar) Ms. Shweta Bhardwaj (SRF, BPDU-CPRS, Jalandhar) Mr. Karan Acharya, (RA, BPDU-CPRS, Jalandhar) Er. Sukhwinder (CCPI & Scientist, BPDU-CPRS, Jalandhar)
6.	Press Conference was organized in Jalandhar by BPDU to publicized news about BPD activities through local and national newspapers	13/11/2013 (45minutes)	3400	Dr. JS Minhas, CPI& Head, CPRS, Er. Sunil Gulati, CPRS, Er. Sukhwinder Singh, CPRS, Bipin Mishra, Business Manager, BPD Unit,CPRS Jalandhar
7.	Foundation day program of Agrinnovate India Pvt. Limited, New Delhi	18-19 October	2827	Bipin Mishra, Business Manager, BPD,CPRS, Jalandhar

16. Foreign Trainings/Visits:

S. No.	Name, Designation, Address of the Person	Visit/Training/Seminar its Place, Organization and Duration (From-To)	Dates of Seminar Delivered and Report Submitted on Return	Follow up Action	Total Cost (₹)
	Nil				

17. Performance Indicators for Component-1: BPD

(As per the enclosed format in Appendix-1: Component-wise; and Sub-component-wise)

S. No.	Indicator	Total No.
1.	No. of technologies commercialised	02
2.	No. of entrepreneurs incubated/enrolled	31
3.	No. of incubatees graduated	01
4.	No. of entrepreneurs supported/ trained	82
5.	Client servicing (commitment/delivered)	1
6.	Revenue generated for the BPD (₹ lakhs)	8.749

7.	Amount of funding mobilized for incubatees	Nil
8.	No. of consultancy assignments undertaken	Nil
9.	Farmers directly benefitted with value addition	30
10.	No. of local employment generated (direct) through incubatees	10
11.	No. of mergers & acquisitions, joint ventures, tie-ups made	Nil
12.	BPD surplus fund (₹ lakhs)	
13.	a. Number of applications filed for patent	2
	b. Number of patents granted	0
14.	Number of scientists trained overseas in the frontier areas of science	Nil
15.	Number of scientists trained overseas in consortium-based subject areas	Nil
16.	No. of scientists participated in conference/seminar etc. abroad	Nil
17.	Number of novel tools/protocols/methodologies developed	3
18.	Publications	
	Articles in NAAS rated journals	Nil
	Articles in other journals	Nil
	Book(s)	Nil
	Book chapter(s)	Nil
	Thesis	Nil
	Popular article(s) (English)	Nil
	Newspaper article(s)	Nil
	Seminar/Symposium/Conference/Workshop Proceedings	1
	Technical bulletin(s)	1
	Manual(s)	Nil
	CDs/Videos	Nil
	Popular article(s) in other language	Nil
	Folder/Leaflet/Handout	10
	Report(s)	1
	Success stories	--

18. Employment Generation (man-days/year)

S. No.	Type of Employment Generation	Employment Generation up to End of Sub-project	Responsible Partner
1.	2 technical staff along with 10 semi -skilled* supportive staff for two aeroponics Unit with different companies	12	CPRI Shimla

❖ * Around 10 semi -skilled jobs are continued in tissue culture labs and Aeroponics Units

19. Assets Generated

(Details to be given on equipments and works undertaken in the sub-project, costing more than ₹ 10,000/- in each case)

(i) Equipment

S. No.	Name of the Equipment with Manufacturers Name, Model and Sr. No.	Year of Purchase	Quantity (Nos.)	Total cost (Rs)	Responsible Partner
1.	Tractor	2013	01	6,30,140.00	CPRS, Jalandhar
2.	Tractor Trolley	2013	01	2,60,000.00	CPRS, Jalandhar
3.	Cultivator	2013	01	22,800.00	CPRS, Jalandhar
4.	Disc harrow	2013	01	40,000.00	CPRS, Jalandhar
5	Planker	2013	01	12,500.00	CPRS, Jalandhar
6	Fertilizeer drill cum line marker	2013	01	28,000.00	CPRS, Jalandhar
7	Automatic potato planter-Two row	2013	01	1,10,000.00	CPRS, Jalandhar
8	Automatic potato planter-three row	2013	01	1,30,000.00	CPRS, Jalandhar
9	Inter cultivator	2013	01	28,000.00	CPRS, Jalandhar
10	Ridger	2013	01	24,000.00	CPRS, Jalandhar
11	Sprayer	2013	02	1,47,000.00	CPRS, Jalandhar
12	Potato digger	2013	02	1,10,000.00	CPRS, Jalandhar
13	Potato grader	2013	01	2,63,000.00	CPRS, Jalandhar
14	Generator set	2013	01	2,98,323.00	CPRS, Jalandhar
15	Aeroponic system	2013	01	14,99,404.00	CPRS, Jalandhar
16	Hardening chamber	2013	01	6,96,945.00	CPRS, Jalandhar
17	Storage system	2013	01	11,96,475.00	CPRS, Jalandhar
18	Net house	2013	01	3,99,999.00	CPRS, Jalandhar
19	Laminar air flow	2013	02	2,30,000.00	CPRS, Jalandhar
20	Computer with accessories	2013	(2UPS, 2 printer, MS Office, 3 HDD, 1scanner)	1,32,843.00	CPRS, Jalandhar
21	Laptop	2013	01	66,990.00	CPRS, Jalandhar
22	Fax machine	2013	01	15,800.00	CPRS, Jalandhar
23	Photocopier	2013	01	1,60,877.00	CPRS, Jalandhar
24	Furniture	2013	_____	4,99,831.00	CPRS, Jalandhar

(ii) Works

S. No.	Particulars of the Work, Name and Address of Agency Awarded the Work	Year of Work Done	Quantity (Nos.)	Total Cost (₹)	Responsible Partner
1.	Advertisement for the post of contractual staff in BPDU project in different local and national news -papers. Press conference held at Jalandhar for promotion of BPD activities	2013-14	11	73760	CPRS, Jalandhar
2.	Board & Signboard to Brite Lite, Jalandhar	2013-14	8	46760	CPRS, Jalandhar
3.	BPD office partitioning with aluminum frame to Friends Aluminum, Jalandhar	2013-14	1	CPRI, Shimla	CPRI, Shimla
4.	Aeroponics Unit at CPRS, Jalandhar to Rajdeep Agri Products Pvt. Ltd. New Delhi	2013-14	1	40,22,823	CPRS, Jalandhar

(iii) Revenue Generated

(Details may be given on revenue generated in the sub-project viz., sale of seeds, farm produce, products, patents, commercialization, training, etc.)

S. No.	Source of Revenue	Year	Total amount (Lakhs₹)	Responsible Partner
1.	Technology commercialization	2013-14	8.50	BPDU CPRI
2.	FPO membership	2013-14	0.245	BPDU CPRI
3.	Sale of Biofertilizer Beej-rakshak	2013-14	0.004	BPDU CPRI
	Total revenue		8.749	

(iv) Livestock

(Details of livestock procured/produced in the sub-project)

S. No.	Details of Livestock (Breed, etc.)	Year of Procurement/Production	Nos.	Total Cost (₹)	Responsible Partner
	NA				

20. Awards and Recognitions

S. No.	Name, Designation, Address of the Person	Award/ Recognition (with Date)	Institution/ Society Facilitating (Name & Address)	Responsible Partner
	Nil			

21. Steps Undertaken for Post NAIP Sustainability

- ❖ CPRI –BPD unit has been sanctioned and established in May 2013. It was very short span of time for CPRI to take any steps for post NAIP sustainability. CPRI BPD Unit needs support in beginning from ICAR to get mature as our BPD unit is less than a year old.
- ❖ Handholding of the BPDs must be continued during the plan period through ICAR funding till unit becomes self sufficient

22. Possible Future Line of Work

(Comments/suggestions of CPI regarding possible future line of work that may be taken up arising out of this sub-project)

- ❖ Networking of the BPD Units for better clientele data base and technology-sharing.
- ❖ Evaluation of individual BPDs Unit should be based on individual region specific and institute specific variations and not on the same parameters for all BPD Units.
- ❖ The technologies developed by NARS system needs to be refined prior to push them for commercialization. The cost benefit ratio of each technology should be worked out at different scales.
- ❖ Domestically commercialized technologies from BPD Unit may be promoted internationally in South-East Asian and African countries (Third world countries).

23. Personnel

(Staff of Lead Centre & Partner-wise, their Name, Designation, Discipline and Duration)

	From – To (DD/MM/YYYY)
Research Management (CL)	
1. Dr. B.P. Singh, Director, CPRI, Shimla, HP	22/05/2013-31/3/2014
Scientific (CPI, CCPI, others)	
2. Dr. J.S. Minhas, Head, CPRS, Jalandhar (CPI)	22/05/2013-31/3/2014
3. Er. Sunil Gulati, Scientist SG (FM&P) (CCPI)	22/05/2013-31/3/2014
4. Er. Sukhwinder Singh, Scientist (FM&P) (CCPI)	22/05/2013-31/3/2014
5. Dr. R.K. Arora, Principal Scientist, CPRS, Jal	
6. Dr. S.P. Trehan, Principal Scientist, CPRS, Jal	
7. Dr. A. Mehta, Principal Scientist, CPRS, Jal	
8. Dr. Rajkumar, Principal Scientist, CPRS, Jal	
9. Dr. R.P. Kaur, Scientist, CPRS, Jalandhar	

Technical	
10. AK Sharma, STO	
11. YK Gupta, STO	
12. Jaswinder Singh, STO	
13. Kapil Sharma, STO	
14. Akhilesh Kumar Singh, TO	
15. Dr. Sanat Kumar, Farm supervisor	
16. Munna Lal, TO	
17. Gurdev Singh TO	
18. Pradeep TO	
Contractual	
19. Bipin Mishra, Business Manager, BPD, CPRI	10/9/2013 to 31/3/2014
20. Karan Acharya, RA, BPD, CPRI	27/7/2013 to 31/3/2014
21. Richa Verma, SRF, BPD, CPRI	21/7/ 2013 to 31/3/2014
22. Shweta Bhardwaj, SRF, BPD, CPRI, Shimla	26/7/ 2013 to 31/3/2014
23. Amit Kumar, Office Assistant, BPD, CPRI	22/7/2013 to 31/3/2014

24. Governance, Management, Implementation and Coordination

A. Composition of the various committees (CIC, CAC, CMU, etc.)

S. No.	Committee Name	Chairman (From-To)	Members (From-To)
1.	CIC		
2.	CAC		
3.	CMU		

A. List of Meetings organized (CIC, CAC, CMU, etc.)

S. No.	Details of the meeting	Date	Place & Address (Where meeting was organized)
1.	CIC		

2.	CAC		
3.	CMU		

Part-III: Budget and its Utilization
STATEMENT OF EXPENDITURE (Final)

(Period from 22/05/2013 to 31/03/2014)

Sanction Letter No. F. No: 30(1/2013/CPRI/BPD/NAIP/O&M Dated 22/05/2013)

Total Sub-project Cost: Rs 137.75700 Lakhs

Sanctioned/Revised Sub-project cost (if applicable) _____

Date of Commencement of Sub-project: 03/05/2013

Duration: From 22/05/2013 to 31/03/2014

Funds Received in each year

I Year: Rs. 1,12,00,350.00

II Year _____

Bank Interest received on fund (if any) Rs _____

Total amount received: Rs. 1,12,00,350.00 _____

Total expenditure: Rs. 8677241.00

Expenditure Head-wise:

Sanctioned Heads	Funds Allocated (*) In lakhs	Funds Released			Expenditure Incurred			Total Expenditure	Balance as on date	Requirement of additional funds	Remarks
		1 st Year	2 nd Year	3 rd Year	1 st Year	2 nd Year	3 rd Year				
A. Recurring Contingencies											
(1) TA	3.3				1.304730			1.304730	1.99527		
(2) Workshops	4.0				1.92407			1.92407	2.07593		
(3) Contractual Services/RA/SRF	17.52				8.01942			8.01942	9.50058		
Sub-Total of A (1-4)	24.82				11.24822			11.24822	13.57178		
B. HRD Component											
(5) Training	2.0				0.077			0.077	1.92300		
(6) Consultancy	4.0				0.00			0.00	4.00		
Sub-Total of B (5-6)	6.0				0.077			0.077	5.923		
C. Non-Recurring											
(7) Equipment	79.25				66.79100			66.79100	12.45900		
(8) Furniture	5.0				4.99831			4.99831	0.00169		
(9) Works (new renovation)	--										
(10) Others (Animals, Books, etc.)	--										
Sub-Total of C (7-10)	84.25				71.78931			71.78931	12.46069		
D. Institutional Charges*	4.137				1.4767			1.4767	2.6603*		
Grand Total (A+B+C+D)	119.207				84.59123			84.5865	34.61577		

* Institutional charges will be 10% of the recurring contingencies for the Lead Consortium and 5% for Consortia Partners.

Name & Signature of CPI : Dr. JS Minhas

Name & Signature of Competent Financial authority:

Date: _____

Date: _____

Date: _____

Signature, name and designation of Consortia Leader

PART-IV: DECLARATION

This is to certify that the final report of the Sub-project has been submitted in full consultation with the consortium partners in accordance with the approved objectives and technical programme and the relevant records, note books; materials are available for the same.

Place: _Jalandhar

Date: _____

Signature of Consortium Principal Investigator

Er. Sunil Gulati
Scientist (FM & P) CPRS Jalandhar

Signature & Date
Consortium Co-Principal Investigator

Er. Sukhwinder Singh
Scientist (FM & P) CPRS Jalandhar

Signature & Date
Consortium Co-Principal Investigator

Director
Central Potato Research Institute Shimla

Date:

General Instructions and Guidelines

- 1) The CPI will send the consolidated report to PIU-NAIP after compiling the progress reports received from all the consortium partners. The report should also list the constraints (if any) being faced by consortia partners.
- 2) The Final Report should not be a mere repetition of Annual Reports. The purpose of the final report is to link all findings from the sub-project so that the overall achievements are discussed in terms of scientific accomplishments, contributions to scientific, human capital development, the relevance of findings to development, and how the information technology is to be disseminated.
- 3) The Executive Summary should review and summarize the entire Sub-project. The Executive Summary should clearly place sub-project accomplishments in the overall context of agricultural development.
- 4) Summary in Hindi must be included.
- 5) Final Report should be of A-4 size and the total number of pages must not exceed 50-60 in any case.
- 6) The text of the Final Report should be in the following format:
 - MS Word document
 - Line spacing: 1.15
 - Font: Times New Roman
 - Main headings: 12 point bold
 - Running text: 12 point normal
- 7) Following colour schemes to be used for cover page (front & back) by sub-projects under different components

Component-1:	Light Orange	 #F79646
Component-2:	Light Pink	 #FF99CC
Component-3:	Light Green	 #33CC33
Component-4:	Light Blue	 #66CCFF
- 8) Ten hard bound printed copies of Final Report should be submitted. Also, soft copy of the Final Report in MS Word document (2003) should be sent in the CD in duplicate.
- 9) The details of performance indicators claimed in the listing should be submitted as soft copy in CD in MS Word Format. A copy of each publication, film, knowledge products, patent application to be attached in a separate folder.
- 10) CPIs must strictly follow the guidelines while composing and printing the sub-project Final Report.
- 11) The draft of Final Report in soft copy be sent 15 days before sub-project closing date to concerned National Coordinator. Final printing be done after getting comments/suggestions on draft report.