



ISAP

News Letter

Indian Society of Agribusiness Professionals

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Editorial...

Dear ISAPIans,

Winter brings with it a crop of seminars. Some of them, which ISAP participated include, "Agricultural Diversification and Vertical Integration" organised by FICCI, "Agro-East 2003" by CII at Kolkata, "Easing the Transition to a More Open Market" by International Food & Agricultural Trade Policy Council, "Farmers Rights and Indigenous Knowledge" by Gene Campaign on their 10th Anniversary gave a lot of food for thought.

ISAP is now actively expanding its network in the North Eastern states and has Mr. Mustaseem Ahmed based in Assam, spearheading the drive. The response has been enthusiastic.

This month, ISAP is pleased to announce the launch of an exhaustive reference manual for the benefit of farmers cultivating medicinal plants. The book is entirely in Hindi, and is authored by Dr Gurpal Singh Jaryal and Dr. Mayaram Uniyal. The title of the book is "*Aushadiya Padhpon Ka Vyavasayik Krishikaran*". The book is with a hard cover and jacket, has 300 pages of solid data compiled after original research and analysis and is also low priced @ Rupees 450/-. Chapter Coordinators have been requested to take up the distribution of this book.

With Kind regards,

R. Santhanam



Join Hands with ISAP as Chapter Co-ordinators

We would like to invite you to associate with ISAP as chapter co-ordinator. ISAP is growing rapidly and currently has over 7000 member (of whom more than 100 hold Ph.Ds) all over India and abroad. It has 59 chapters, 350 NGO Partners and has answered well over 3000 queries/problems raised by members of the farming community.

The traditional extension system has failed to address the current needs of the farmers and this is a fact documented and analysed in great detail. ISAP targets to create a network of 100,000 members who would work at taluka levels and below as micro entrepreneurs to achieve this task. We plan to put together an expert back end consisting of more than 50,000 experts.

We are working on several projects currently and they include work with SDC, JBIC, Bio-diversity, OXFAM and etc. We would also like to work in your region through workshops seminars, expert visits and campaigns.

The chapter co-ordinator is a voluntary position and ISAP helps meet expenses of activities related to its program in the co-ordinators region.

We reiterate our invitation to join this mass movement and help in supporting the farming community. Please visit www.isapindia.org to get an idea of our work.

Warm regards,

Sunil Khairnar
Executive Director

दिल्ली देहात में औषधीय पौधों की व्यवसायिक खेती

भारतीय सभ्यता के समान ही पुरानी है हमारी आयुर्वेदिक औषधि चिकित्सा प्रणाली। आज भी विश्व में लगभग 80 प्रतिशत लोग घरेलू उपचार या आयुर्वेद पर निर्भर हैं। प्रतिवर्ष हमारे देश से करोड़ों की औषधीय जड़ी-बूटियाँ विदेशों में भेजी जा रही है, तथा इनकी मांग दिन-प्रतिदिन बढ़ती ही जा रही है। अभी तक औषधीय पौधे प्राकृतिक रूप से जंगलों में पाये जाते रहे हैं, तथा उसी से सारी खपत की पूर्ति की जा रही है। पिछले कुछ सालों से जंगलों में भी इनकी मात्रा कम होती जा रही है तथा कुछ पौधों के तो दर्शन भी दुर्लभ हो गये हैं। इन सभी कारणों से आज इनकी खेती पर ज्यादा ध्यान दिया जा रहा है। फसल विविधता के तहत औषधीय तथा सुगन्धित पौधों की खेती अन्य प्रचलित फसलों जैसे गेहूँ, चावल, मक्का की तुलना में अधिक लाभप्रद है।

1. इन पौधों को सभी तरह की मिट्टी व असिंचित क्षेत्रों में सफलता पूर्वक लगाया जा सकता है।
2. प्राकृतिक रूप से कठोर होने के कारण किसी भी बीमारी या कीट का प्रकोप कम होता है।
3. रसायनिक तत्वों के कारण इन्हें पशु-पक्षी भी नहीं खाते हैं।
4. देश विदेशों के बाजार में माँग होने के कारण इनकी बिक्री भी आराम से की जा सकती है।

अतः हमारे किसान भाई इन फसलों को कम लागत तथा सही मुनाफे के साथ अपने खेतों में आराम से लगा सकते हैं।

दिल्ली तथा इसके आसपास के क्षेत्रों (राजस्थान, हरियाणा, उत्तर प्रदेश) के लिए उपयुक्त कुछ औषधीय तथा सुगन्धित पौधों की सुचारु खेती सम्बन्धित जानकारी इस लेख में दी जा रही है। इस क्षेत्र के लिए निम्नलिखित पौधे उपयुक्त हैं।

सफेद मूसली

सफेद मूसली कंद वर्ग का पौधा है विभिन्न प्रकार की आयुर्वेदिक, यूनानी तथा ऐलोपैथिक दवाइयों के निर्माण में इस्तेमाल होता है। जंगलों में अपने आप फैलने वाला यह पौधा 4-5 साल तक लगातार फसल देता है। इसकी खेती के लिए रेतीली मिट्टी अच्छी है। खेत को पहले जोत कर गोबर की खाद 5-10 टन प्रति एकड़ मिला दें। एक सिंचाई के बाद इसमें कन्दों बन्वों की बिजाई करनी चाहिए। 5-6 ग्राम वजन के कन्द (छिलका समेत) को पहले 2-4 घंटों के लिए पानी में डुबो कर रख दें, तत्पश्चात् इन्हें हल्का सा सुखा कर खेत में 15x15 सेमी. की दूरी पर रोप दें। बिजाई के लिए कन्दों में डिस्क का कुछ हिस्सा आना जरूरी है। कन्दों का अंकुरण 80 से 100 प्रतिशत तक होता है। रोपाई का समय मई-जून का महिना सर्वश्रेष्ठ है, क्योंकि फिर महीने में दो सिंचाई की परेशानी नहीं होती, बरसात का पानी ही काफी रहता है। बिजाई या रोपण के 7-10 दिन बाद पौधा बढ़ने लगता है। तथा सितम्बर-अक्टूबर में पत्ते फूल लग जाते हैं। तत्पश्चात् (दिसम्बर-जनवरी) सर्दी में चूंकि भूमिगत कन्द में वृद्धि होती है इसलिए पत्ते झड़ जाते हैं।

कन्दों को निकालने का कार्य जनवरी-फरवरी में शुरू किया जा सकता है। कुदाली या हाथ से एक-एक कन्द सावधानी पूर्वक मिट्टी से निकाल लें ताकि वे टूटे नहीं और अगले वर्ष फिर बीज के काम आ सकें। व्यापार के लिए कन्दों को 3-4 दिन छाया में खुले हवादार स्थान पर फैलाकर सुखायें। यदि खुदाई के समय कन्दों का छिलका उतर गया है तो एक दिन हल्का सा पानी का स्प्रे मार दें। इससे छिलका तो ठीक हो ही जायेगा साथ में कन्दों की लम्बाई भी बढ़ जाती है। एक हफ्ते के बाद कन्दों पर हल्की उंगलियों से दबाव देने पर इसका छिलका उतर जाता है। छिलका उतरी हुई मूसली को साफ पानी से धो लें तथा एक हफ्ते तक छाया में सुखा लें। अब यह बाजार में आसानी से बेची जा सकती है। औसतन प्रति एकड़ 2 से 16 क्विन्टल की पैदावार होती है। उत्तम गुणवत्ता वाली सूखी मूसली का भाव 1000 से 1200 रुपये प्रति किलो है। प्रति एकड़ खर्चा मिला कर लगभग 1.5 से 2.0 लाख रुपये की आमदनी प्राप्त कर सकते हैं।

बिजाई योग्य कन्दों का प्राप्ति स्थान

अच्छे स्वस्थ डिस्क सहित ट्यूबर या कन्द निम्नलिखित विक्रय सम्पर्क सूत्रों से प्राप्त किये जा सकते हैं—

1. राष्ट्रीय अनुसंधान केन्द्र (औषधीय एवं सुगन्धित पौधों) आनन्द, गुजरात।
2. सुरजीवन, मॉडल फार्म एण्ड रिसर्च, गाँव-बिरसर अकबरपुर, तहसील-तावड़ू, गुड़गांव हरियाणा।

सनाय

सनाय मूलतः अरब देशों का पौधा है। यह एक छोटा झाड़ीनुमा 1–2 मी. ऊँचा सदाबहार चटक पीले रंगों वाला पौधा है। मई–जून की तपती गर्मी में भी सनाय का खेत सरसों के खेत के समान लहराता रहता है। इसकी पत्तियों में एन्थाक्वूनोन, ग्लाइकोसाइड, फ्लेवोनाइड सहित अनेक औषधीय गुण वाले रसायनिक तत्व हैं। सनाय के औषधीय गुण उत्तेजक, रेचक तथा बड़ी आँत की परतों को मुलायम कर कब्ज की शिकायत को दूर करता है। भारतीय सनाय विश्व प्रसिद्ध हैं, तथा प्रतिवर्ष यहाँ से करीब बीस करोड़ रुपये का सनाय पत्ती का निर्यात किया जाता है।

राजस्थान, हरियाणा, उत्तर प्रदेश, गुजरात, कर्नाटक तथा तमिलनाडू की जलवायु इस फसल के लिए सर्वाधिक उपयुक्त है। इसकी खेती के लिए रेतीली से लेकर दोमट मिट्टी उपयुक्त है। बिजाई से पहले एक गहरी जुताई करके खेत को खरपतवार से मुक्त कर लेना चाहिए।

बरसात के बाद जब खेत में पर्याप्त नमी हो तब 10 किलो प्रति हेक्टेयर के हिसाब से बीज की बुवाई करें। एक इंच की गहराई पर 30X30 सेमी. दूरी पर कतार में बीज डालें। 15–20 दिनों में बीजों में अंकुर फूट जाता है। फसल बुवाई के 80–90 दिन के बाद इस की पत्तियाँ काटने योग्य हो जाती हैं। तेज धार के हसिये से पत्तियाँ तथा ऊपर की टहनियाँ काट लें। साल भर में हर दो महीने बाद चार बार कटाई की फसल प्राप्त करें।

पत्तियों को काट कर छोटी-छोटी ढेरियाँ बना कर खेत में 2–3 दिन सुखा लें, बाद में तिरपाल बिछा कर उस पर पत्तों की डण्डल हटा कर छाया में सुखा लें। सूखी पत्तियों को बड़े बोरों में भर कर बेचा जा सकता है। इस प्रकार तीन-चार कटाई के बाद प्रतिवर्ष एक हेक्टेयर खेत से 1000 किलो पत्तियों का उत्पादन होता है, जिसका बाजार भाव 10–15 रु. प्रति किलो है। एक बार बोने के बाद लगातार काटते रहने से पाँच वर्ष तक लगातार उत्पादन देती रहती है।

बीज प्राप्ति स्थान :- इसके अच्छे बीज प्राप्त करने के लिए *केसिया एग्रो एक्सपोर्ट प्रा0 लि0*, ए-17 गोलीमार गार्डन जयपुर से सम्पर्क करें।

बाजार निर्यात :- कृषि विपणन बोर्ड, दिल्ली।

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UNDERSTANDING THE SOIL AND SOIL AMENDMENT

What is a soil – Soil is the most important natural resource because it is the medium that supports the growth of all plants.

It offers mechanical anchorage as well as water and essential plant food elements in the quantities and proportions required for optimum plant growth. It could be called a **medium providing anchorage and fertility**.

It consists minute particles of soil, organic matter, living organisms, chemicals and plant nutrients.

If the soil is poor the effect of all the nutrients supplemented through fertilizers and manures get nullified.

Understanding soils and its proper use is therefore necessary so that we continue to produce a good crop year after year.

Soil formation – Soils are derived from rocks and the process of conversion of rocks into soil is called **weathering**.

Weathering is brought about by the physical agencies and is termed as disintegration and chemical agencies termed as decomposition.

Disintegration of rocks was brought by the action of temperature through alternative heating and cooling and due to freezing of the water present in the cracks and holes in the rocks. This was also caused by erosion through water, ice and winds and of course the human, animal and plant element also played its role.

Decomposition or the chemical conversion took place through the action of carbon and oxygen present in the water along with other elements present in the rocks.

The weathering of rocks provided the parent material in which the simple form of life like lichens, fungi and bacteria took birth. Plants and animals followed. The activity of all these forms of life and the decomposition of their remains hastened the process of soil formation and ultimately we have the soil that is capable of supporting plant life.

To a plant grower soil means the shallow upper layer that is about 12 inches in depth and provides a foothold and nourishment to the plants.

The Indian soils normally consist of mineral particles like stones, gravel, coarse sand and minute particles of silt and clay, besides organic matter formed by decaying of plants and animal residues and air and water.

The soil is defined mainly by the size of the mineral particles present in it.

- Course sand - 2 to 0.2 mm in diameter.
- Fine sand - 0.2 to 0.02 mm in diameter.
- Silt - 0.02 to .002 mm in diameter.

Your soil is one of the most important factors in successful landscaping and gardening.

Evaluating your soil condition is a critical step before preparing your beds and planting plants. The following are some things to consider:

- **Soil Types**
- **Soil Testing**
- **Adding Organic Amendments**
- **Adding Fertilizer**

Soil Types

Soil is a mixture of mineral particles and various types of organic and inorganic material. The size of those mineral particles determines the soil's physical category: **clay**, **sand** or **loam**.

You would like to know what makes up your soil, so you can prevent problems.

A soil-testing lab will tell you what kind of soil you have.

A simple test that will give you some idea: When it's wet, loamy soil will form a lump when you squeeze it and it will crumble easily into small clumps. Wet clay forms a hard lump that won't break up, but wet sand will not t lump at all.

You'll have poor drainage with **clay** soil. Its tiny particles bind together when wet and keep water from draining properly. Plants in clay get too much water and too little air to thrive, and their roots have trouble penetrating the soil. Organic amendments will improve clay soils.

Sandy soils consist of larger particles, which create a porous mix and allow water to drain through too quickly. Plants rooted in it have trouble absorbing water. Organic amendments will also help with this type of soil.

The ideal growth soil is a combination of large and small particles known as **loam**. It holds water long enough for thirsty plants while safely draining away the excess.

Sand or clay soils can be improved with applications of organic matter in the spring (compost, peat moss, or dried manure), but they should be dug into the soil a foot or more deep to really aerate the soil properly.

Soil Testing

It's best to have your soil tested before you start planting to see what nutrients it might be lacking.

You should be able to find labs in your area to do a test for a nominal fee. Your local nursery or the District Agriculture Extension Office will help to have it tested. You can also buy a kit and do the test yourself.

Testing will indicate which of the crucial elements for plant growth your soil's lacking; chiefly **nitrogen**, **phosphorous** and **potassium**. You can add fertilizers to help overcome any deficiencies.

A soil test will also give you the pH level, which indicates the amount of acid in the soil. Some plants need high amounts of acid. Others need more alkaline soil. If it's too acidic, you can add lime to balance it. If it needs more acidity, you can add aluminum sulfate or ammonium sulfate to it.

Adding Organic Amendments

Organic amendments like **peat moss**, **manure** or **compost** will loosen up your soil and promote good drainage. They also improve the ability of the soil to deliver nutrients to the roots.

It's best to dig in your amendments in the spring before planting. Then roto-till the soil to fluff it up and make plant growth easier.

Adding organic amendments to your soil will have long term benefits. In fact, the first few years you may not notice dramatic results. After the amendments have a chance to break down you should see the soil become darker, easier to work with, and require less watering.

The same type of amendments (peat moss, manure, compost) will help either thicken sandy soils and thin out clay. Manure even has small amounts of plant nutrients.

Adding Fertilizer

A garden should get regular doses of fertilizer to keep producing. That's because plants, rain and wind remove a lot of nutrients over time.

Fertilizers come in both **inorganic** and **organic** forms. They both provide the same essential nutrients that your grass or plants need to grow properly:

- **Nitrogen** helps plants produce strong stems and healthy green leaves.
- **Phosphorous** is crucial for flowering and fruiting plants.
- **Potassium** promotes the development of healthy roots and stems.

Check the labels of fertilizers for the numbers indicating the ratio of nutrients. A label with 10-10-10 means it's got ten percent nitrogen, ten percent phosphorous and ten percent potassium. So every 10 kgs of it puts a kg of each element in the soil.

Use a fertilizer with the right combination of nutrients to supplement the specific deficiencies of your soil.

There are advantages and disadvantages to both chemical and organic fertilizers. **Chemical** fertilizers work faster and can be applied in the balance of nutrients your garden or lawn needs. They are less expensive than commercial organic fertilizers and can be applied in concentrated amounts. However, they can be harmful to the environment, and can kill the plants if applied incorrectly.

Organic fertilizers are slower, but longer lasting than chemical fertilizers. They actually build up the nutrients and earthworms in the soil so that fertilizing won't be needed as much in the future. However, they don't contain the balanced mix of nutrients that chemicals do.

Soil Fertility and Maintenance – Under natural conditions the plants take up the nutrients present in the soil as food. The leaves and twigs that falls on the soil decompose in time and return back most of the essential elements required for healthy plant support. This cycle if not disturbed continues in nature and normally no input is needed.

When we grow plants in the home garden, we normally, in order to make it beautiful, remove all the fallen twigs and leaves. Also we continue to grow plants one season after another without giving hardly any breathing time to the soil. The replenishment therefore becomes necessary.

The plants, like human beings need 16 elements for proper and healthy growth. Unlike the humans and animals, plants build up organic tissues directly from inorganic materials. They grow and breed by taking up water and minerals from the soil, carbon dioxide from the air and energy from the sun and convert these into plant tissues.

By **Capt. S. K. BHANDARI** (Retd.)

News and Information

Query Posted on isapindia@yahoogroups.com

Taxus baccata

Mrs. **Krishna Kulkarni** enquired for some information on cultivation aspects of "**taxus baccata**". The medicinal plants are in great demand in traditional system of medicine i.e. Ayurveda, Siddha and Unani Tibb as well as folklore prescriptions. *Taxus baccata* has its own potential in modern pharmaceutical industry also and finds a ready market with herb dealers/large pharmaceutical industries, some description of *Taxus baccata* are as under:

Taxus baccata (Common Name: Himalayan Yeup /Talispatra /Yew)

Habitat: Himalayan and NorthEast India **Exposure:** Full sun, Partial shade, Shade **Hardiness:** Hardy **Soil type:** Well-drained/light, Chalky/alkaline, Dry, Moist, Sandy **Height:** 1000cm **Spread:** 600cm **Time to take cuttings:** August to September **Part Used:** LEAVES **Action:** Anti-cancer, carminative, expectorant. **Uses:** It is the source of the anti-cancer alkaloid "Taxol". It is also used in treatment of asthma, haemoptysis and epilepsy.

Taxus baccata has a restricted distribution in Himalayas occurring sporadically under mixed coniferous forests at altitude 2,500-2,700 m above sea level. Its wood was once used for making longbows. Young plants are bushy and, if left unclipped, they eventually grow into large trees almost as wide as they are tall. However they are rarely allowed to grow naturally, being a firm favourite for classic style hedges and topiary. The plants withstand quite hard clipping and, if overgrown, can be rejuvenated by cutting them back to the stumps. They are also quite amenable to growing conditions and will grow in any well-drained soil. To propagate, take cuttings in late summer and early autumn. It takes almost 100 years for a tree to reach maturity. Now days techniques has been established for fast colonel propagation, which takes about 90-100 days for getting a fully rooted sampling ready for transplanting in its natural habitat. Plant can be propagated through seeds, clonel propagation through layering and stem cutting.

The plant is in great demand nationally and internationally and claims a premium. The bark, needles, leaves and twigs of the Himalayan plant *Taxus baccata*, known as Thunor are the source of a chemical compound that forms the starting material for the synthesis of taxol. Taxol is an anticancer drug and is credited as wonder drug found to be active different cancers The foliage and seeds contain several alkaloids, in particular taxine, very poisonous, which alters to hydrotaxine by hydrolysis. Also one glucoside, taxicatine. The wood, bark, foliage and seeds are toxic. The foliage is the principal source of taxine. Old and desiccated foliage are more poisonous than young and fresh foliage.

Poisoning is frequent in animals. Horses, asses and mules are extremely sensitive and can be killed in less than one hour. Rabbits, guinea-pigs and cats are insensitive to taxine. In humans, the yew generates digestive, nervous, respiratory and cardiovascular disorders which can result in death. Symptoms include excitation, hyperventilation, and tachycardia, followed by deceleration of the heart, hypotension, nausea, stomach pains, cramps, giddinesses, colic, violent diarrhoea, dizzy spells, convulsions, coma and death. The red aril surrounding the seed can be eaten just as it is like

delicacy with the proviso of not chewing the seed. It is sweetened and very mucilaginous. The arilles, removed from their seeds, have diuretic and laxative effects

T. Baccata has played a major role in several religious traditions. This may have occurred because the tree is poisonous, valued for a variety of medicinal purposes, and symbolic of eternal life due to its evergreenness, exceptional longevity, and the wood's resistance to decay. Thus the tree unites of death (by poison) with eternal life. By Jitender Mehta

Egg Powder Manufactures in India

Dr. Amal Ke Borpujari from Guwahati has enquired about manufactures of egg powder in India. I wish to inform him and all interested members of ISAP that here are the few manufactures of egg powder in India **1.** - Balaji Foods & Feeds Ltd. Venkateswara House, Hyderguda, Hyderabad Plant at Mehboobnagar, capacity 1 mil eggs/day. **2.** - Indo Dutch Proteins Ltd. Lumbini Enclave, Punjagutta, Hyderabad, capacity 5 laks/day. **3.** - SKM Energy & Foods Ltd 180, Ganndhiji Road Erode TN, capacity 1 mil/day. **4.** - Ovobel Foods Ltd 984, 1st Cross HAL 2nd Stage, Indiranagar, Bangalore, capacity 6 lakh/day. **5.** - AG Foods Ltd. 2222/21 C, Chandigarh, capacity 1 mil/day. All the above plants are 100% EOU & are producing Whole Egg powder, Egg Yolk & Egg White Powder.

Lemon Grass Marketing Assistance

Buyers address for lemongrass was enquired by Mr. Kachhadia Amitkumar Shambhubhai. Please contact Mr. G S Sreekanta, CEO, Agri Life, Mobile - 040 5664 5766.

Management of Bacterial Leaf Blight in Paddy

Mr. Uma Kant Naik, Malda, Raigarh Chattisgarh posted the query by post for control of Bacterial leaf blight attack in Rice. Bacterial Leaf Blight (*Xanthomonas campestris*). On seedling, the infection appear as tiny water soaked spot at the margin on the leaves. Water-soaked lesion usually starting at leaf margins, a few cm from the tip, and spreading towards the leaf base; affected areas increase in length and width, and become yellowish to light brown due to drying; with yellowish border between dead and green areas of the leaf. It is usually observed at maximum tillering stage and onwards. In severely diseased fields grains may also be infected. In the tropics infection may also cause withering of leaves or entire young plants and production of pale yellow leaves at a later stage of the growth. The lesion can cover the whole leaf blade, turn white and later grayish contaminated with various saprophytic fungi. A turbid ooze of the bacterium, steaming from the vascular bundle can be observed on immersing the cut end of affected leaves in clear water.

Management of Bacterial Leaf Blight

- High temperature favour diseases development.
- Lesion enlarge and leaves die faster at high temperature. High rate of nitrogen fertilizer increases development thus to control the disease effectively, balanced use of nitrogen is necessary.
- Application of Streptocycline @ .6% for spray.
- Use seed from disease free crop.
- Treat the seeds by soaking it for 12hrs in a mixed solution of streptocycline (0.15%) and wettable Ceresan (0.05%) followed by hot water treatment at 52°C-54°C for 30 minutes.
- Drain away the water from fields as frequently as possible.

Grow **resistant varieties** such as PR114, IR-20, IR-54, Pusa2-21, **Ajay, Asha and Daya**.

Functional areas of Experts proposed to be networked:

- 1 Plant Breeding
- 2 Agronomy
- 3 Soil Science
- 4 Meteorology
- 5 Pathology
- 6 Entomology
- 7 Irrigation Engineering
- 8 Horticulture
- 9 Floriculture
- 10 Sericulture
- 11 Post Harvest Technology
- 12 Farm Machinery
- 13 Output Marketing
- 14 Biotechnology
- 15 Trade Policy
- 16 Agricultural Chemistry
- 17 Agricultural Economics
- 18 Extension
- 19 Statistics
- 20 Agri-Structural Engineering
- 21 Food Processing Engineering
- 22 Animal Nutrition
- 23 Animal Physiology
- 24 Animal Reproduction
- 25 Bio Physics
- 26 Bio Informatics
- 27 Bio Chemistry
- 28 Dairy Biotechnology
- 29 IT Applications in Agri
- 30 Dairy Bacteriology
- 31 Dairy chemistry
- 32 Dairy Engineering
- 33 Dairy Technology
- 34 Botany
- 35 Rural Electrification
- 36 Fish Processing
- 37 Fishery Sciences
- 38 Forestry
- 39 Genetics and Cytogenetics
- 40 Livestock Products Technology
- 41 Livestock Products and Management
- 42 Nematology
- 43 Seed Technology

Traditional Knowledge base

While above represent formal disciplines in India's educational establishment, there exists also, the vast body of inherited knowledge in the form of tradition, cultural practices and traditional knowledge base, which are also being given due recognition in various branches be they medicine or agriculture or other disciplines. The activities of the NIF, Ahmedabad, HoneyBee network and Srishti are examples of organised efforts to collect such data so that they can be made available to a wider audience.

ISAP also recognises their importance and adds such streams of knowledge for wider dissemination to the targeted recipients - the poor farmer cultivating rain fed small land holdings.

ISAP disseminates knowledge and hence Contributions are invited on appropriate technologies, suitable for Indian agriculture. The presentation should aim for knowledge dissemination to the rural poor farmer and even highly complex subjects need to be presented in layman's language rather than as a scientific paper. This will fulfill ISAP's core mission statement of knowledge dissemination, particularly to the poor rural farmers.

Some of the suggested topics

(This is not exhaustive. We welcome your suggestions!)

Soil fertility and improvement:

- (1) Vermiculture / Vermicomposting:
- Earthworm gut microbiology
 - Worm cast Microbial activity
 - Pathogen reduction of MSW using vermiculture
 - Vermicomposting food industry organic wastes
 - Vermiculture / vermicomposting in India
 - Best Practice guide for the Indian small farmer on organic farming.

For farmer's daily cooking, water heating needs:

- (2) Solar energy appliances:
- Flat plate collector technology
 - Parabolic dish technology
- (3) Biogas generation:
- From cattle and other animal manure, human wastes for farmer's energy needs and using the slurry for vermi composting to attain a ph stabilised manure for application as humus.

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